IV. ENVIRONMENTAL IMPACT ANALYSIS

D. AIR QUALITY

INTRODUCTION

The analysis and information in this section are based primarily on the following report (refer to Appendix IV.D):

- *Air Quality Impact Analysis, Urban Crossroads, October 31, 2013.*

ENVIRONMENTAL SETTING

South Coast Air Basin

The Project site is located in the South Coast Air Basin (the "Basin") within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act (the "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 bound 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 bound by the San Gabriel Mountains to the south and west, the Los Angeles County/Kern County border to the north, and the Los Angeles County/San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bound by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

Regional Climate

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 (°F). 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 the downtown Los Angeles and 36°F in San Bernardino. 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 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. Clouds absorb the remaining one-quarter. 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 ½ 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 that 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.

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.

Wind speed and direction data is monitored by the SCAQMD for the Project area (Source Receptor Areas [SRA] 24 and 25) this data was obtained from the Perris Valley and Lake Elsinore monitoring stations, located approximately 11.9 miles northwest of the Project site and 18.0 miles southwest of the Project site, respectively. As shown on Figure IV.D-1, the prevailing winds move predominately from the southwest to northeast and northeast to southwest with an average wind speed of 2.15 meters per second (m/s) or 4.8 miles per hour (mph).

Existing Air Quality

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. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well health effects of each pollutant regulated under these standards are shown on Table IV.D-1.

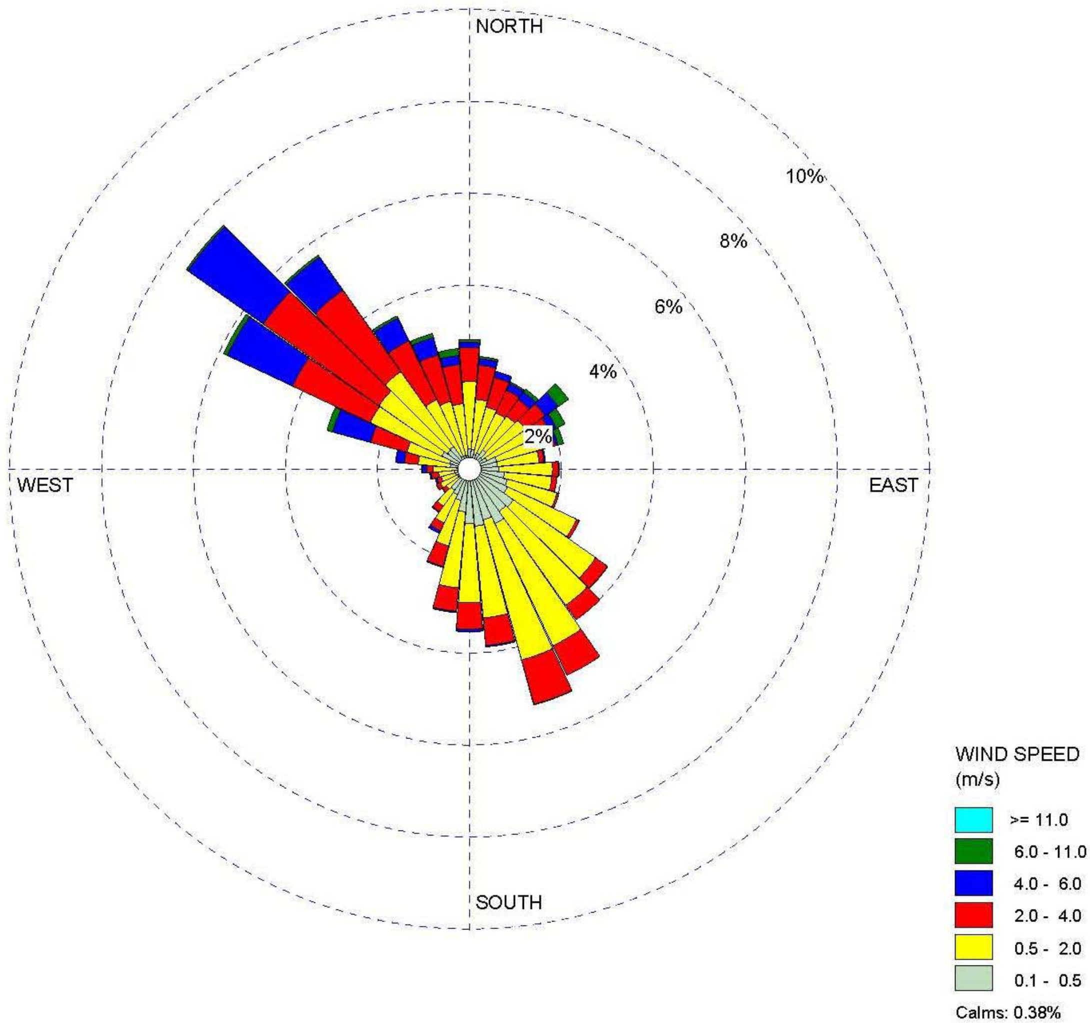
The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented on Table IV.D-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter $\leq$ 10 microns (PM_{10}), and particulate matter $\leq$ 2.5 microns ($PM_{2.5}$) 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.

WIND ROSE PLOT:

peri

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	2007 **Jan 1 - Dec 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **0.38%**	TOTAL COUNT: **8694 hrs.**	
	AVG. WIND SPEED: **1.65 m/s**	DATE: **1/28/2009**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Source: Urban Crossroads, 2013.

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Figure IV.D-1
Wind Rose

Table IV.D-1
State and National Criteria Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard	National Standard	Health and Atmospheric Effects	Major Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.07 ppm[1]	0.075 ppm		
Carbon Monoxide	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide	1 hour	0.18 ppm	---	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030	0.053 ppm		
Sulfur Dioxide	1 hour	0.25 ppm	75 ppb	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hours	---	---		
	24 hours	0.04 ppm	---		
Particulate Matter ≤ 10 Microns (PM-10)	24 hours	50 µg/m3	150 µg/m3	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 µg/m3	---		
Particulate Matter ≤ 2.5 Microns (PM-2.5)	24 hours	---	35 µg/m3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	Annual Avg.	12 µg/m3	12 µg/m3		

Table IV.D-1
State and National Criteria Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard	National Standard	Health and Atmospheric Effects	Major Sources
Lead	Monthly Avg.	1.5 µg/m3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly Rolling 3-Month Avg.	--- ---	1.5 µg/m3 0.15 µg/m3[2]		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)	Geothermal Power Plants, Petroleum Production and refining
Sulfates	24 hour	25 µg/m3	No National Standard	Breathing difficulties, aggravates asthma, reduced visibility	Produced by the reaction in the air of SO2.
Visibility Reducing Particles	8 hour	Light extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, discourages tourism.	See PM10/PM2.5.

ppm = parts per million *mg/m³ = micrograms per cubic meter.*

[1] *This concentration was approved by the Air Resources Board on April 28, 2005 and became effective May 17, 2006.*

[2] *On December 14, 2012, Overview of EPA's Revisions to the Air Quality Standards for Particulate Pollution, available at http://www.epa.gov/air/particlepollution/2012/decfsoverview.pdf*

Source: California Air Resources Board, 09/08/2010 (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf). Ambient Air Quality Standards, available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Standards last updated November 17, 2008. California Air Resources Board, 2001. CARB Fact Sheet: Air Pollution Sources, Effects and Control, http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last updated December 2005.

