



DAUCHY AVENUE

AIR QUALITY IMPACT ANALYSIS

CITY OF RIVERSIDE

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LIST OF ABBREVIATED TERMS

%	Percent
°F	Degrees Fahrenheit
(1)	Reference
µg/m ³	Microgram per Cubic Meter
AB 2595	California Clean Air Act
AQ	Air Quality
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BACM	Best Available Control Measures
BAAQMD	Bay Area Air Quality Management District
BC	Black Carbon
BP	Business Park
Brief	Brief of Amicus Curiae
C ₂ Cl ₄	Perchloroethylene
C ₂ H ₄	Acetaldehyde
C ₄ H ₆	1,3-butadiene
C ₆ H ₆	Benzene
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH ₂ O	Formaldehyde
CO	Carbon Monoxide
COH	Coefficient of Haze
COHb	carboxyhemoglobin
County	County of Riverside

CR	Commercial Retail
Cr(VI)	Chromium
CTP	Clean Truck Program
CY	Cubic Yards
DPM	Diesel Particulate Matter
DRRP	Diesel Risk Reduction Plan
EAPC	Existing Plus Ambient Growth Plus Project
EC	Elemental Carbon
EIR	Environmental Impact Reports
EMFAC	EMissions FACtor Model
EPA	Environmental Protection Agency
ETW	Equivalent Test Weight
EV	Electric Vehicles
FBMSM	Facility-Based Mobile Source Measures
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
g/L	Grams per Liter
GHG	Greenhouse Gas
GVWR	Gross Vehicle Weight Rating
H ₂ S	Hydrogen Sulfide
HDT	Heavy Duty Trucks
HI	Hazard Index
HHDT	Heavy-Heavy-Duty Trucks
HHDR	Highest Density Residential
hp	Horsepower
HRA	Health Risk Assessment
I-215	Interstate 215
ITE	Institute of Transportation Engineers
lbs	Pounds
lbs/day	Pounds Per Day
LDA	Light Duty Auto
LDT1/LDT2	Light-Duty Trucks
LHDT	Light-Heavy-Duty Trucks
LST	Localized Significance Threshold
LST METHODOLOGY	Final Localized Significance Threshold Methodology
MARB/IPA	March Air Reserve Base/Inland Port Airport
MATES	Multiple Air Toxics Exposure Study
MDV	Medium-Duty Vehicles

MHDT	Medium-Heavy-Duty Trucks
MHDR	Medium High Density Residential
MICR	Maximum Individual Cancer Risk
MM	Mitigation Measure
mph	Miles Per Hour
MUA	Mixed-Use Area
N ₂	Nitrogen
N ₂ O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NB	Northbound
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
O ₂	Oxygen
O ₃	Ozone
OBD-II	On-Board Diagnostic
OEHHA	Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
OS-R	Open Space - Reaction
OS-W	Open Space - Water
Pb	Lead
PCE	Passenger Car Equivalent
PM ₁₀	Particulate Matter 10 microns in diameter or less
PM _{2.5}	Particulate Matter 2.5 microns in diameter or less
POLA	Port of Los Angeles
POLB	Port of Long Beach
ppm	Parts Per Million
Project	Dauchy Avenue
RECLAIM	Regional Clean Air Incentives Market
RFG-2	Reformulated Gasoline Regulation
ROG	Reactive Organic Gases
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
Rule 403	Fugitive Dust
Rule 1113	Architectural Coating
RV	Recreational Vehicle
SB	Southbound

SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCAX	Metrolink
SF	Square Feet
SIPs	State Implementation Plans
SO ₂	Sulfur Dioxide
SO ₄	Sulfates
SO _x	Sulfur Oxides
SR-79	State Route 79
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
TDM	Transportation Demand Management
TIA	Traffic Impact Analysis
TITLE I	Non-Attainment Provisions
TITLE II	Mobile Sources Provisions
UFP	Ultra Fine Particles
UTRs	Utility Tractors
C ₂ H ₃ Cl	Vinyl Chloride
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
VPH	Vehicles Per Hour

ES.1 SUMMARY OF FINDINGS

The results of this Dauchy Avenue *Air Quality Impact Analysis* are summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for each potential air quality impact under CEQA before and after any required mitigation measures described below.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Regional Construction Emissions	3.4	<i>Less Than Significant</i>	<i>n/a</i>
Localized Construction Emissions	3.6	<i>Less Than Significant</i>	<i>n/a</i>
Regional Operational Emissions	3.5	<i>Less Than Significant</i>	<i>n/a</i>
Localized Operational Emissions	3.7	<i>Less Than Significant</i>	<i>n/a</i>
CO "Hot Spot" Analysis	3.8	<i>Less Than Significant</i>	<i>n/a</i>
Air Quality Management Plan	3.9	<i>Less Than Significant</i>	<i>n/a</i>
Sensitive Receptors	3.10	<i>Less Than Significant</i>	<i>n/a</i>
Odors	3.11	<i>Less Than Significant</i>	<i>n/a</i>
Cumulative Impacts	3.12	<i>Less Than Significant</i>	<i>n/a</i>

ES.2 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES

Measures listed below (or equivalent language) shall appear on all Project grading plans, construction specifications and bid documents, and the City shall ensure such language is incorporated prior to issuance of any development permits. South Coast Air Quality Management District (SCAQMD) Rules that are currently applicable during construction activity for this Project include but are not limited to Rule 403 (Fugitive Dust) (2), Rule 445 – VOC Limits (3), and Rule 1113 (Architectural Coatings) (4). It should be noted that these Rules are not mitigation as they are standard regulatory requirements. Because they are required by law, credit for Rule 403, Rule 445, and Rule 1113 have been taken in the analysis.

RULE 403

The contractor shall adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to (2):

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) 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.
- Track-out gravel beds or similar devices shall be installed at all construction site access points.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are limited to 15 miles per hour or less.

RULE 1113

The following measures shall be incorporated into Project plans and specifications as implementation of SCAQMD Rule 1113 (4):

- Only “Low-Volatile Organic Compounds (VOC)” paints (no more than 50 gram/liter of VOC) consistent with SCAQMD Rule 1113 shall be used.

RULE 445

The Project is required to comply with SCAQMD Rule 445, which prohibits the use of wood burning stoves and fireplaces in new development (3).

ES.3 CONSTRUCTION-SOURCE AND OPERATIONAL-SOURCE MITIGATION MEASURES

The Project would not exceed any thresholds of significance for construction or operational-source emissions. As such, a less than significant impact would occur for Project-related construction and operational-source emissions and no mitigation would be required.

1 INTRODUCTION

This report presents the results of the AQIA prepared by Urban Crossroads, Inc., for the proposed Dauchy Avenue (Project). The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project and, if warranted, recommend measures to mitigate impacts considered potentially significant in comparison to thresholds established by the SCAQMD.

