HELIX Environmental Planning

Sky Canyon Retail Center Project

Air Quality and Greenhouse Gas Emissions Technical Report

June 2019 | AVA-01

Prepared for:

AVA Property Investment, LLC
14407 Alondra Boulevard
La Mirada, CA 90638

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

Sky Canyon Retail Center Project

Air Quality and Greenhouse Gas Emissions Technical Report

Prepared for:

AVA Property Investment, LLC
14407 Alondra Boulevard
La Mirada, CA 90638

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

June 2019 | AVA-01

This page intentionally left blank

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

LIST OF APPENDICES

LIST OF FIGURES

TABLE OF CONTENTS (cont.)

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AQMP	Air Quality Management Plan
C_2F_6	hexafluoroethane
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
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
CEQA	California Environmental Quality Act
CF_4	tetraflouromethane
CFC	chlorofluorocarbon
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	Riverside County
DPM	diesel particulate matter
EO	Executive Order
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
I-	Interstate
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LLG	Linscott, Law & Greenspan, Engineers
LOS	Level of Service
LST	localized significance threshold
mg/m^3	milligrams per cubic meter
MMT	million metric tons
MT	metric tons

ACRONYMS AND ABBREVIATIONS (cont.)

mpg	miles per gallon
mph	miles per hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NHTSA	National Highway Traffic Safety Administration
NO	nitrogen oxide
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
O_3	ozone
Pb	lead
PFC	perfluorocarbon
PM_{10}	particulate matter less than 10 microns
$PM_{2.5}$	particulate matter less than 2.5 microns
ppm	parts per million
Proactive Engineering	Proactive Engineering Consultants West, Inc.
ROG	reactive organic gas
RTP	Regional Transportation Plan
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SF_6	hexafluoride
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_X	sulfur oxides
SRA	source receptor area
TACs	toxic air contaminants
TIA	Traffic Impact Analysis
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled
VOC	volatile organic compound

This page intentionally left blank

EXECUTIVE SUMMARY

This report presents an assessment of potential air quality and greenhouse gas (GHG) emissions impacts during construction and operation of the proposed Sky Canyon Retail Center Project (project), located in unincorporated County of Riverside (County).

The project would result in emissions of criteria air pollutants during construction and operation. Construction emissions include fugitive dust, heavy construction equipment exhaust, and vehicle trips associated with workers commuting to and from the site and trucks hauling materials and debris. In accordance with South Coast Air Quality Management District (SCAQMD) Rule 403, fugitive dust control measures including the use of an on-site water truck to wet down active grading areas and roads at least twice daily are incorporated into the project design. Operational sources of criteria air pollutant emissions include area, on-site energy use, and transportation. Project emissions of criteria pollutants during construction and operation would remain below SCAQMD emissions thresholds.

The project would be consistent with air quality policies set forth by the SCAQMD as presented in the most recent Air Quality Management Plan.

Project-generated traffic would not result in a carbon monoxide hot spot. Construction and operation of the project would not result in exposure of sensitive receptors to significant quantities of toxic air contaminants. In addition, evaluation of potential odors from the project indicated that associated impacts would be less than significant.

Construction sources of GHG emissions include heavy construction equipment, worker vehicle miles traveled, and water use. Operational sources of GHG emissions include area, energy, transportation, water use, and solid waste. The project would be required to comply with the 2016 Title 24 Energy Code; the 2016 California Green Building Standards Code; the Assembly Bill 341 solid waste diversion target of 75 percent; reduction of potable water use by 20 percent when compared to the statewide average; low-flow water and bathroom fixtures; reduction of wastewater generation by 20 percent; weather-based irrigation systems; and provide areas for storage and collection of recyclables and yard waste.

The project-related construction activities are estimated to generate 876 metric tons (MT) of carbon dioxide equivalent (CO_2e). Construction emissions are amortized over 30 years, such that the proposed construction activities would contribute an average of 29 MT per year of CO_2e emissions. The project-related operational and amortized construction GHG emissions for opening year are estimated to generate 5,115 MT CO_2e. Project emissions would exceed the GHG screening threshold of 3,000 MT CO_2e established by the County Climate Action Plan (CAP). However, with adherence to the applicable emissions-reducing measures defined in CAP Screening Tables, the project would be consistent with the County CAP and result in a less than significant impact related to GHG emissions.

This page intentionally left blank

1.0 INTRODUCTION

This report presents an assessment of potential air quality and greenhouse gas (GHG) emissions impacts during construction and operation of the proposed Sky Canyon Retail Center Project (project) in unincorporated County of Riverside (County), adjacent to the City of Murrieta limits.