The O_3 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.

Regional Air Quality

SCAQMD monitors levels of various criteria pollutants at 30 monitoring stations throughout the air district. In 2010, the federal and state standards were exceeded on one or more days for O_3, PM_{10}, and $PM_{2.5}$ at most monitoring locations. No areas of the Basin exceeded federal or state standards for SO_2, CO, or sulfates. Refer to Table IV.D-2 for attainment designations for the Basin.

Table IV.D-2
Attainment Status of Criteria Pollutants in the Basin

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	No Standard
Ozone - 8 hour standard	Nonattainment	Extreme Nonattainment[1]
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment/Maintenance
Nitrogen Dioxide	Nonattainment[2]	Attainment/Maintenance
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment/Nonattainment[3]	Attainment/Nonattainment[4]
All others	Attainment/Unclassified	Attainment/Unclassified

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

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

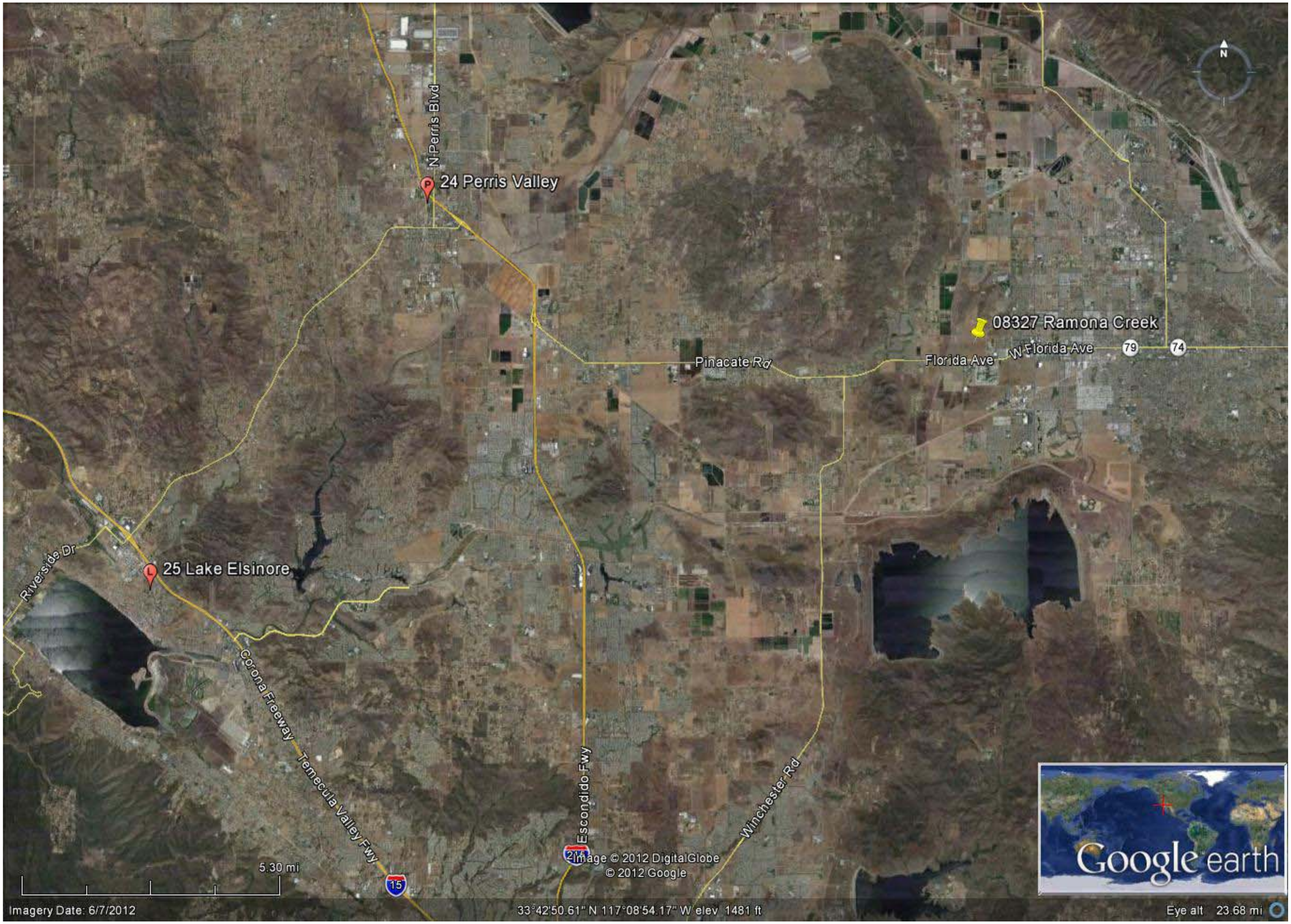
3 *Los Angeles County was reclassified from attainment to nonattainment for lead on March 25, 2010; the remainder of the Basin is in attainment of the State Standard.*

4 *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: California Air Resources Board 2010 (http://www.arb.ca.gov/regact/2010/area10/area10.htm, http://www.arb.ca.gov/desig/feddesig.htm)

Local Air Quality

The Project site is located in the SRA 28 (Hemet/San Jacinto Valley); the nearest air quality monitoring stations relative to the City are the Perris monitoring station and the Lake Elsinore monitoring station (refer to Figure IV.D-2). Ambient concentration data of recent O_3 and PM_{10} emissions was obtained from the Perris Monitoring Station (SRA 24). Ambient concentration data of CO, O_3, and NO_2 emissions was taken from the Lake Elsinore Monitoring Station (SRA 25). Data for SO_2 has been omitted, because attainment is regularly met in the Basin, and few monitoring stations measure SO_2 concentrations. Both the Perris and Lake Elsinore data are presented on Table IV.D-3. The three years of data on Table IV.D-3 show the number of days standards were exceeded for the Project area, which was chosen to be representative of the local air quality at the Project site.