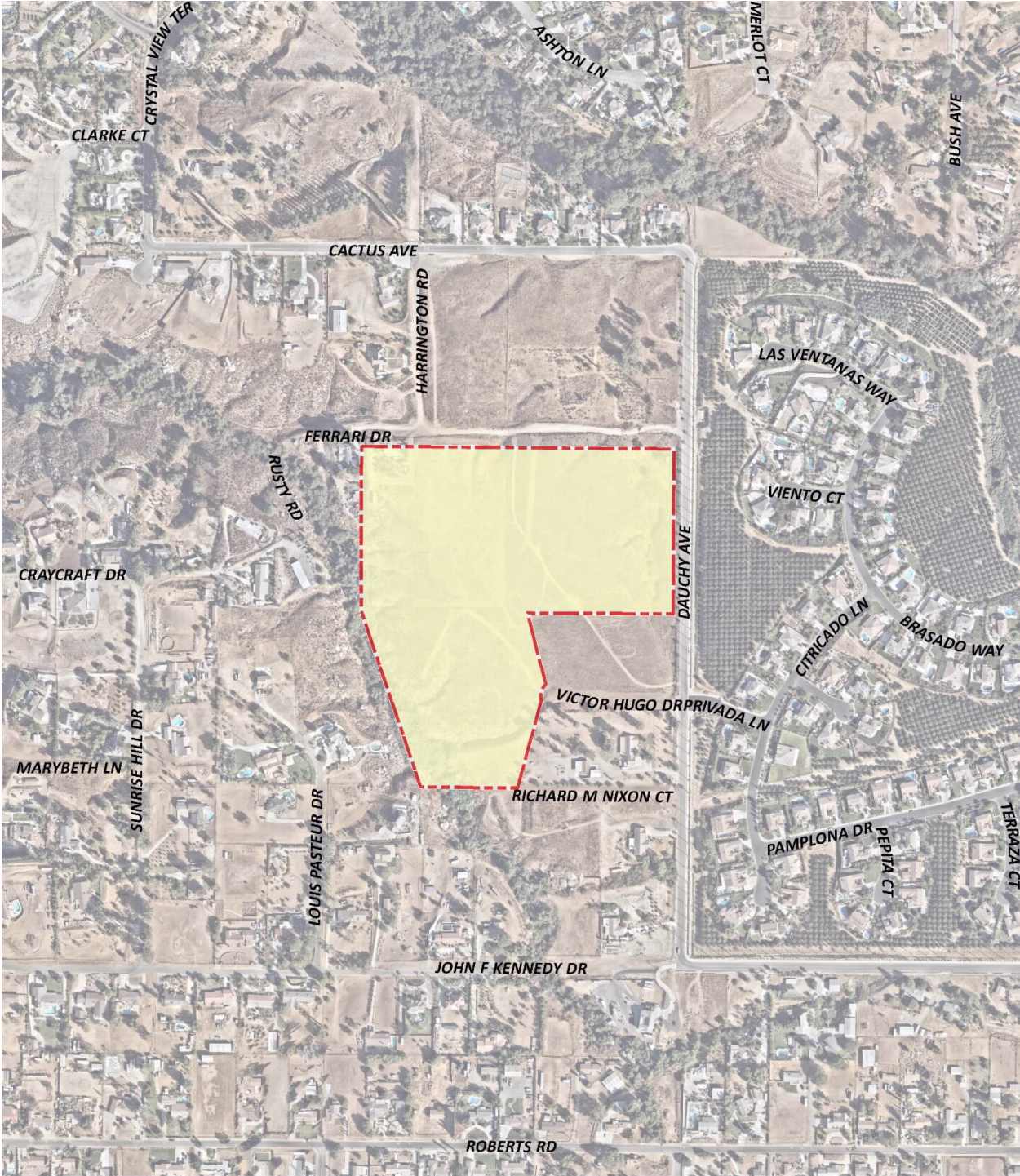
1.1 SITE LOCATION

The proposed Dauchy Avenue site is located south of Ferrari Drive (APN 276-040-011 and -012), and west of Dauchy Avenue (APN 276-050-029), in the City of Riverside, as shown on Exhibit 1-A. Based on the City of Riverside zoning map, the Project site is zoned R-1-1/2-Acre-WC – Single Family Residential and Water Course Overlay Zones (APN 276-040-011 and -012) and RC-WC – Residential Conservation and Water Course Overlay Zones (APN 276-050-029), which allows for the development of single-family dwellings. The General Plan designates the Project area as VLDR- OS – Very Low Density Residential and Open Space (APN 276-040-011 and -012) and HR-OS – Hillside Residential and Open Space (APN 276-050-029).

1.2 PROJECT DESCRIPTION

The Project consists of the development of 53 residential dwelling units on three parcels (APN:276-050-029,276-040-011 and -012), as shown on Exhibit 1-B. The current acreage of the three parcels involved in the project is 24.45 acres. With the street vacations indicated Lots “A” and “H” on the Tentative Tract Map, the amount of acreage will increase to 24.73 acres. Accordingly, street improvements on the project frontage along Ferrari Drive and Dauchy Avenue will include curbs, gutters, and sidewalks. Ferrari Drive will also include street side landscaping. Victor Hugo Drive will be paved to its full width. Accordingly, curbs and sidewalks will be installed on the north side of Victor Hugo Drive.