1.1 PROJECT LOCATION

The project site is located north of Willows Avenue, south of Murrieta Hot Springs Road, east of Winchester Road, and west of Sky Canyon Drive and is composed of Assessor's Parcel Numbers 920-120-034 and 920-120-035. The project site has a General Plan land use designation of Commercial Retail (County 2015a) and surrounding land uses include a commercial-retail development to the north, Tucalota Creek to the east, with sports fields and single-family residences farther to the east, an undeveloped parcel to the south, and single-family residences across Winchester Road to the west. Interstate (I-) 215 is located approximately 2 miles southwest and Highway 79 is located adjacent to the western boundary of the project site (see Figure 1, *Regional Location*, and Figure 2, *Aerial Photograph*).

1.2 PROJECT DESCRIPTION

The project proposes to develop a commercial and retail center on 7.3 acres. The project comprises a 31,900-square foot grocery store, 10,000-square foot retail store, 7,027-square foot tire shop, 3,000-square foot drive-through restaurant, and a 4,133-square foot car wash (see Figure 3, *Site Plan*). The project would build an extension southward of Sky Canyon Drive from its current southern terminus to connect the roadway with Willows Avenue. The project includes approximately 239,176 square feet of pavement, which would include 161,611 square feet of parking and 77,565 square feet for the Sky Canyon Drive extension. The site would tap into existing utilities for electricity, water, and sewer within adjacent roadways. The project would include two water quality basins and would utilize recycled or reclaimed water during operation. The project would provide enhanced wall and window insulation; solar ready roofs and modest cool roofs; air infiltration and heating and cooling improvements; water efficient water heaters, toilets and faucets; energy efficient appliances; bicycle lockers and racks; local transit within a quarter mile and sidewalks on both sides of the street; parking designated for carpool and low emission vehicles and electric vehicle charging stations; recycling improvements; and would recycle 5 percent of construction and demolition debris. Operational design features of the proposed project include:

- **Area Source Air Pollutant Emission Reductions –** The project would use low volatile organic compound (VOC) coating during operation of the project.

- **Mobile Source Air Pollutant Emission Reductions –** The project would be built in such a way as to include features that work to minimize vehicle miles traveled (VMT). This includes the following measures as described in the California Air Pollution Control Officers Association (CAPCOA; 2010*) Quantifying Greenhouse Gas Mitigation Measures*:

    - *LUT-3 Increase Diversity of Urban and Suburban Developments (Mixed Use)* – Having different types of land uses in close proximity can decrease VMT since trips between land use types are shorter and may be accommodated by non-auto modes of transport. The project would increase diversity of neighborhood land uses by placing a

commercial-retail area within a quarter-mile walking distance and one mile bicycling distance of single- and multi-family residences.

- *LUT-5 Increased Transit Accessibility* – Locating a project near transit facilities increase the use of transit by people traveling to or from the project site. The use of transit results in a mode shift and therefore reduced VMT. The project site is near two Riverside Transit stops located on Highway 79: Winchester FS Winchester Creek, located approximately 800 feet northwest of the project site; and Winchester FS Willows, located along the western boundary of the project site; and one Riverside Transit Stop, Murrieta Hot Springs FS Winchester, located approximately 1,500 feet north of the project site at the intersection of Highway 79 and Murrieta Hot Springs Road.