Source: Urban Crossroads, 2013.

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Figure IV.D-2
Air Quality Monitoring Station Locations

Table IV.D-3
Project Area Air Quality Monitoring Summary 2008-2010

Pollutant	Averaging Time	Federal Primary Standards	California Air Quality Standards	Maximum Concentrations			Number of Days Exceeding Federal Standard			Number of Days Exceeding State Standard		
				2008	2009	2010	2008	2009	2010	2008	2009	2010
Perris Monitoring Station												
O_3	1-hour	0.12 ppm	0.09 ppm	0.142	0.125	0.122	4	1	0	65	53	42
	8-hour	0.075 ppm	0.07 ppm	0.114	0.108	0.107	41	67	50	94	88	82
PM_{10}	24-hour	150 µg/m	50 µg/m	85	80	51	0	0	0	12	9	1
	Annual	Revoked	20 µg/m	38.3	34.8	28	Revoked			--	--	--
Lake Elsinore Monitoring Station												
CO	1-hour	35 ppm	20 ppm	1	1	1	--	--	--	--	--	--
	8-hour	9 ppm	9 ppm	1	0.7	0.6	--	--	--	--	--	--
O_3	1-hour	0.12 ppm	0.09 ppm	0.139	0.128	0.107	6	1	0	49	24	15
	8-hour	0.075 ppm	0.07 ppm	0.118	0.105	0.091	32	37	24	92	65	42
NO_2	1-hour	0.18 ppm	--	0.06	0.06	0.0512	--	--	--	--	--	--
	Annual	0.053 ppm	0.030 ppm	0.0129	0.0129	0.01	--	--	--	--	--	--

ppm parts per million *-- Pollutant no monitored*

1 Concentration units for O_3, CO, and NO_2 are in ppm. Concentration units for PM_{10} and $PM_{2.5}$ are in µg/m^3. State max values reported.

2 A value of 1 indicates that the standard has been exceeded.

3 The federal 1-hour O_3 standard was revoked in June 2005.

Source: SCAQMD, 2012.

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

- 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 O_3, 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.

- 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).

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): NO_x consist of nitric oxide (NO), NO_2, and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). The lifespan of NO_x in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for N_2O. NO_x is typically created during combustion processes and is a major contributor 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 NO_x 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.

- O_3: Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and NO_X, both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. O_3 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.

- PM_{10}: 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 and is a criteria air pollutant.

- $PM_{2.5}$: A similar air pollutant consisting of tiny solid or liquid particles that are 2.5 microns or smaller, 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 highly depends on location, time of year, and weather conditions.

- VOCs: VOCs 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 O_3 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: CO, CO_2, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3.

- Reactive Organic Gases (ROG): Similar to VOCs, reactive organic gases (ROG) are also precursors in forming O_3 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 NO_x react in the presence of sunlight. ROG is a criteria pollutant since it is a precursor to O_3, which is also a criteria pollutant. (The SCAQMD uses the terms VOC and ROG interchangeably.)

- Lead (Pb): Pb is a heavy metal that is highly persistent in the environment. In the past, the primary source of Pb in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of Pb from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of Pb are largely limited to stationary sources such as Pb smelters.

Health Effects of Air Pollutants

O_3

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 O_3 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 O_3 levels are associated with increased school absences. In recent years, a correlation between elevated ambient O_3 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 O_3 levels.

O_3 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 O_3 may be more toxic than exposure to O_3 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.

CO

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.

Particulate Matter

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 (U.S.) 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 $PM_{2.5}$.

NO_2

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 O_3 exposure increases when animals are exposed to a combination of O_3 and NO_2.

SO_2

A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of who 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.

In animals, 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.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb 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 Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb 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 Pb because of previous environmental Pb exposure of their mothers.

Odors

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.

REGULATORY BACKGROUND

Federal Regulations

The U.S. Environmental Protection Agency (U.S. EPA) is responsible for setting and enforcing the NAAQS for O_3, CO, $NO_{x,}$ SO_2, PM_{10}, and P_b. 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 P_b. 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 IV.D-1 provides the NAAQS within the basin.

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.

California Regulations

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (California CAA), 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 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. Generally, the CAAQS are more stringent than the NAAQS.

Local air quality management districts, such as the 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.

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

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing 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;
- Implementing 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;
- 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.

Air Quality Management Planning

Currently, the NAAQS and CAAQS 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 SCAQMD has published the Draft Final 2007 AQMP (the most recently adopted version), which was adopted by the SCAQMD Governing Board on June 1, 2007. In September 2007, the CARB Board adopted the SCAQMD 2007 AQMP as part of the State Implementation Plan (SIP). The purpose of the 2007 AQMP for the Basin (and those portions of the Salton Sea Air Basin under the SCAQMD's jurisdiction) is to set forth a comprehensive program that will lead these areas into compliance with federal and state air quality planning requirements for O_3 and $PM_{2.5}$. On September 27, 2007, the CARB Board adopted the State Strategy for the 2007 SIP and the 2007 AQMP as part of the SIP.

As part of the 2007 AQMP, the SCAQMD requested, and the U.S. EPA's subsequently approved a "bump-up" to the "extreme" nonattainment classification for ozone in the Basin, which extends the attainment date to 2024 and allows for the attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improvement of existing control technologies. Although $PM_{2.5}$ plans for nonattainment areas were due in April 2008, the 2007 AQMP also focuses on attainment strategies for the $PM_{2.5}$ standard through stricter control of sulfur oxides, directly-emitted $PM_{2.5}$, NO_X, and VOCs. The need to commence $PM_{2.5}$ control strategies before April 2008 is due to the attainment date for $PM_{2.5}$ (2015) being much earlier than that for ozone (2021 for the current designation of severe-17 or 2024 for the extreme designation). However, it should be noted that the $PM_{2.5}$ plans are still in the process of being submitted. Control measures and strategies for $PM_{2.5}$ will also help control ozone generation in the region because $PM_{2.5}$ and ozone share similar precursors (e.g., NO_X). The SCAQMD has integrated $PM_{2.5}$ and ozone reduction control measures and strategies in the 2007 AQMP. In addition, the AQMP focuses on reducing VOC emissions, which have not been reduced at the same rate as NO_X emissions in the past. Hence, the Basin has not achieved the reductions in ozone as were expected in previous plans.

The 2007 AQMP was based on assumptions provided by both CARB and SCAG in the new EMFAC2007 model for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2007 AQMP are based on several assumptions. For example, the 2007 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 2004 RTP. The 2007 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development.

The SCAQMD adopted the most recent version of the AQMP in 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. The development of the 2012 AQMP faced several challenges, including new and changing federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches.