EXHIBIT 1-A: PROJECT LOCATION

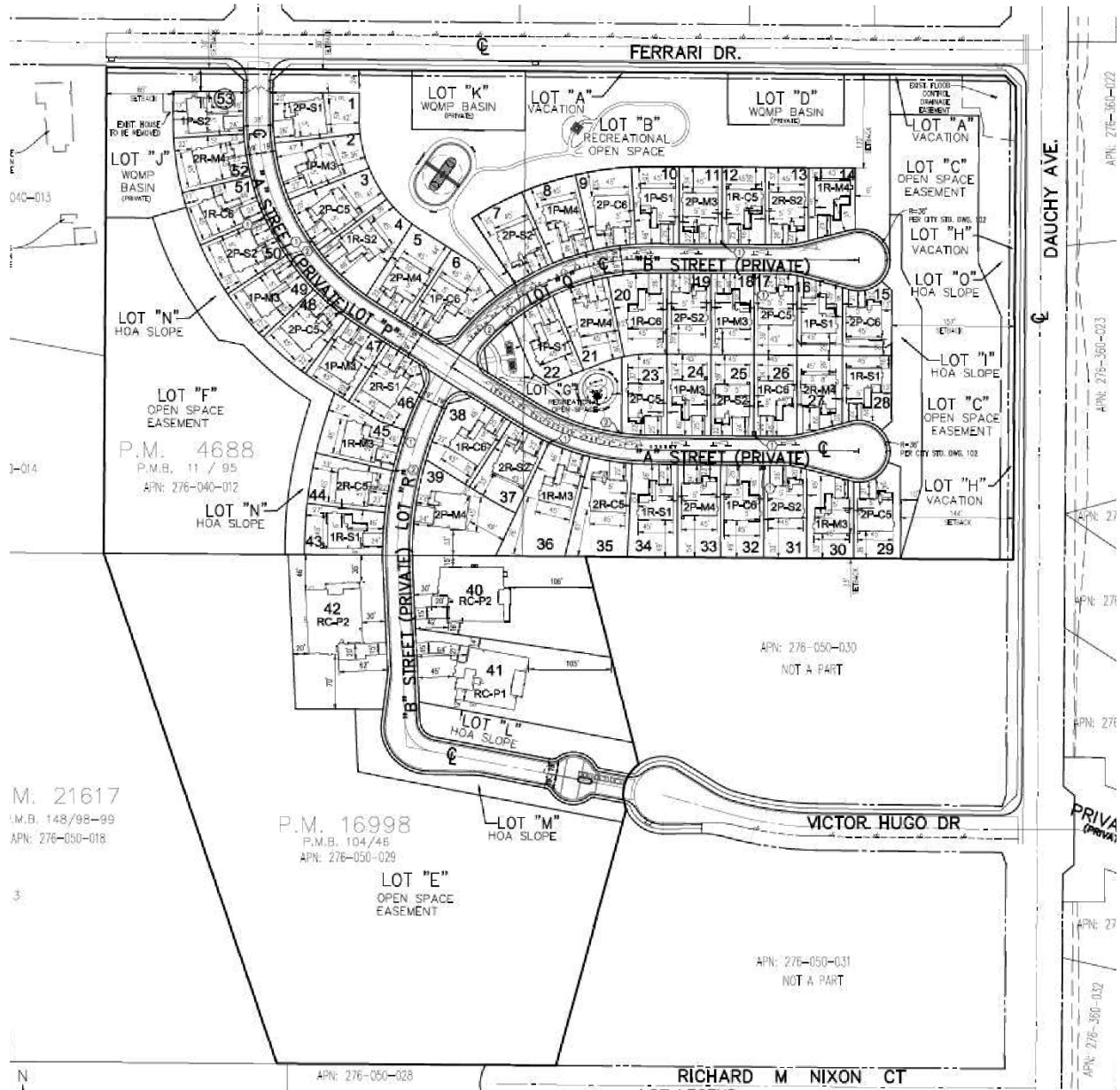


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 Site Boundary

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EXHIBIT 1-B: SITE PLAN



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2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (1). The SCAQMD 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. As previously stated, the Project site is located within the SCAB, 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 SCAB 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.

2.2 REGIONAL CLIMATE

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

The annual average temperatures throughout the SCAB vary from the low to middle 60s degrees Fahrenheit (°F). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB 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 SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide (SO₂) to sulfates (SO₄) 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 SCAB is 71% along the coast and 59% 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% of the SCAB'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 SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. 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 14½ 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 SCAB 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 SCAB 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 SCAB, 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 SCAB. 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 carbon monoxide (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.

2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The SCAB 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 onshore 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.

2.4 CRITERIA POLLUTANTS

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and health effects are identified in Table 2-1 (2).

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
CO	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 SCAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	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.

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
SO ₂	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)	Coal or oil burning power plants and industries, refineries, diesel engines	<p>A few minutes of exposure to low levels of SO₂ 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 SO₂. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO₂.</p> <p>Animal studies suggest that despite SO₂ 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.</p> <p>Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO₂ levels. In these studies, efforts to separate the effects of SO₂ 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.</p>

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
NO _x	NO _x consist of nitric oxide (NO), nitrogen dioxide (NO ₂) and nitrous oxide (N ₂ O) 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. NO _x 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 monitoring station.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	<p>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 NO₂ 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 NO₂ 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.</p> <p>In animals, exposure to levels of NO₂ considerably higher than ambient concentrations result 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 NO₂.</p>
Ozone (O ₃)	O ₃ is a highly reactive and unstable gas that is formed when VOCs and NO _x , both byproducts of internal combustion engine exhaust, undergo slow	Formed when reactive organic gases (ROG) and NO _x react in the	Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
	<p>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.</p>	<p>presence of sunlight. ROG sources include any source that burns fuels, (e.g., gasoline, natural gas, wood, oil) solvents, petroleum processing and storage and pesticides.</p>	<p>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 outdoor sports and live in communities with high ozone levels.</p> <p>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,</p>

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
			which can lead to subsequent lung structural changes.
Particulate Matter	<p>PM₁₀ (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. Particulate matter pollution is a major cause of reduce visibility (haze) which is caused by the scattering of light and consequently the significant reduction air clarity. 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. Additionally, it should be noted that PM₁₀ is considered a criteria air pollutant.</p> <p>PM_{2.5} (Particulate Matter less than 2.5 microns): A similar air pollutant to PM₁₀ 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 SO₂ 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. PM_{2.5} is a criteria air pollutant.</p>	<p>Sources of PM₁₀ include road dust, windblown dust and construction. Also formed from other pollutants (acid rain, NO_x, SO_x, organics). Incomplete combustion of any fuel.</p> <p>PM_{2.5} comes from fuel combustion in motor vehicles, equipment and industrial sources, residential and agricultural burning. Also formed from reaction of other pollutants (acid rain, NO_x, SO_x, organics).</p>	<p>A consistent correlation between elevated ambient fine particulate matter (PM₁₀ 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 lifespan, and an increased mortality from lung cancer.</p> <p>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.</p> <p>The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more</p>

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
			susceptible to the effects of high levels of PM ₁₀ and PM _{2.5} .
Volatile Organic Compounds (VOC)	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 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 criteria pollutant since they are a precursor to O ₃ , which is a criteria pollutant. The terms VOC and ROG (see below) interchangeably.	Organic chemicals are widely used as ingredients in household products. Paints, varnishes and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.	Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. Not all VOCs have all these health effects, though many have several.
ROG	Similar to VOC, 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 NO _x react in the presence of sunlight. ROGs are a criteria pollutant since they are a	Sources similar to VOCs.	Health effects similar to VOCs.

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
	precursor to O ₃ , which is a criteria pollutant. The terms ROG and VOC (see previous) are used interchangeably.		
Lead (Pb)	Lead is a heavy metal that is highly persistent in the environment and is considered a criteria pollutant. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. The major sources of lead emissions are ore and metals processing, particularly lead smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. It should be noted that the Project does not include operational activities such as metal processing or lead acid battery manufacturing. As such, the Project is not anticipated to generate a quantifiable amount of lead emissions.	Metal smelters, resource recovery, leaded gasoline, deterioration of lead paint.	<p>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.</p> <p>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.</p>
Odor	Odor means the perception experienced by a person when one or more chemical substances	Odors can come from many sources including animals, human activities,	Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
	in the air come into contact with the human olfactory nerves.	industry, natures, and vehicles.	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.

2.5 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of 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 are shown in Table 2-2 (4).

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. At the time of this AQIA, the most recent state and federal standards were updated by CARB on May ,4 2016 and are presented in Table 2-2. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O₃, CO (except 8-hour Lake Tahoe), SO₂ (1 and 24 hour), NO₂, PM₁₀, and PM_{2.5} are not to be exceeded. All others are not to be equaled or exceeded. It should be noted that the three-year period is presented for informational purposes and is not the basis for how the State assigns attainment status. Attainment status for a pollutant means that the SCAQMD meets the standards set by the Environmental Protection Agency (EPA) or the California EPA (CalEPA). Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality in nonattainment areas, a State Implementation Plan (SIP) is drafted by CARB. The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area (5).

TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

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) ⁸	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)		0.070 ppm (137 µg/m ³)			
Respirable Particulate Matter (PM ₁₀) ⁹	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 (PM _{2.5}) ⁹	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	12.0 µg/m ³			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) ¹⁰	1 Hour	0.18 ppm (339 µg/m ³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m ³)	Same as Primary Standard	Gas Phase Chemiluminescence	
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)			
Sulfur Dioxide (SO ₂) ¹¹	1 Hour	0.25 ppm (655 µg/m ³)	Ultraviolet Fluorescence	75 ppb (196 µg/m ³)	—	Ultraviolet Fluorescence; 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) ¹¹			—
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas) ¹¹			—
Lead ^{12,13}	30 Day Average	1.5 µg/m ³	Atomic Absorption	—	Same as Primary Standard	High Volume Sampler and Atomic Absorption	
	Calendar Quarter	—		1.5 µg/m ³ (for certain areas) ¹²			
	Rolling 3-Month Average	—		0.15 µg/m ³			
Visibility Reducing Particles ¹⁴	8 Hour	See footnote 14	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 ¹²	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography				

See footnotes on next page ...