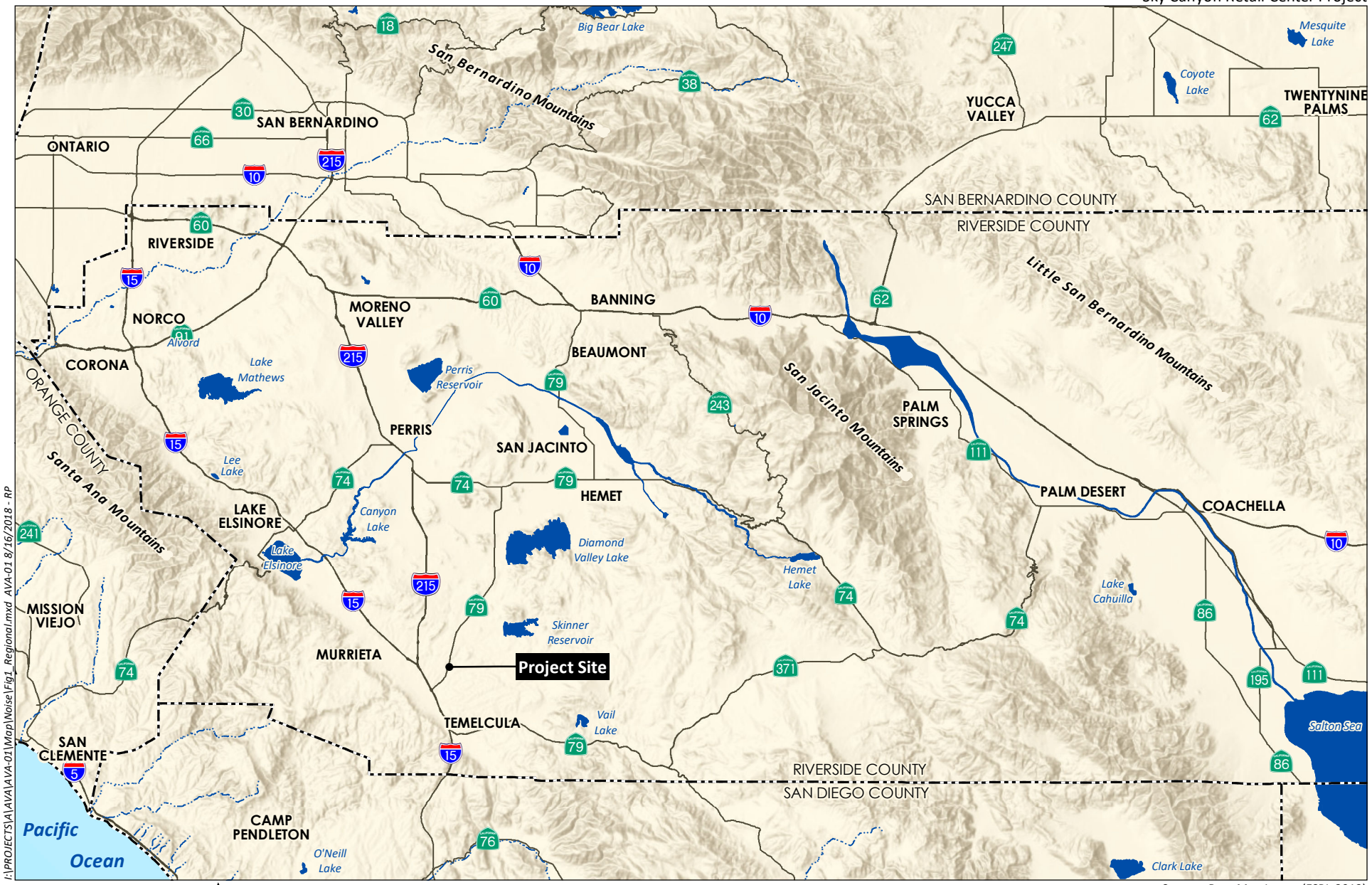
- *SDT-1 Improve Pedestrian Network* – Providing a pedestrian access network to link areas of the project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project would provide a pedestrian access network that internally links all uses and connects to all existing external streets and pedestrian facilities contiguous with the project site.

- **Water and Waste Related Air Pollutant Emission Reductions –** The project would provide 20 percent water reduction per California Green Building Standards Code (CALGreen). A 25 percent operational solid waste diversion rate was applied to the project to account for 75 percent diversion rate consistent with Assembly Bill (AB) 341 standards.

1.3 CONSTRUCTION ACTIVITIES AND PHASING

Project construction is assumed to begin in July 2019 and be completed in March 2021. Construction activities include site preparation, grading, installation of underground utilities and infrastructure, construction of structures, and paving and coating of the buildings. The project would not require demolition, as the site is currently vacant and undeveloped. Grading and underground utilities installation are expected to overlap in November 2019 and building and underground utilities would overlap in December 2019. During site preparation, approximately 5,600 cubic yards of material would be exported and approximately 27,287 cubic yards of soil would be imported during grading activities, generating approximately 1,285 truck trips over one month. Overall construction is expected to last approximately three years.

Construction design features include the following: fugitive dust control measures such as the use of an on-site water truck to wet down active grading areas and roads at least twice daily per South Coast Air Quality Management District (SCAQMD) Rule 403; providing 12 percent moisture content to unpaved roads; limiting vehicle speeds to 15 miles per hour (mph); and using low VOC paint during architectural coating. Detailed construction phasing and equipment assumptions are summarized in Section 4.1, *Methodology*, and provided in Appendix A.