City of Hemet General Plan

The following are General Plan Policies that are relevant to air quality:

OS-7.1 **Development Design and Practices:** Reduce the amount of air pollution emissions from mobile and stationary sources, and enhance the South Coast Air Basin by using best management practices in development proposals and project implementation.

OS-7.2 **Public Transportation:** Pursue expansion of the public transportation system, as well as bicycle and pedestrian trails, that are linked to the regional transit network, to reduce vehicle trips.

OS-7.3 **Alternative Vehicles:** Promote the use of fuel-efficient and low-emissions vehicles, including neighborhood electric vehicles (NEVs).

OS-7.4 **Municipal Fleet:** Manage the municipal fleet to achieve the highest possible number of fuel-efficient and low emissions vehicles commercially available.

OS-7.5 **Trip Reduction:** Encourage a mix of housing types that are affordable to all segments of the population and are near job opportunities to further reduce vehicle trips.

OS-7.6 **Transportation Trip Management:** Encourage employers to implement transportation demand management (TDM) measures to reduce trips and vehicle miles traveled.

OS-7.7 **Clean Technologies:** Encourage businesses to use clean, innovative technologies and promote the use of alternative clean-fueled vehicles, new transportation technologies, and other alternatives to the combustion engine for City vehicles and individual use.

OS-7.8 **Green Building Techniques:** Encourage green building techniques that improve indoor air quality, energy efficiency and conservation in buildings, and utilization of renewable energy sources.

OS-7.9 **Stationary Source Pollution:** Continue to minimize stationary source pollution through the following:

- Ensure that industrial and commercial land uses are meeting existing South Coast Air Quality Management air thresholds by adhering to established rules and regulations.
- Encourage the use of new technology to neutralize harmful criteria pollutants from stationary sources.
- Reduce exposure of the City's sensitive receptors to poor air quality nodes through smart land use decisions.

OS-7.10 **Sensitive Receptors:** Locate sensitive receptors (i.e., residences, playgrounds, childcare centers, athletic facilities, churches, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes) away from significant pollution sources to the maximum extent feasible.

OS-7.11 **Fugitive Dust:** Reduce the amount of fugitive dust released into the atmosphere by construction and demolition, materials hauling, paved roads, unpaved roads, and stock piles through development standards and compliance with CEQA regulations.

OS-7.12 **Best Management Practices:** Ensure all applicable best management practices are used in accordance with South Coast Air Quality Management District (SCAQMD) to reduce emitting criteria pollutants during construction.

OS-7.13 **Partnerships:** Continue to work with the WRCOG Regional Air Quality Task Force to implement regional and local programs designed to meet federal, state, and regional air quality planning requirements.

OS-7.14 **Public Education:** Protect the air from contamination by working with South Coast Air Quality Management District and other interested organizations to elevate public awareness regarding air pollution sources and pollutant reduction initiatives.

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 previously on Table IV.D-3.

ENVIRONMENTAL IMPACT ANALYSIS

Methodology

This analysis focuses on the nature and magnitude of the change in the air quality environment due to implementation of the Project. Air pollutant emissions associated with the Project would result from Project operations and Project-related traffic volumes. Construction activities would also generate air pollutant emissions at the Project site and on roadways resulting from construction-related traffic. The net increase in Project site emissions generated by these activities and other secondary sources have been quantitatively estimated and compared to thresholds of significance recommended by the SCAQMD (see subheading "Project Impacts," below).

Construction Emissions

The regional construction emissions associated with the Project were calculated using the recently published California Emissions Estimator Model (CalEEMod Version 2011.1.1). CalEEMod was developed in collaboration with the air districts of California as a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. Compared to

URBEMIS 2007, CalEEMod provides several modeling improvements, including but not limited to the latest factors, survey data, and calculation methodologies for criteria pollutants and GHGs. Although both models are supported by the SCAQMD, the impact analysis and conclusions for the Project have been based on the results from CalEEMod.

Construction activities associated with demolition, site preparation, grading, and building construction would generate pollutant emissions. Specifically, these construction activities would temporarily create emissions of dusts, fumes, equipment exhaust, and other air contaminants. These construction emissions were compared to the thresholds established by the SCAQMD. It was assumed that all of the construction equipment used would be diesel-powered.

In addition to the SCAQMD's regional significance thresholds, the SCAQMD has developed localized significance thresholds (LSTs) that are based on the amount of pounds of emissions per day that can be generated by a project that would cause or contribute to adverse localized air quality impacts. These localized thresholds, which are found in the mass rate look-up tables in the "Final Localized Significance Threshold Methodology" document prepared by the SCAQMD, apply to projects that are less than or equal to five acres in size and are only applicable to the following criteria pollutants: NO_x, CO, PM_{10}, and $PM_{2.5}$.[1] LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards, and are developed based on the ambient concentrations of that pollutant for each SRA. In terms of NO_x emissions, the two principal types of NO_x are NO and NO_2, with the vast majority (95 percent) of the NO_x emissions comprising NO. However, because adverse health effects are associated with NO_2, the analysis of localized air quality impacts associated with NO_x emissions is focused on NO_2 levels. NO is converted to NO_2 by several processes, the two most important of which are: (1) the reaction of NO with ozone, and (2) the photochemical reaction of NO with hydrocarbons. When modeling NO_2 emissions from combustion sources, the SCAQMD assumes that the conversion of NO to NO_2 is complete at a distance of 5,000 meters from the source. For PM_{10} LSTs, the thresholds were derived based on requirements in SCAQMD Rule 403 - Fugitive Dust. For $PM_{2.5}$ LSTs, the thresholds were derived based on a general ratio of $PM_{2.5}$ to PM_{10} for both fugitive dust and combustion emissions.

Operational Emissions

Operational emissions associated with the Project were calculated using CalEEMod Version 2011.1.1 and the information provided in the traffic study prepared for the Project. Operational emissions associated with the Project would comprise mobile source emissions and area source emissions. Mobile source emissions are generated by the increase in motor vehicle trips to and from the Project site associated with operation of the Project. Area source emissions are generated by natural gas consumption for space and

[1] *SCAQMD, Final Localized Significance Threshold Methodology, June 2003, Revised July 2008.*

water heating, and landscape maintenance equipment. To determine if an air quality impact would occur, the increase in emissions is compared with the SCAQMD's recommended regional and localized thresholds for operational emissions.