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TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

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 $150 \mu\text{g}/\text{m}^3$ 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. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from $15 \mu\text{g}/\text{m}^3$ to $12.0 \mu\text{g}/\text{m}^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at $35 \mu\text{g}/\text{m}^3$, as was the annual secondary standard of $15 \mu\text{g}/\text{m}^3$. The existing 24-hour PM10 standards (primary and secondary) of $150 \mu\text{g}/\text{m}^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. 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.
11. 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.
12. 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.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ($1.5 \mu\text{g}/\text{m}^3$ 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.
14. 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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2.6 REGIONAL AIR QUALITY

Air pollution contributes to a wide variety of adverse health effects. The EPA has established NAAQS for six of the most common air pollutants: CO, Pb, O₃, particulate matter (PM₁₀ and PM_{2.5}), NO₂, and SO₂ which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Pb air monitoring sites throughout the air district (6). On February 21, 2019, CARB posted the 2018 amendments to the state and national area designations. See Table 2-3 for attainment designations for the SCAB (7).

TABLE 2-3: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SCAB

Criteria Pollutant	State Designation	Federal Designation
O ₃ – 1-hour standard	Nonattainment	--
O ₃ – 8-hour standard	Nonattainment	Nonattainment
PM ₁₀	Nonattainment	Attainment-Maintenance
PM _{2.5}	Nonattainment	Nonattainment
CO	Attainment	Attainment-Maintenance
NO ₂	Attainment	Unclassifiable/Attainment
SO ₂	Unclassifiable/Attainment	Unclassifiable/Attainment
Pb	Attainment	Nonattainment (part)

"--" = The national 1-hour O₃ standard was revoked effective June 15, 2005.

2.7 LOCAL AIR QUALITY

The Project site is located within the Source Receptor Area (SRA) 23. Within SRA 23, the South San Gabriel Valley monitoring station is located at 500 S. 7th Avenue, City of Industry, approximately 7.5 miles northwest within SRA 23 and is the nearest monitoring station to the Project site.

The most recent three (3) years of data available is shown on Table 2-4 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site. Data for O₃, CO, NO₂, PM₁₀, and PM_{2.5} for 2016 through 2018 was obtained from the SCAQMD Air Quality Data Tables (8). Additionally, data for SO₂ has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO₂ concentrations.

TABLE 2-4: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2017-2019

POLLUTANT	STANDARD	YEAR		
		2017	2018	2019
CO				
Maximum Federal 1-Hour Concentration	> 35 ppm	2.5	2.0	1.9
Maximum Federal 8-Hour Concentration	> 20 ppm	2.2	1.8	1.5
O ₃				
Maximum Federal 1-Hour Concentration (ppm)		0.118	0.115	0.108
Maximum Federal 8-Hour Concentration (ppm)		0.086	0.082	0.091
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	7	3	5
Number of Days Exceeding Federal/State 8-Hour Standard	> 0.070 ppm	9	8	7
NO ₂				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	0.075	0.079	0.062
Annual Federal Standard Design Value		0.020	0.018	0.055
PM ₁₀				
Maximum Federal 24-Hour Concentration (µg/m ³)	> 150 µg/m ³	--	--	--
Annual Federal Arithmetic Mean (µg/m ³)		--	--	--
Number of Days Exceeding Federal 24-Hour Standard	> 150 µg/m ³	--	--	--
Number of Days Exceeding State 24-Hour Standard	> 50 µg/m ³	--	--	--
PM _{2.5}				
Maximum Federal 24-Hour Concentration (µg/m ³)	> 35 µg/m ³	49.5	35.4	29.6
Annual Federal Arithmetic Mean (µg/m ³)	> 12 µg/m ³	12.2	12.3	24.4
Number of Days Exceeding Federal 24-Hour Standard	> 35 µg/m ³	1	0	0
ppm = Parts Per Million Source: Data for was obtained from SCAQMD Historical Air Quality Data.				

2.8 REGULATORY BACKGROUND

2.8.1 FEDERAL REGULATIONS

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_(10). NAAQS have been designated for the criteria pollutants of primary concern: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter with diameters of up to ten microns (PM₁₀) and up to 2.5 microns (PM_{2.5}), and lead (Pb). The primary NAAQS “in the judgment of the [EPA] are....are requisite to protect the public health” with an adequate a margin of safety and the secondary standards are to “protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air” [42 USC 7409(b)(2)]. The U.S. EPA classifies specific geographic areas as either “attainment” or “non-attainment” areas for each pollutant based on the comparison of measured data with

the NAAQS. States are required to adopt enforceable plans, known as a State Implementation Plan (SIP), to achieve and maintain air quality meeting the NAAQS. 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) (11) and Title II (Mobile Source Provisions) (12). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O₃, NO₂, SO₂, PM₁₀, CO, PM_{2.5}, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O₃ and to adopt a NAAQS for PM_{2.5}. Table 2-3 (previously presented) provides the NAAQS within the SCAB.

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 NO_x which are emitted as byproducts of the combustion process.

The EPA is responsible for setting and enforcing the NAAQS for O₃, CO, NO_x, SO₂, PM₁₀, and Pb (9). The 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 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 CARB.

2.8.2 CALIFORNIA REGULATIONS

California Air Resources Board

The CARB, which became part of the CalEPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. AB 2595 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 SO₄, visibility, hydrogen sulfide (H₂S), and vinyl chloride (C₂H₃Cl). However, at this time, H₂S and C₂H₃Cl are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (13) (9).

Local air quality management districts, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and 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 (AQMP) 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 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 5% or more annual reduction in emissions or 15% or more in a period of three years for ROGs, NO_x, CO and PM₁₀. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than 5% per year under certain circumstances.

California Building Standards Code

Title 24 of the California Code of Regulations contains numerous subparts, including Part 1 (Administrative Code), Part 2 (Building Code), Part 3 (Electrical Code), Part 4 (Mechanical Code), Part 5 (Plumbing Code), Part 6 (Energy Code), Part 8 (Historical Building Code), Part 9 (Fire Code), Part 10 (Existing Building Code), Part 11 (Green Building Standards Code), Part 12 (Referenced Standards Code). Of particular interest to air quality are the requirements that California homes and businesses are constructed to meet high energy-efficiency and sustainability measures.

Part 6 (Building Energy Efficiency Standards)

Part 6 of Title 24 contains the 2016 Building Energy Efficiency Standards for new residential and non-residential buildings, which went into effect on January 1, 2017. Part 6 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2016 Standards improve upon the previous 2013 Standards for new construction of and additions and alterations to residential and nonresidential buildings. The 2016 Standards improve upon the previous 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. Under the 2016 Standards, residential buildings are generally 28 percent more efficient than the 2013 Standards, and nonresidential buildings are generally five percent more energy efficient than the 2013 Standards as a result of better windows, insulation, lighting, ventilation systems, and other features (CEC 2016). Part 6 also provides for the installation of cool roofs in Sections 140.3(a)(1), 141.0(b)(2)(B), and 141.0(b)(3).