HELIX Environmental Planning

Regional Location

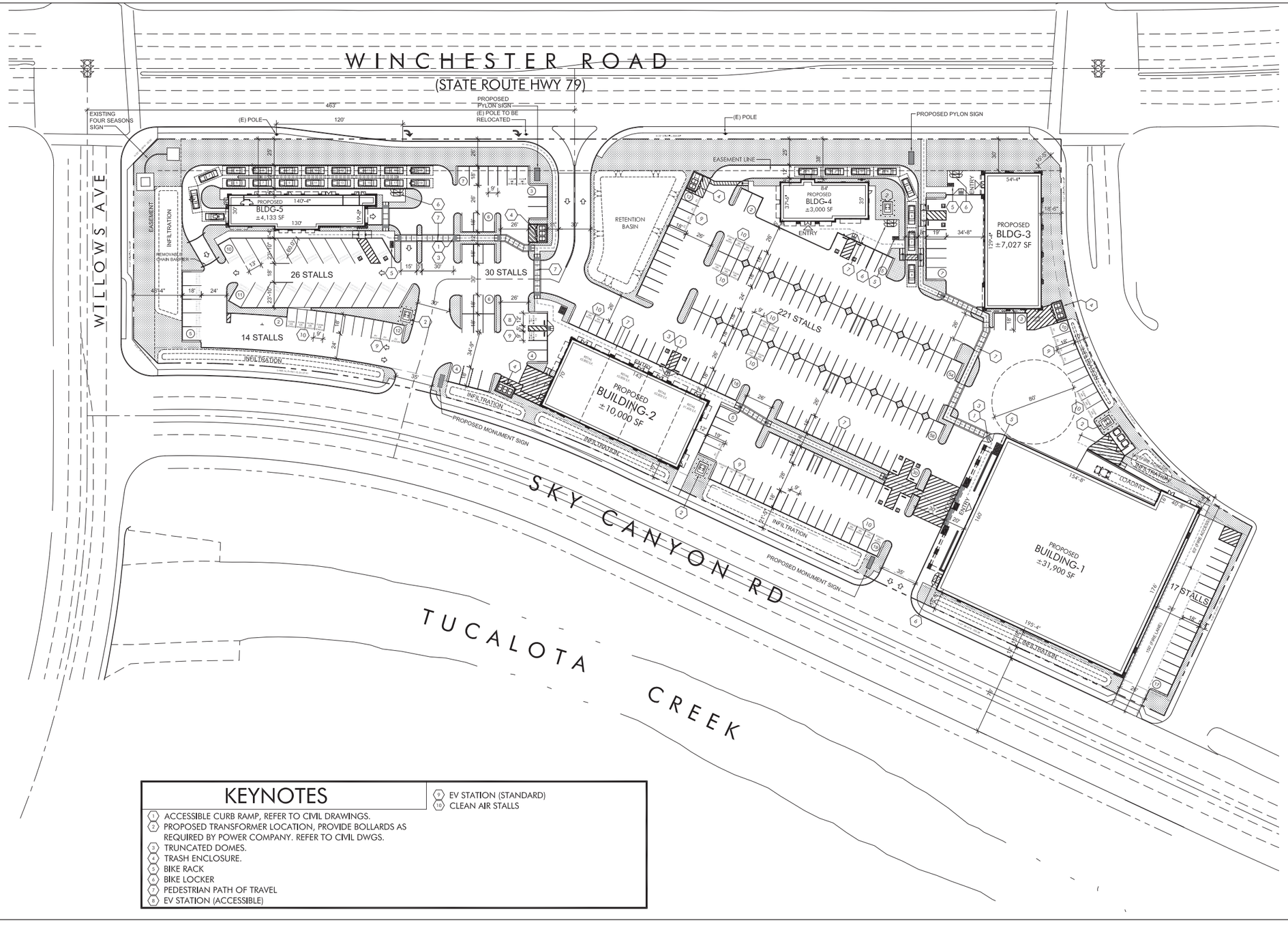
Figure 1

Source: Aerial (Eagle, 2014)

HELIX Environmental Planning

Project Location

Figure 2



KEYNOTES

1. ACCESSIBLE CURB RAMP, REFER TO CIVIL DRAWINGS.
2. PROPOSED TRANSFORMER LOCATION, PROVIDE BOLLARDS AS REQUIRED BY POWER COMPANY. REFER TO CIVIL DWGS.
3. TRUNCATED DOMES.
4. TRASH ENCLOSURE.
5. BIKE RACK
6. BIKE LOCKER
7. PEDESTRIAN PATH OF TRAVEL
8. EV STATION (ACCESSIBLE)
9. EV STATION (STANDARD)
10. CLEAN AIR STALLS