Localized CO Concentrations

Localized CO concentrations were calculated for the study intersections analyzed in the traffic report for the Project based on the simplified CALINE4 screening procedure developed by the Bay Area Air Quality Management District (BAAQMD) and accepted by the SCAQMD. The simplified model is intended as a screening analysis, which identifies a potential CO hotspot. This methodology assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations. The emission factors used in the simplified CALINE4 model have been updated to EMFAC2007. The resulting emissions were compared with adopted national and state ambient air quality standards.

Thresholds of Significance

In accordance with Appendix G to the CEQA Guidelines, a project could have a significant air quality impact if the project would do any of the following:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release in emissions which exceed quantitative thresholds for ozone precursors);

d) Expose sensitive receptors to substantial pollutant concentrations; or

e) Create objectionable odors affecting a substantial number of people.

Additional Explanation of Significance Thresholds

AQMP Consistency

The two 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* and are as follows:

- Consistency Criterion No. 1: Whether the 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.

- Consistency Criterion No. 2: Whether the project will exceed the assumptions used in preparing the AQMP in 2010 or increments based on the year of project build-out and phase.

Violate Air Quality Standards/Contribute to Air Quality Violations

Maximum Daily Regional Emissions

The SCAQMD's regional emission thresholds apply to all federally regulated air pollutants except Pb, which is not exceeded in the Basin. Table IV.D-4 shows the thresholds of significance published by the SCAQMD for construction and operational emissions that apply to development projects and are used to determine project-specific impacts. The SCAQMD also recommends that any construction-related and operational emissions from individual development projects that exceed the construction and operational thresholds, shown on Table IV.D-4, to be considered cumulatively considerable. These thresholds apply to individual development projects only; the thresholds do not apply to the combined emissions generated by a set of cumulative development projects.

Localized Daily Pollutant Concentrations

In addition to SCAQMD's regional significance thresholds, the SCAQMD has also developed localized significance thresholds (LSTs) that are based on the amount of pounds of emissions per day generated by a project that could cause or contribute to adverse localized air quality impacts. These localized thresholds, which are found in the mass rate look-up tables in the "Final Localized Significance Threshold Methodology" document prepared by the SCAQMD, apply to projects that are less than or equal to five acres in size and are only applicable to the following criteria pollutants: NO_x, CO, PM_{10}, and $PM_{2.5}$.[2] LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards and are developed based on the ambient concentrations of that pollutant for each SRA. For PM_{10} LSTs, the thresholds are based on requirements in SCAQMD Rule 403 — Fugitive Dust. For $PM_{2.5}$ LSTs, the thresholds are based on a general ratio of $PM_{2.5}$ to PM_{10} for both fugitive dust and combustion emissions.

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[2] *South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, June 2003, Revised July 2008.*

Table IV.D-4
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction**	**Operation**
NOx	100 pounds/day	55 pounds/day
VOC [b]	75 pounds/day	55 pounds/day
PM_{10}	150 pounds/day	150 pounds/day
$PM_{2.5}$	55 pounds/day	55 pounds/day
SO_x	150 pounds/day	150 pounds/day
CO	550 pounds/day	550 pounds/day
Odor Thresholds		
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [c]		
NO_2 1-hour average Annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.10 ppm (federal)[d] 0.03 ppm (State)	
PM_{10} 24-hour average Annual average	10.4 $\mu g/m^3$ (construction)[e] & 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
$PM_{2.5}$ 24-hour average	10.4 $\mu g/m^3$ (construction)[e] & 2.5 $\mu g/m^3$ (operation)	
Sulfate 24-hour average	25 $\mu g/m^3$ (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 25 ppm (federal) 9.0 ppm (state/federal)	

Notes: ppm = parts per million by volume; $\mu g/m^3$ = micrograms per cubic meter

[a] *Source: SCAQMD CEQA Handbook (SCAQMD, 1993).*

[b] *The definition of VOC includes ROG compounds and additional organic compounds not included in the definition of ROG. However, for the purposes of this evaluation, VOC and ROG will be considered synonymous.*

[c] *Ambient air quality thresholds for criteria pollutants based on SCQMD Rule 1303, table A-2 unless otherwise stated.*

[d] *In January 2010, the USEPA proposed a new 1-hour national air quality standard of 0.10 ppm for NO_2, which is more stringent than the state's current 1-hour threshold of 0.18 ppm. For the purposes of conducting a conservative analysis, this more stringent national one-hour standard for NO_2 is used as a threshold in the evaluation of the Project's air quality impacts.*

[e] *Ambient air quality threshold based on SCAQMD Rule 403.*

Source: SCAQMD Air Quality Significance Thresholds, website: http://www.aqmd.gov/ceqa/handbook/signthres.pdf, Revision March 2011.

The SCAQMD has developed five sample construction scenarios (one-acre, two-acre, three-acre, four-acre, and five-acre sizes) where construction impacts do not exceed the most stringent LSTs. The sample scenarios were designed for use as models or templates for determining construction air quality impacts by projects of similar size. Because the Project site is approximately 208.87 acres in size, the five-acre sample construction scenario is used as a template to analyze the significance of the construction emissions generated by the Project. As such, construction and operational emissions associated with the Project, which is located within SRA 28 (Hemet/San Jacinto Valley area), would be significant if the emissions exceed the LSTs shown on Table IV.D-5.

Table IV.D-5
SCAQMD's Localized Significance Thresholds for Construction Emissions[a]

Pollutant Monitored Within SRA 28 — Hemet/San Jacinto Area	25 meters
Nitrogen Oxides (NO_x)	380.00
Carbon Monoxide (CO)	2,114.80
Respirable Particulate Matter (PM_{10})	18.40
Fine Particulate Matter ($PM_{2.5}$)	8.40

[a] *The localized thresholds for both construction and operational emissions for a 5.0-acre site in SRA 28 were calculated based on the linear regression methodology recommended by the SCAQMD.*

Source: SCAQMD, Final Localized Significance Threshold Methodology, Appendix IV.D (Localized Significance Threshold Mass rate Look-up Table), June 2003, Revised July 2008.

Cumulatively Considerable Net Increase of Criteria Pollutants

The SCAQMD's *CEQA Air Quality Handbook* identifies several methods to determine the cumulative significance of land use projects (i.e., whether the contribution of a project's emissions is cumulatively considerable). However, the SCAQMD no longer recommends the use of these methodologies. Instead, the SCAQMD recommends that any construction-related emissions and operational emissions from individual development projects that exceed the project-specific mass daily emissions thresholds identified above also be considered cumulatively considerable.[3] The SCAQMD neither recommends quantified analyses of the emissions generated by a set of cumulative development projects nor provides thresholds of significance to be used to assess the impacts associated with these cumulative emissions.

Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Localized CO Hotspot Concentrations

The SCAQMD currently recommends that impacts to sensitive receptors be considered significant if a project's traffic causes CO concentrations at sensitive receptors located near congested intersections to exceed the NAAQS and CAAQS. The roadway CO thresholds would also apply to the contribution of emissions associated with cumulative development.

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[3] *White Paper on Regulatory Options for Addressing Cumulative Impacts from Air Pollution Emissions, SCAQMD Board Meeting, September 5, 2003, Agenda No. 29, Appendix D, p. D-3.*

- 1-hour CO standard of 20.0 parts per million (ppm)
- 8-hour CO standard of 9.0 ppm

Exposure to Objectionable Odors

A significant impact may occur if objectionable odors occur that would adversely impact sensitive receptors. Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills.

Project Impacts

Impact IV.D-1: The Project would not conflict with or obstruct implementation of the applicable air quality plan, and impacts would be less than significant.

As stated previously, the two 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* and are as follows:

- Consistency Criterion No. 1: Whether the 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.
- Consistency Criterion No. 2: Whether the Project will not exceed the assumptions in the AQMP in 2010 or increments based on the year of project build-out and phase.

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. As evaluated as part of the Project localized construction emissions (below and under the subheading "Level of Significance After Mitigation" at the end of this section), the Project's mitigated localized construction-source emissions would not exceed applicable significance thresholds, and impacts related to localized construction emissions would be less than significant. See Table IV.D-16.

The Project's operational emissions are discussed later in this section (refer to subheading "Regional Operational Emissions," below). Although operational emissions would be generated in excess of SCAQMD's regional threshold criteria, these emissions are accounted for in the AQMP and the AQMP air quality attainment goals. Specifically, land uses and development proposed under the Project are consistent with land uses and development intensities reflected in the City's 1992 General Plan, which was in place when the 2007 AQMP was adopted.

The 1992 General Plan designated the Project site within the Northwest Hemet Neighborhood Planning Area. The 1992 General Plan did not designate land use intensities on individual sites within this neighborhood planning area, but instead included a land use summary table of anticipated and maximum buildout intensities. The Community Development Element of the 1992 General Plan designated the Project site for a future Northwest Specific Plan, and the 1992 General Plan Land Use Map designated the Project site as Specific Plan. Further, the 1992 General Plan permitted a maximum of 5,531,744 square feet of regional commercial space and 1,893 residential dwelling units within the Northwest Hemet Specific Plan area. As of 2008, no other commercial uses had been entitled or built within the Northwest Hemet Specific Plan area. Accordingly, it is believed that the Project would represent the first increment of development in the area and is, therefore, consistent with the land uses and intensities designated by the 1992 General Plan, because the Project includes development of a maximum development of approximately 535,788 square feet of commercial land uses and 1,077 residential dwelling units.[4] The proposed development is less than what was anticipated under the 1992 General Plan for the Project site and would generate less pollutant emissions than what was considered in the 2007 AQMP.

The current 2030 General Plan designates the majority of the Project site as Mixed Use and the area between Devonshire Avenue and Celeste Road as Low Density Residential, which allows 2.1 to 5.0 dwelling units per acre. The Project includes General Plan amendments to (1) amend the development capacity allowed in the Florida Avenue Commercial Mixed Use Area #1 as shown on Table 2-3 and as described in Section 2.6.4 of the 2030 General Plan; (2) increase the base maximum allowed density north of Devonshire Avenue (Planning Areas 9 and 10) from a maximum of 5.0 du/acre to 6.0 du/acre; and (3) increase the allowed maximum density in Planning Area 9 up to 8.0 du/acre if necessary to accommodate the potential transfer of residential units in the event the Hemet Unified School District does acquire the School Overlay (Planning Area 10). The proposed increase in residential along with the decrease in commercial retail and office results in a net decrease in the number of vehicle trips anticipated to be generated by the Project as compared to the number of vehicle trips forecasted for the Project area based on the intensity of uses currently allowed within the Florida Avenue Commercial Mixed-Use Area #1 of the General Plan. Accordingly, while the Project includes General Plan amendments, the decrease in number of vehicle trips and associated mobile source emissions and air quality impacts assures consistency with the growth assumptions in the current AQMP.

Consequently, the Project falls within the scope of air quality considerations reflected in the prior and current AQMPs. Additionally, the Project's incorporation of contemporary energy-efficient technologies and operational programs (see applicable PDFs) and compliance with SCAQMD emissions reductions and control requirements (required for all projects in the basin) would reduce stationary-source air emissions. These Project attributes and features are consistent with and support AQMP air pollution

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4 *The Project as described in Section III (Project Description), includes development of 954 residential dwelling units. However, for the purposes of providing a conservative air quality analysis, the analysis in this section assumes development of 1,077 residential dwelling units. (See also, Section III, Project Description.)*

reduction strategies and promote timely attainment of AQMP air quality standards. On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

Assumptions of the AQMP used in projecting future emissions levels are based in part on land use data provided by lead agency general plan documentation. Projects that propose general plan amendments and changes of zone may increase the intensity of use and/or result in higher traffic volumes, thereby resulting in increased stationary area source emissions and/or vehicle source emissions when compared to the AQMP assumptions. However, if a project does not exceed the growth projections in the applicable local General Plan, then the project is considered to be consistent with the growth assumptions in the AQMP.

As discussed previously, the Project would not exceed the growth assumptions included in the 1992 General Plan and hence would not exceed the growth projections in the 2007 AQMP. Additionally, the Project's reduction in vehicle trips and associated mobile source emissions and air quality impacts as compared to the 2030 General Plan assumption demonstrates consistency with the growth assumptions in the current 2012 AQMP. Accordingly, the Project is consistent Criterion No. 2.

Therefore, because the Project satisfies both of the two aforementioned criteria for determining consistency, the Project would be consistent with the AQMP, and impacts related to this issue would be less than significant.

Impact IV.D-2 and Impact IV.D-3: With respect to regional and localized construction emissions, implementation of Mitigation Measures D-1 through D-3 would ensure that the Project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. With respect to regional operational emissions, the Project would result in a significant and unavoidable impact.

Regional Construction Emissions

Construction activities associated with the Project will 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
- Paving
- Building Construction
- Architectural Coatings (Painting)
- Construction Workers Commuting

As discussed in Section III (Project Description), land uses under the Project likely would be developed in phases and/or as individual specific project; the entirety of the Project likely would not be developed at once. However, to provide for a conservative analysis of the Project's construction emissions, this EIR assumes that the entire Specific Plan would be developed at one time. The conservative construction schedule associated with this scenario is reflected on Table IV.D-6. The approximate construction schedule was developed in consultation with the applicant; the construction schedule represents a "worst-case" analysis scenario should construction occur any time after these respective dates since emission factors for construction equipment decrease as the calendar year increases (due to the natural turnover of the older vehicle fleet and implementation of new regulations). A summary of the construction equipment assumptions by phase is provided on Table IV.D-7.