The 2019 Building Energy Efficiency Standards, adopted on May 9, 2018, became effective on January 1, 2020. The 2019 Standards move toward cutting energy use in new homes by more than 50 percent and will require installation of solar photovoltaic systems for single-family homes and multi-family buildings of three stories and less. The 2019 Standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements (18). Under the 2019 Standards, nonresidential buildings will be 30 percent more energy-efficient compared to the 2016 Standards, and single-family homes will be seven percent more energy-efficient (18). When accounting for the electricity generated by the solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards.

Part 11 (CALGreen)

The California Green Building Standards Code (24 CCR, Part 11, known as “CALGreen”) was adopted as part of the California Building Standards Code in 2008. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of the CALGreen became effective January 1, 2011 and were updated in 2016. The 2016 Standards, which became effective on January 1, 2017, establish green building criteria for residential and nonresidential projects. The CEC adopted updates to the 2016 Standards in 2019 that took effect on January 1, 2020. These changes include the following: increasing the number of parking spaces that must be prewired for electric vehicle chargers in residential development; requiring all residential development to adhere to the applicable MWELO; requiring mechanically ventilated buildings to install filters with a Minimum Efficiency Reporting Value (MERV) of 13, and requiring more appropriate sizing of HVAC ducts.

2.8.3 REGIONAL REGULATIONS

South Coast Air Quality Management District

The SCAQMD is the air pollution control agency in the Basin. The role of the local SCAQMD is to protect the people and the environment of the Basin from the effects of air pollution. Under State law, the SCAQMD is required to prepare a plan for air quality improvement for pollutants for which the SCAB is in non-attainment under the NAAQS or CAQQS. The SCAQMD updates the plan regularly. Each iteration of the SCAQMD’s Air Quality Management Plan (AQMP) is an update of the previous plan and has a 20-year horizon. The latest AQMP, the 2016 AQMP, was adopted on March 3, 2017. It incorporates new scientific data and notable regulatory actions that have occurred since adoption of the 2012 AQMP, including the approval of the new federal 8-hour ozone standard of 0.070 ppm that was finalized in 2015. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.11.

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3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard, contribute to an existing or projected air quality violation, or determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable NAAQS and CAAQS. Additionally, the Project has been evaluated to determine consistency with the applicable AQMP, exposure of sensitive receptors to substantial pollutant concentrations, and the impacts of odors. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 CCR §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (15):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. affecting a substantial number of people.

The SCAQMD has also developed regional significance thresholds for other regulated pollutants, as summarized at Table 3-1 (16). The SCAQMD's CEQA Air Quality Significance Thresholds (April 2019) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 17, 2017, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_x, SO_x, CO, PM₁₀, and PM_{2.5}) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (17). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions.

TABLE 3-1: MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS

Pollutant	Construction Regional Thresholds	Operational Regional Thresholds
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
Pb	3 lbs/day	3 lbs/day
lbs/day = Pounds Per Day Source: SCAQMD		

3.3.1 EMISSION FACTORS MODEL

On August 19, 2019, the EPA approved the 2017 version of the EMISSIONS FACTOR model (EMFAC) web database for use in SIP and transportation conformity analyses. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (18). This AQIA utilizes summer, winter, and annual EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season.

Because the EMFAC2017 emission rates are associated with vehicle fuel types while CalEEMod vehicle emission factors are aggregated to include all fuel types for each individual vehicle class, the EMFAC2017 emission rates for different fuel types of a vehicle class are averaged by activity or by population and activity to derive CalEEMod emission factors. The equations applied to obtain CalEEMod vehicle emission factors for each emission type are detailed in CalEEMod User’s Guide *Appendix A: Calculation Details for CalEEMod* (19). EMFAC2017 emission rates utilized in this analysis can be found in Appendix 3.2 of this report.

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of VOCs, NO_x, SO_x, CO, PM₁₀, and PM_{2.5}. Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust 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.). CalEEMod was utilized to calculate fugitive dust emissions resulting from this phase of activity. Based on information provided by the Project Applicant, no import of earthwork material is anticipated for the Project, as it is anticipated that grading on the site would be balanced. Additionally, the construction emissions included watering the project site twice per day and thus are reported from the mitigated emissions run output from CalEEMod.

Construction Worker Vehicle Trips

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 from CalEEMod defaults.

3.4.1 CONSTRUCTION DURATION

For purposes of analysis, construction of Project is expected to commence June 1, 2024, and be completed by September 19, 2025. The construction schedule utilized in the analysis, shown in Table 3-2, represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines 15064 (15).

TABLE 3-2: CONSTRUCTION DURATION

Phase Name	Start Date ¹	End Date ¹	Days
Site Preparation	6/1/2024	6/14/2024	10
Grading	6/15/2024	7/26/2024	30
Building Construction	7/27/2024	9/19/2025	300
Paving	7/26/2025	9/19/2025	40
Architectural Coating	7/26/2025	9/19/2025	40
Source: CalEEMod 2016.			
¹ Dates included in modeling conservatively assume earlier years with higher emission rates,			

3.4.2 CONSTRUCTION EQUIPMENT

Site specific construction fleet may vary due to specific project needs at the time of construction. The associated construction equipment was generally based on CalEEMod 2016.3.2 defaults, and the Project applicant has confirmed that the equipment list is reasonable for the Project’s construction. A detailed summary of construction equipment by phase is provided in Table 3-3.

TABLE 3-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase Name	Equipment	Amount	Hours Per Day
Site Preparation	Crawler Tractors	4	8
	Rubber Tired Dozers	3	8
Grading	Crawler Tractors	2	8
	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
Building Construction	Air Compressors	1	8
	Cranes	1	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8
Source: CalEEMod 2016.			

3.4.3 CONSTRUCTION EMISSIONS SUMMARY

CalEEMod calculates maximum daily emissions for summer and winter periods. The estimated maximum daily construction emissions are summarized on Table 3-4. Detailed construction model outputs are presented in Appendices 3.1 and 3.2. As shown, Project construction activities will not exceed the applicable thresholds of significance established by the SCAQMD.

TABLE 3-4: OVERALL CONSTRUCTION EMISSIONS SUMMARY

Year	Emissions (lbs/day)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Summer						
2024	5.2	57.2	34.4	0.1	23.0	12.5
2025	18.6	29.6	38.1	0.1	1.9	1.5
Maximum Daily Summer Emissions	18.58	57.16	38.06	0.08	22.98	12.54
Winter						
2024	5.2	57.2	34.3	0.1	22.98	12.54
2025	18.6	29.6	37.9	0.1	1.91	1.49
Maximum Daily Winter Emissions	18.59	57.16	37.95	0.08	22.98	12.54
Maximum Daily Emissions	18.59	57.16	38.06	0.08	22.98	12.54
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No

Source: CalEEMod unmitigated regional construction-source emissions are presented in Appendix 3.1.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of VOCs, NO_x, SO_x, CO, PM₁₀, and PM_{2.5}. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions

3.5.1 AREA SOURCE EMISSIONS

Architectural Coatings

Over a period of time the building that is part of this Project will 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 CalEEMod.

Consumer Products

Consumer products 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 use of consumer products were calculated based on defaults provided within CalEEMod.