SITE DATA

ZONING

PROPOSED USE	RETAIL
EXISTING ZONING	COMMERCIAL
APN(S)	920-120-034
	920-120-035

SITE AREA

SITE AREA (GROSS)	±10.98 AC±478,097 SF
SITE AREA (NET)	±7.30 AC ±318,056 SF

BUILDING DATA

BUILDING AREA	
BUILDING-1 (GROCERY)	±31,900 SF
BUILDING-2 (RETAIL)	±10,000 SF
BUILDING-3 (TIRE SHOP)	± 7,027 SF
BUILDING-4 (DRIVE THRU)	± 3,000 SF
BUILDING-5 (CARWASH)	± 4,133 SF
TOTAL BUILDING AREA	±56,060 SF
NUMBER OF STORIES	ONE
F.A.R.	0.17

PARKING DATA

BUILDING-1 (31,900 S.F. @ 5.5/1,000 S.F.)	175.45 STALLS
BUILDING-2 (10,000 S.F. @ 5.5/1,000 S.F.)	55.00 STALLS
BUILDING-3 (7,027 S.F. @ 5.5/1,000 S.F.)	38.64 STALLS
BUILDING-4 (3,000 S.F. @ 5.5/1,000 S.F.)	16.50 STALLS
BUILDING-5 (4,133 S.F. @ 5.5/1,000 S.F.)	22.73 STALLS
TOTAL PARKING REQUIRED	308.3 STALLS
PARKING PROVIDED	308 STALLS
ADA	12 STALLS
STANDARD	252 STALLS
EV ACCESSIBLE	2 STALLS
EV STANDARD	17 STALLS
CLEAN AIR	25 STALLS
OVERALL PARKING RATIO	5.49 / 1,000 S.F.

SITE LAYOUT DATA

MIN. DRIVE AISLE WIDTH	24'-0"
STANDARD PARKING STALL	9'-0" x 18'-0"
END PARKING STALL	11'-0" x 18'-0"
BIKE LOCKERS	8 LOCKERS FOR 16 BIKES
BIKE RACKS	8 RACKS FOR 16 BIKES

I:\PROJECTS\1A\AVA1AVA-01_SkyCanyonRetailCenter\Map\Noise\Fig3_SitePlan.indd AVA-01 6/11/19 - SAB

Source: Proactive McKently, Malak (2019)

2.0 REGULATORY SETTING

2.1 AIR QUALITY

2.1.1 Air Pollutants of Concern

2.1.1.1 Criteria Pollutants

Criteria pollutants are defined by state and federal law as a risk to the health and welfare of the general public. In general, air pollutants include the following compounds:

- Ozone (O_3)
- Reactive organic gases (ROGs) or VOCs
- Carbon monoxide (CO)
- Nitrogen dioxide (NO_2)
- Respirable particulate matter and fine particulate matter (PM_{10} and $PM_{2.5}$)
- Sulfur dioxide (SO_2)
- Lead (Pb)

The following specific descriptions of health effects for each of the air pollutants potentially associated with project construction and operation are based on information provided by the California Air Resources Board (CARB; 2009) and the U.S. Environmental Protection Agency (USEPA; 2017a).

Ozone. Ozone is considered a photochemical oxidant, which is a chemical that is formed when VOCs and nitrogen oxides (NO_X), both by-products of fuel combustion, react in the presence of ultraviolet light. Ozone is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma, and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to ozone.

Reactive Organic Gases. ROGs (also known as VOCs) are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. While ROGs can be a health concern indoors, CARB regulates ROGs outdoors mainly because of their ability to create photochemical smog under certain conditions.

Carbon Monoxide. CO is a by-product of fuel combustion. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease and can also affect mental alertness and vision.

Nitrogen Dioxide. NO_2, a species of the aforementioned NO_X, is also a by-product of fuel combustion and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. NO_2 can also increase the risk of respiratory illness.

Respirable Particulate Matter and Fine Particulate Matter. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in these size ranges have been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, fuel combustion, tire and brake wear, construction operations, and windblown dust. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs. Particulate matter originating from diesel exhaust, diesel particulate matter, discussed in further detail below, is classified a carcinogen by CARB.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Lead in the atmosphere occurs as particulate matter. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Lead is also present in some aircraft and racing fuels. Lead has the potential to cause gastrointestinal, central nervous system, kidney and blood diseases upon prolonged exposure. Lead is also classified as a probable human carcinogen. Because emissions of lead are found only in specialty fuels and projects that are permitted by the local air district, lead is not an air quality of concern for the proposed project.