Table IV.D-6
Construction Schedule Assumptions

Phase	Start Date[1]	End Date[1]	Number Days/Week	Total Number of Days
Site Preparation	October 1, 2013	December 9, 2013	6	60
Grading	December 10, 2013	April 4, 2014	6	120
Building Construction	April 4, 2014	September 9, 3014	6	430
Architectural Coating	June 14, 2014	March 20, 2015	6	240
Paving	September 12, 2015	December 25, 2015	6	90

[1] The construction schedule included on this table reflects the approximate anticipated schedule known at the time the air quality modeling was commenced for the Project. This construction schedule will change (if the Project is approved). Pollutant emissions calculations for future dates take into consideration the effectiveness of improvements in engine combustion technology and other pollutant reduction measures not considered in the analysis in this EIR. As such, the pollutant emissions calculations in this EIR are conservative.

Source: Urban Crossroads and Regent Properties, 2013.

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod™ model was used to calculate fugitive dust emissions resulting from this phase of activity.

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 estimated based on information provided by the Project Applicant and the CalEEMod™ model.

As shown on Table IV.D-8, the Project's construction-related emissions would exceed the significance thresholds for VOCs and NO_x. Therefore, impacts related to construction emissions would be significant.

Table IV.D-7
Construction Equipment Assumptions

Activity	Water Trucks	Scraper	Grader	Rubber Tired Dozer	Tractor/Loader/Backhoe	Excavator	Pavers	Paving Equipment	Rollers	Forklift	Cranes	Air Compressor	Generator Set	Welder
Site Preparation	3			3	4									
Grading	3	4	2	3	2	2								
Building Construction					3					3	1		1	1
Paving							2	2	2					
Architectural Coating												1		
Source: Urban Crossroads, March 2013.														

Table IV.D-8
Maximum Daily Construction Emissions Summary (in pounds)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2013	15.89	132.21	70.69	0.14	31.34	15.79
2014	119.27	123.02	108.15	0.22	30.85	15.31
2014	118.24	59.86	100.65	0.22	20.75	3.27
Maximum Daily Emissions	**119.27**	**132.21**	**108.15**	**0.22**	**30.85**	**15.79**
SCAQMD Regional Threshold	*75.00*	*100.00*	*550.00*	*150.00*	*150.00*	*55.00*
Significant Impact?	**YES**	**YES**	No	No	No	No
Note: Please refer to Appendix IV.D for the modeling output files and additional hand calculations for the estimated emissions. *Source: Urban Crossroads, March 2013.*						

Regional Operational Emissions

Operational activities associated with the Project would 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
- Architectural coatings

The Project-related operations emissions totals are presented on Tables IV.D-9 and IV.D-10. Results of the analysis indicate that operations of the Project would exceed criteria pollutant thresholds established by the SCAQMD for VOCs, NO_X, CO, PM_{10}, and $PM_{2.5}$ during the summer and winter scenarios. Therefore, Project impacts related to regional operational emissions would be significant.

Table IV.D-9
Summary of Summer Peak Operational Emissions
(in pounds per day)

Operational Activity	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions[a]	48.23	0.95	81.25	-	1.58	1.57
Energy Source Emissions[b]	0.83	7.15	3.47	0.05	0.57	0.57
Mobile Emissions[c]	150.72	365.79	1,479.97	2.57	289.11	17.75
Maximum Daily Emissions	**199.81**	**373.89**	**1,504.69**	**2.62**	**291.26**	**19.89**
SCAQMD Regional Threshold	*55.00*	*55.00*	*550.00*	*150.00*	*150.00*	*55.00*
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

[a] *Includes emissions associated with landscape maintenance equipment and architectural coatings.*
[b] *Includes emissions associated with natural gas consumption.*
[c] *Includes vehicle emissions and fugitive dust related to vehicular travel.*
Note: Please refer to Appendix IV.D for the modeling output files and additional hand calculations for the estimated emissions.
Source: Urban Crossroads, March 2013.

Localized Construction Emissions

Table IV.D-11 identifies the localized impacts associated with construction-related emissions at the nearest receptor location in the vicinity of the Project site. As shown, emissions during construction activity would exceed the SCAQMD's localized significance thresholds for PM_{10} and $PM_{2.5}$. Therefore, Project impacts related to localized construction emissions would be significant.

Table IV.D-10
Summary of Winter Peak Operational Emissions
(in pounds per day)

Operational Activity	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions[a]	48.23	0.95	81.25	-	1.58	1.57
Energy Source Emissions[b]	0.83	7.15	3.47	0.05	0.57	0.57
Mobile Emissions[c]	153.81	390.77	1,396.99	2.29	289.28	17.93
Maximum Daily Emissions	**202.90**	**398.87**	**1,481.71**	**2.44**	**291.43**	**20.07**
SCAQMD Regional Threshold	*55.00*	*55.00*	*550.00*	*150.00*	*150.00*	*55.00*
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

[a] *Includes emissions associated with landscape maintenance equipment and architectural coatings.*
[b] *Includes emissions associated with natural gas consumption.*
[c] *Includes vehicle emissions and fugitive dust related to vehicular travel.*
Note: Please refer to Appendix IV.D for the modeling output files and additional hand calculations for the estimated emissions.
Source: Urban Crossroads, March 2013.

Table IV.D-11
Localized Construction Emissions

Activity	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**131.01**	**67.66**	**30.73**	**15.74**
SCAQMD Localized Threshold	380	2,114.80	18.40	8.40
Significant?	No	No	**YES**	**YES**

Modeling results are included in Appendix IV.D.
Source: Urban Crossroads, March 2013.

Impact IV.D-4: The Project would not expose sensitive receptors to substantial pollutant concentrations, and impacts would be less than significant.

Localized Operational Emissions

It has long been recognized that CO exceedances ("hotspots") are caused by vehicular emissions, primarily from vehicles 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 on Table IV.D-3. Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard.

A CO "hotspot" would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9.0 ppm were to occur. At the time of preparation of SCAQMD's *CEQA Air Quality*

Handbook, the Basin was designated nonattainment under the CAAQS and NAAQS for CO. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the Basin and in the state have steadily declined. In 2007, the SCAQMD was designated in attainment for CO under both the CAAQS and NAAQS. As identified within SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the Basin were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection. A CO "hotspot" analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods and did not predict a violation of CO standards.[5] Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.[6] The Project would not produce the volume of traffic required to generate a CO hotspot (refer to Table IV.D-12). Therefore, CO hotspots are not an environmental impact of concern for the Project. Therefore, localized air quality impacts related to mobile-source emissions would be less than significant.