Hearths/Fireplaces

The emissions associated with use of hearths/fireplaces were calculated based on assumptions provided in the CalEEMod model. The Project is required to comply with SCAQMD Rule 445, which prohibits the use of wood burning stoves and fireplaces in new development. In order to account for the requirements of this Rule, the unmitigated CalEEMod model estimates were adjusted to remove wood burning stoves and fireplaces. As the project is required to comply with SCAQMD Rule 445, the removal of wood burning stoves and fireplaces is not considered "mitigation" although it must be identified as such in CalEEMod in order to treat the case appropriately. All units are assumed to have natural gas burning fireplaces.

Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shredders/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 CalEEMod.

3.5.2 ENERGY SOURCE EMISSIONS

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 SCAB, 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 CalEEMod.

Title 24 Energy Efficiency Standards

California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020. The CEC anticipates that nonresidential buildings will use approximately 30% less energy due to lighting upgrade requirements (20). The CalEEMod defaults for Title 24 – Electricity, Title 24 – Natural Gas, and Lighting Energy were reduced by 30% in order to reflect consistency with the 2019 Title 24 standards.

3.5.3 MOBILE SOURCE EMISSIONS

Project mobile source air quality 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. The Project-related operational air quality impacts are derived primarily from vehicle trips generated by the Project. Trips were calculated based on the Institution of Transportation Engineers (ITE) trip generation rates included in CalEEMod (20).

Mobile source emission factors in CalEEMod were updated to use the most current version of CARB's Emissions Factor Model, EMFAC2017. EMFAC 2017 emission factors used in the model are included in appendix 3.2.

3.5.4 OPERATIONAL EMISSIONS SUMMARY

As previously stated, CalEEMod utilizes summer and winter EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season. As such, operational activities for summer and winter scenarios are presented in Table 3-5. Detailed operational model outputs are presented in Appendices 3.1. As shown, Project operational activities will not exceed the applicable thresholds of significance established by the SCAQMD.

3.6 LOCALIZED SIGNIFICANCE

BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (21). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the NAAQS and CAAQS. Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4¹. 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 unhealthy concentrations of 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 analysis makes use of methodology included in the *LST Methodology* (21).

¹ The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "...equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

TABLE 3-5: SUMMARY OF PEAK OPERATIONAL EMISSIONS²

Source	Emissions (lbs/day)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Summer						
Area Source	2.28	0.85	4.72	0.01	0.09	0.09
Energy Source	0.03	0.24	0.10	0.00	0.02	0.02
Mobile Source Passenger Cars	1.44	3.75	13.78	0.04	3.82	1.05
Total Maximum Daily Emissions	3.74	4.83	18.60	0.05	3.93	1.16
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No
Winter						
Area Source	2.28	0.85	4.72	0.01	0.09	0.09
Energy Source	0.03	0.24	0.10	0.00	0.02	0.02
Mobile Source Passenger Cars	1.29	3.89	11.88	0.04	3.82	1.05
Total Maximum Daily Emissions	3.60	4.97	16.70	0.04	3.93	1.16
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No

Source: CalEEMod 2016, Appendix 3.2.

Source: CalEEMod 2016, Appendix 3.2.

APPLICABILITY OF LSTs FOR THE PROJECT

For this Project, the appropriate SRA for the LST analysis is South San Gabriel Valley (SRA 23). LSTs apply to CO, NO₂, PM₁₀, and PM_{2.5}. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Project-related construction, the following process is undertaken:

- CalEEMod is utilized to determine the maximum daily on-site emissions that will occur during construction activity.
- The SCAQMD's *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* and CalEEMod User's Guide *Appendix A: Calculation Details for CalEEMod* is used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod (22) (19).
- If the total acreage disturbed is less than or equal to five acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a Project has the potential to result in a significant impact. The look-up tables establish a maximum daily emissions threshold in lbs/day that can be compared to CalEEMod outputs.

² On November 20, 2019, CARB released the EMFAC Off-Model Adjustment Factors to account for the impact of the Safer Affordable Fuel-Efficient (SAFE) Vehicle Rule Part One. The emissions presented in Table 3-6 have been adjusted to reflect the adjustment factors. The adjustment factors can be found at: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf?utm_medium=email&utm_source=govdelivery

- If the total acreage disturbed is greater than five acres per day, then LST impacts are appropriately evaluated through dispersion modeling.
- The LST methodology presents mass emission rates for each SRA, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds.

Sensitive Receptors

As previously stated, LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Project activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, individuals with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather to exercise are defined as “sensitive receptors.” These structures typically include residences, hotels, hospitals, etc. as they are also known to be locations where an individual can remain for 24 hours.

While commercial and similar non-residential facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. The *LST Methodology* explicitly states that “LSTs based on shorter averaging periods, such as the NO₂ and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours (21).”

However, there are no non-residential land uses in proximity to the project site, thus, the nearest land use to the Project site where an individual could remain for 8 or 24 hours has been used to determine construction and operational air quality impacts. It should be noted that all off-site receptors in this analysis are residential land uses.

Project-related Sensitive Receptors

Sensitive receptors in the vicinity of the Project site are shown in Exhibit 3-A. Localized air quality impacts were evaluated at sensitive receptor land uses nearest the Project site. All distances are measured from the Project site boundary to the outdoor living areas (e.g., backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on Federal Highway Administration (FHWA) guidelines and is consistent with additional guidance provided by Caltrans and the Federal Transit Administration (FTA).

- R1: Location R1 represents the existing residence at 18351 Ferrari Drive, located approximately 35 feet west of the Project site. R1 represented the back yard of the nearest residence.

- R2: Location R2 represents the existing residence at 18386 Cactus Avenue, located approximately 753 feet southeast of the Project site. R2 represents the façade of the residence located at 18386 Cactus Avenue.
- R3: Location R3 represents the existing residence at 1268 Viento Court, located approximately 261 feet west of the Project site. R3 represented the back yard of 1268 Viento Court.
- R4: Location R4 represents the existing residence at 14855 Dauchy Avenue, located approximately 451 feet west of the Project site. R4 represents the façade of the residence located at 14855 Dauchy Avenue as it is the nearest point a residence is likely to spend extended periods.
- R5: Location R5 represents the existing residence at 18306 John F. Kennedy Drive, located approximately 84 feet west of the Project site. R3 represented the back yard of 18306 John F. Kennedy Drive.