Table IV.D-12
Project Peak-Hour Traffic Volumes

Intersection Location	Northbound (AM/PM)	Southbound (AM/PM)	Eastbound (AM/PM)	Westbound (AM/PM)	Total (AM/PM)
Warren Road/ Florida Avenue	1,432/1,881	1,006/1,332	2,530/3,323	2,633/3,498	7,602/10,033
Sanderson Avenue/ Menlo Avenue	2,984/3,497	3,093/3,522	672/579	720/643	7,470/8,242
Sanderson Avenue/ Florida Avenue	2,226/3,182	2,499/3,007	2,256/3,205	1,998/2,750	8,979/12,144
Sanderson Avenue/ Stetson Avenue	2,833/2,969	2,532/3,219	1,123/1,585	2,278/2,368	8,766/10,140
Source: Ramona Creek Specific Plan Traffic Impact Analysis, Urban Crossroads, March 2013.					

5 *The four intersections were: Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day and LOS E in the morning peak hour and LOS F in the evening peak hour.*

6 *For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections to more than 44,000 vehicles per hour.*

Sensitive Receptors

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. The nearest sensitive receptor land use (defined as a place where an individual could remain for 24-hours) would be the existing residential units located approximately 20 meters west of the Project boundary along Warren Road. In addition, PDF D-1 requires the Project to have a minimum buffer of 100 feet (30 meters) from construction activity to sensitive receptors (including on-site and off-site residences and schools).

Results of the analysis of localized construction and operational emissions indicate that localized emissions generated by the Project would not exceed the applicable SCAQMD significance thresholds, and a less than significant impact would occur during construction and operational activity.

Similarly, with respect to on-site sensitive receptors, short-term construction impacts would be similar to off-site impacts and would be less than significant since the majority of localized construction activity is related to the overall mass grading of the entire Project site, when the on-site sensitive receptors would not yet be in existence. Additionally, PDF D-1 requires a buffer of 100 feet between construction activity and on-site sensitive receptors. Finally, there would be no localized operational impacts that would affect on-site sensitive receptors.

Impact IV.D-5: The Project would not create objectionable odors affecting a substantial number of people, and impacts would be less than significant.

Land uses generally associated with odor complaints include the following:

- 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 any of these land uses that are 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. Specifically these include requirements for removing solid waste, refuse or any other construction debris in a timely manner and requirements related to maintenance of equipment. 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 less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City's solid waste regulations. The Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Rule 402 provides that a person shall not 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. Therefore, odors associated with the Project construction and operations would be less than significant and no mitigation is required.

CUMULATIVE IMPACTS

The Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM_{10} and $PM_{2.5}$. Germane to this non-attainment status, the Project-specific evaluation of emissions presented in the preceding analysis demonstrates that after application of mitigation, construction of the Project will not result in any exceedances of regional thresholds. Thus, a less than significant cumulative impact is expected during construction activity.

Project operational-source VOC, NOx, CO, PM_{10} and $PM_{2.5}$ emissions would exceed the applicable SCAQMD regional threshold. This is a significant and unavoidable impact of the Project that for the useful life of the Project would result in a cumulatively considerable net increase for the pollutants VOC, NOx, CO, PM_{10} and $PM_{2.5}$ (as noted above, ozone precursors) within the encompassing ozone non-attainment area.

MITIGATION MEASURES

Regional Construction Emissions Impacts

Because the Project would generate regional construction emissions in excess of SCQAMD's thresholds, the following mitigation measures are required:

D-1: During any grading activities, all heavy-duty diesel equipment (≥ 100 horsepower) shall be CARB Tier 3 Certified or better.

D-2: Only Zero-Volatile Compounds paints (no more than 100 gram/liter of VOC) and/or High-Pressure Low-Volume applications consistent with SCAQMD Rule 1113 shall be used.

With respect to Mitigation Measure D-2, it may be noted that the standard for residential uses is 100 grams/liter of VOC. The standard for non-residential uses is 250 grams/liter. Accordingly, the measure exceeds the standard requirement.

Localized Construction Emissions Impacts

Because the Project would generate localized construction emissions in excess of SCQAMD's thresholds, the following mitigation measure is required:

D-3: During any construction activities, active heavy-duty construction equipment shall be located at least 100 feet away from sensitive receptors (including on-site and off-site residences and schools).

Regional Operational Emissions Impacts

With respect to operational emissions, the majority of operational emissions come from mobile sources. The Project has been designed to reduce vehicle miles traveled by including a balanced mix of uses. In fact, as noted above, the proposed increase in residential along with the decrease in commercial retail and office results in a net decrease in the number of vehicle trips anticipated to be generated by the Project as compared to the number of vehicle trips forecasted for the Project area based on the intensity of uses currently allowed within the Florida Avenue Commercial Mixed-Use Area #1 of the General Plan. Further reductions in mobile source emissions are not feasible.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Regional Construction Emissions Impacts

As shown on Table IV.D-13, with implementation of Mitigation Measures D-1 and D-2, the Project's regional construction-related VOC and NO_x emissions would be reduced and would not exceed the significance thresholds. Impacts would be less than significant.

Table IV.D-13
Maximum Daily Construction Emissions Summary
With Mitigation (in pounds)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2013	10.66	68.66	74.26	0.14	14.66	8.26
2014	73.12	68.12	109.79	0.22	21.06	8.21
2014	72.18	57.03	102.33	0.22	20.81	3.33
Maximum Daily Emissions	**73.12**	**57.0**	**109.79**	**0.22**	**21.06**	**8.26**
SCAQMD Regional Threshold	*75.00*	*100.00*	*550.00*	*150.00*	*150.00*	*55.00*
Significant Impact?	No	No	No	No	No	No
Note: Please refer to Appendix IV.D for the modeling output files and additional hand calculations for the estimated emissions. *Source: Urban Crossroads, March 2013.*						

Localized Construction Emissions Impacts

As shown on Table IV.D-14, with implementation of Mitigation Measure D-3, localized construction emissions would be less than significant.

Table IV.D-14
Localized Construction Emissions with Mitigation

Activity	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**67.45**	**71.23**	**14.05**	**8.20**
SCAQMD Localized Threshold	380	2,114.80	18.40	8.40
Significant?	No	No	No	No
Modeling results are included in Appendix IV.D. *Source: Urban Crossroads, March 2013.*				

Regional Operational Emissions Impacts

Impacts related to regional operational emissions would be significant and unavoidable.