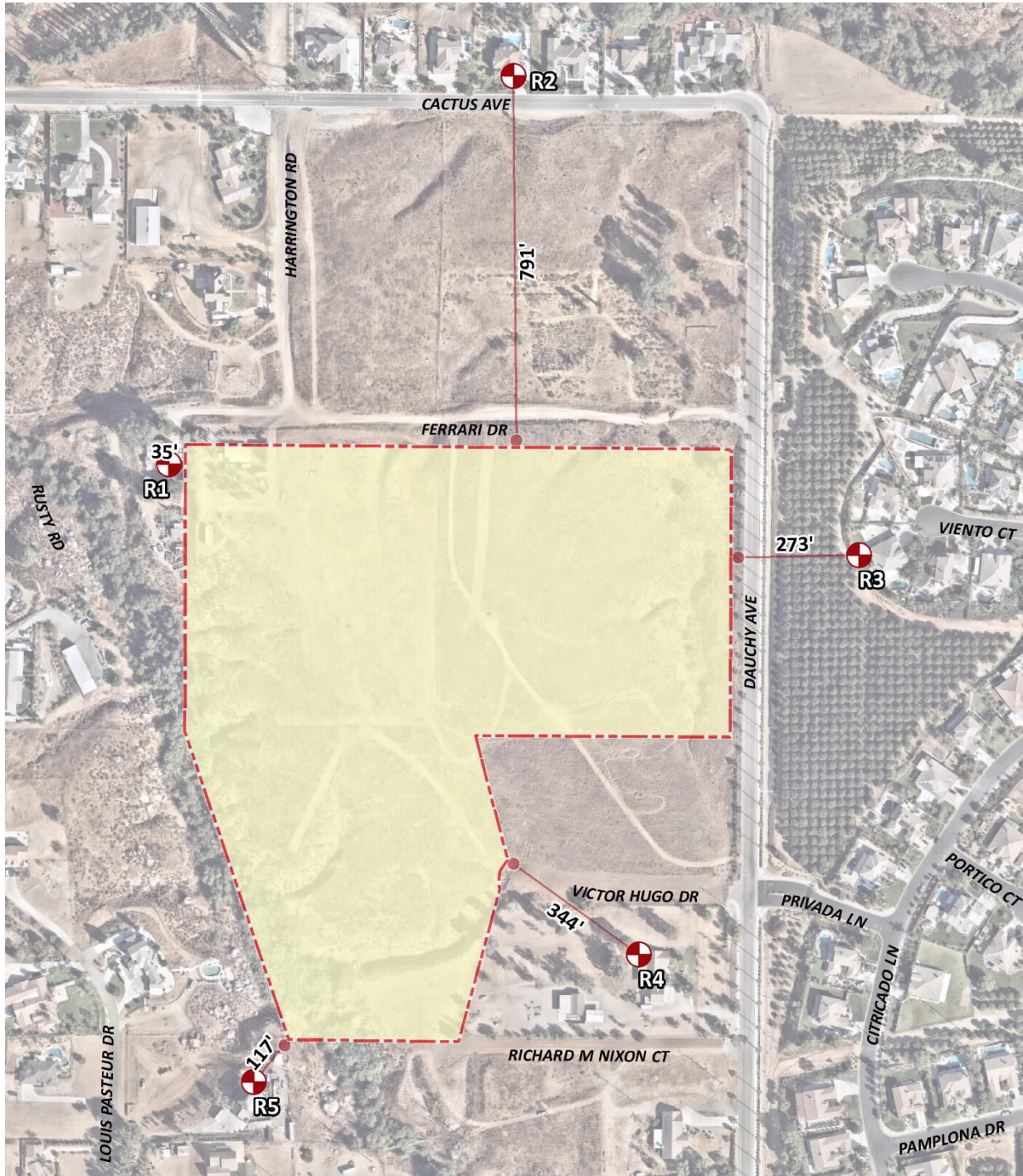
As previously stated, the nearest land use to the Project site has been used to determine localized construction and operational air quality impacts for emissions.

3.6.1 LOCALIZED THRESHOLDS – CONSTRUCTION ACTIVITY

The project site is approximately 24.73 acres and could disturb approximately 20.75 acres per day during site preparation and grading activities. For the purposes of this analysis, and as a conservative measure, the SCAQMD look-up tables of 5 acres are used to determine localized significance thresholds for site preparation and grading. The LST lookup tables can be used as a conservative measure to show that even if the daily emissions from all project construction were emitted on a 5-acre site (and therefore concentrated over a smaller area which would result in greater site adjacent concentrations), if the impacts are less than significant, then a more detailed evaluation is not necessary.

The threshold values presented in Table 3-6, are from the look-up tables for a 5-acre site and a 25-meter distance for localized NO_x, CO, PM₁₀, and PM_{2.5} evaluation. The thresholds presented in Table 3-6.

EXHIBIT 3-A: SENSITIVE RECEPTOR LOCATIONS



LEGEND:

 Receptor Locations

 Site Boundary

 Distance from receptor to Project site boundary (in feet)

TABLE 3-6: MAXIMUM DAILY LOCALIZED CONSTRUCTION EMISSIONS THRESHOLDS

Pollutant	Construction Localized Thresholds
NO _x	270 Lbs./day
CO	1,577 Lbs./day
PM ₁₀	13 Lbs./day
PM _{2.5}	8 Lbs./day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final LST Methodology, July 2008

3.6.2 LOCALIZED CONSTRUCTION-SOURCE EMISSIONS

Table 3-7 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions of any criteria pollutant using the most restrictive distance.

TABLE 3-7: PROJECT LOCALIZED CONSTRUCTION EMISSIONS, INCLUDING RULE 403

On-Site Emissions	Emissions (lbs/day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
Maximum Daily Emissions	57.11	36.72	0.08	7.90
SCAQMD Localized Threshold	270	1,577	13	8
Threshold Exceeded?	No	No	No	No

Source: CalEEMod unmitigated localized construction-source emissions are presented in Appendix 3.1.

3.7 LOCALIZED SIGNIFICANCE – LONG-TERM OPERATIONAL ACTIVITY

The Project is located on an approximately 24.73-acre parcel. This analysis is conservative as it assumes that all operational emissions associated with the project would occur within the Project site. The LST analysis generally includes on-site sources (area, energy as previously discussed in Section 3.5 of this report). However, it should be noted that the CalEEMod outputs do not separate on-site and off-site emissions from mobile sources. In an effort to establish a maximum potential impact scenario for analytic purposes, the emissions shown on Table 3-8 represent all on-site Project-related sources. Modeling based on these assumptions demonstrates that even within broad encompassing parameters, Project operational-source emissions would not exceed applicable LSTs.

3.7.1 LOCALIZED THRESHOLDS FOR OPERATIONAL ACTIVITY

The threshold values presented in Table 3-8, are from the look-up tables for a 5-acre site and a 25-meter distance for localized NO_x, CO, PM₁₀, and PM_{2.5} evaluation.

TABLE 3-8: MAXIMUM DAILY LOCALIZED OPERATIONAL EMISSIONS THRESHOLDS

Pollutant	Operational Localized Thresholds
NO _x	270 Lbs./day
CO	1,577 Lbs./day
PM ₁₀	4 Lbs./day
PM _{2.5}	2 Lbs./day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final LST Methodology, July 2008

3.7.2 OPERATIONAL-SOURCE LOCALIZED EMISSIONS

As shown on Table 3-9 operational emissions will not exceed the LST thresholds for the nearest sensitive receptor. Therefore, the Project will have a less than significant localized impact during operational activity.

TABLE 3-9: LOCALIZED SIGNIFICANCE SUMMARY OF OPERATIONS

Operational Activity	Emissions (lbs/day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
Maximum Daily Emissions	1.47	6.00	0.49	0.21
SCAQMD Localized Threshold	270	1,577	4	2
Threshold Exceeded?	No	No	No	No

Source: CalEEMod localized operational-source emissions are presented in Appendices 3.2 through 3.4.

3.8 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." Further, detailed modeling of Project-specific CO "hot spots" is not needed to reach this conclusion. An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the CAAQS and NAAQS for CO (23). However, the SCAB has been designated a CO attainment area and has maintained a federal maintenance plan for over 10 years.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, the SCAQMD conducted a detailed CO "hot spot" analysis in 2003 for four of the busiest intersections in Los Angeles during the peak morning and afternoon time periods. The results of the "hot spot" analysis are shown on Table 3-10.

TABLE 3-10: CO MODEL RESULTS

Intersection Location	CO Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire Boulevard/Veteran Avenue	4.6	3.5	3.7
Sunset Boulevard/Highland Avenue	4	4.5	3.5
La Cienega Boulevard/Century Boulevard	3.7	3.1	5.2
Long Beach Boulevard/Imperial Highway	3	3.1	8.4

Source: 2003 AQMP, Appendix V: Modeling and Attainment Demonstrations
Notes: Federal 1-hour standard is 35 ppm and the deferral 8-hour standard is 9.0 ppm.

As shown in in Table 3-11, the intersection that had the highest 1-hour concentration Wilshire Boulevard and Veteran Avenue at 4.6 ppm. As shown in Table 3-11 this resulted from a peak hour traffic volume of approximately 8,000 vehicles. Based on these traffic volumes, even the peak hour traffic volume increases four times the modeled volumes ($8,000 \times 4 = 32,000$) the CO concentration would not exceed the most stringent 1-hour CO standard ($4.6 \text{ ppm} \times 4 = 18.4 \text{ ppm} < 20.0 \text{ ppm}$).³

TABLE 3-11: TRAFFIC VOLUMES

Intersection Location	Total (AM/PM)
Wilshire Boulevard/Veteran Avenue	8,062/7,719
Sunset Boulevard/Highland Avenue	6,614/5,374
La Cienega Boulevard/Century Boulevard	6,634/8,674
Long Beach Boulevard/Imperial Highway	4,212/5,514

Source: 2003 AQMP

In addition, as part of the SCAQMD's 2003 AQMP and the Amendment to the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), it was shown that peak CO concentrations at specific locations in the SCAB result from unusual meteorological and topographical conditions and are not from traffic volumes or congestion at a particular intersection. The SCAQMD highlighted this issue by examining the 8-hour CO concentrations measured at various locations during the maximum ambient concentrations. At the Long Beach Boulevard and Imperial Highway intersection, they found while the measured maximum ambient CO was 9.3 ppm, only 0.7 ppm was attributable to the traffic sources while the remaining 8.6 ppm were due to the other sources (24).

Similar evaluation employed by other Air Districts when evaluating potential CO concentration impacts have come to similar conclusions. Specifically, the Bay Area Air Quality Management

³ Based on the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour (vph) —or 24,000 vph where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (25).

As discussed, the project would only generate 168 trips per day (26). As such, the Project considered in this analysis would not produce the volume of traffic required to generate a CO “hot spot” in the context of the 2003 Los Angeles hot spot study. Therefore, localized air quality impacts related to mobile-source emissions would therefore be less than significant.

Based on the SCAQMD’s findings and changes in vehicle emissions regulation, any relatively high CO concentrations in the SCAB are attributable more to meteorological and topographical conditions, which account for approximately 92% of the CO concentrations, than to traffic congestion, which accounts for approximately 8% of the CO concentrations. Therefore, coupled with the on-going improvements in ambient air quality, improvements in fuel economy, and improvements in tailpipe emissions, at a project level few project would not be capable of resulting in a CO “hot spot” at any study area intersections. Therefore, CO “hot spots” are not an environmental impact of concern for the proposed Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

In contrast, based on Table 2-3, the ambient 8-hour CO concentration within the Project study area is estimated at 1.5 ppm — 2.2 ppm. Therefore, even if the traffic volumes for the Project were double or even triple of the traffic volumes generated at the Long Beach Boulevard and Imperial Highway intersection, coupled with the on-going improvements in ambient air quality, the Project would not be capable of resulting in a CO “hot spot” at any study area intersections.

3.9 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the 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 SCAB. In response, the SCAQMD has adopted a series of 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.

In March 2017, the AQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as, explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (27). Similar to the 2012 AQMP,

the 2016 AQMP incorporates scientific and technological information and planning assumptions, including the 2016 RTP/SCS, a planning document that supports the integration of land use and transportation to help the region meet the federal CAA requirements (28). The Project's consistency with the AQMP will be determined using the 2016 AQMP as discussed below.

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) (29). 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.

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

Construction Impacts – Consistency Criterion 1

Consistency Criterion No. 1 refers to violations of the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if LSTs or regional significance thresholds were exceeded. The Project's localized construction-source emissions would not exceed applicable regional significance thresholds. However, as evaluated in Section 3.4, the Project would not exceed the regional significance thresholds for any pollutant. As such, the Project is consistent with the AQMP with regard to regional construction-source air quality violations.

Operational Impacts – Consistency Criterion 1

As evaluated, the Project's localized operational-source emissions would not exceed applicable localized significance thresholds. However, the regional operational-source emissions would not exceed the regional thresholds of significance for emissions of VOC, NO_x, CO, PM₁₀, and PM_{2.5}. As such, the Project would not result in a significant impact with respect to this criterion.

On the basis of the preceding discussion, and the lack of thresholds exceedances the Project is determined to be consistent with the first criterion.

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

The 2016 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in City of Riverside General Plan 2025 is considered to be consistent with the AQMP.

Construction Impacts – Consistency Criterion 2

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities.

Operational Impacts – Consistency Criterion 2

The City of Riverside designates the Project site as VLDR- OS – Very Low Density Residential and Open Space (APN 276-040-011 and -012) and HR-OS – Hillside Residential and Open Space (APN 276-050-029). VLDR allows a maximum of 2 dwelling units per acre, and HR allows for a maximum development of 0.5 dwelling units per acre. As such, the Project's proposed land use is consistent with the types of uses anticipated by the growth assumptions anticipated in County's General Plan.

On the basis of the preceding discussion, the Project is determined to be consistent with the second criterion.

AQMP CONSISTENCY CONCLUSION

The Project would not have the potential to result in or cause NAAQS or CAAQS violations. Additionally, Project construction and operational-source emissions would not exceed the regional or localized significance thresholds. The Project would not alter the allowed land use. The Project is therefore considered to be consistent with the AQMP.

3.10 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long-term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, childcare centers, and athletic facilities can also be considered as sensitive receptors. Project sensitive receptors are described in Section 3.6 of this report and are limited to existing residential uses.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial criteria pollutant concentrations during Project construction.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during operational activity. Further Project traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project operations.

3.11 ODORS

The potential for the Project to generate objectionable odors has also been considered. 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 proposed 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 proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction 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 County's solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required (30).

3.12 CUMULATIVE IMPACTS

The proposed Project site area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM₁₀, PM_{2.5}, and lead.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (31). In this report the AQMD clearly states (Page D-3):

"...the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and

cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.”

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD’s recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

CONSTRUCTION IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project construction-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, proposed Project construction-source emissions would be considered less than significant on a project-specific and cumulative basis.

OPERATIONAL IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project operational-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, proposed Project operational-source emissions would be considered less than significant on a project-specific and cumulative basis.

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5 CERTIFICATIONS

The contents of this GHG study report represent an accurate depiction of the air pollutant impacts associated with the proposed Dauchy Avenue Project. The information contained in this AQIA report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 788-1971.

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APPENDIX 3.1:
CALEEMOD EMISSIONS MODEL OUTPUTS

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APPENDIX 3.2:
EMFAC2017 OUTPUTS

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