2.1.1.2 Toxic Air Contaminants

The Health and Safety Code (§39655, subd. (a).) defines a toxic air contaminant (TAC) as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the Federal Clean Air Act (CAA) (42 United States Code Section 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The solid emissions in diesel exhaust are known as diesel particulate matter (DPM). In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems (e.g., asthma attacks and other respiratory symptoms). Those most vulnerable are children whose lungs are still developing and the elderly who may have other serious health problems. Overall, diesel engine emissions are responsible for the majority of California's known cancer risk from outdoor air pollutants. Diesel engines also contribute to California's $PM_{2.5}$ air quality problems. In addition, diesel soot causes visibility reduction (CARB 2011).

2.1.2 Federal Air Quality Regulations

2.1.2.1 Federal Clean Air Act

Air quality is defined by ambient air concentrations of specific pollutants identified by the USEPA to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the CAA of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several criteria pollutants. Table 1, *Ambient Air Quality Standards*, shows the federal and state ambient air quality standards for these pollutants.

Table 1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[1]	Secondary[2]
O_3	1 Hour	0.09 ppm (180 µg/m^3)	–	–
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	Same as Primary
PM_{10}	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	Same as Primary
$PM_{2.5}$	24 Hour	–	35 µg/m^3	Same as Primary
	AAM	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
CO	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
	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)	–	–
NO_2	1 Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	–
	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
SO_2	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	–	–
Lead	30-day Avg.	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m^3	

Table 1 (cont.)
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[1]	Secondary[2]
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

Source: CARB 2016

[1] National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

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

O_3: ozone; ppm: parts per million; µg/m^3: micrograms per cubic meter; PM_{10}: particulate matter with an aerodynamic diameter of 10 microns or less;

AAM: Annual Arithmetic Mean; $PM_{2.5}$: fine particulate matter; CO: carbon monoxide; mg/m^3: milligrams per cubic meter; NO_2 nitrogen dioxide; SO_2: sulfur dioxide; km: kilometer; –: No Standard.

The USEPA has classified air basins (or portions thereof) as being in "attainment," "nonattainment," "maintenance," or "unclassified" for each criteria air pollutant, based on whether or not the NAAQS have been achieved. Upon attainment of a standard for which an area was previously designated nonattainment, the area will be classified as a maintenance area. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. The project site is located within the Riverside County portion of the South Coast Air Basin (SCAB) and, as such, is in an area designated as a nonattainment area for certain pollutants that are regulated under the CAA. Table 2, *South Coast Air Basin Attainment Status*, lists the federal and state attainment status of the SCAB for the criteria pollutants. With respect to federal air quality standards, the USEPA classifies the SCAB as in attainment for PM_{10}, CO, NO_2, SO_2, and lead, and in nonattainment for 8-hour ozone and $PM_{2.5}$.

Table 2
SOUTH COAST AIR BASIN ATTAINMENT STATUS
(RIVERSIDE COUNTY PORTION)

Criteria Pollutant	Federal Designation	State Designation
O_3 (1-hour)	(No federal standard)	Nonattainment
O_3 (8-hour)	Extreme Nonattainment	Nonattainment
CO	Attainment (Maintenance)	Attainment
PM_{10}	Attainment (Maintenance)	Nonattainment
$PM_{2.5}$	Serious Nonattainment	Nonattainment
NO_2	Attainment (Maintenance)	Attainment
SO_2	Unclassifiable/Attainment	Unclassifiable/Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Attainment
Visibility	(No federal standard)	Attainment

Source: SCAQMD 2016

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The SIP is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has the responsibility to review all SIPs to determine whether they conform to the requirements of the CAA.

2.1.3 California Air Quality Regulations

2.1.3.1 California Clean Air Act

The federal CAA allows states to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the CalEPA, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California Ambient Air Quality Standards (CAAQS). CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts.

In addition to primary and secondary AAQS, the state has established a set of episode criteria for ozone, CO, NO_2, SO_2, and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Table 2, above, lists the state attainment status of the SCAB for the criteria pollutants. Under state designation, the SCAB is currently in attainment for CO, NO_2, SO_2, and lead; and in nonattainment for ozone, PM_{10}, and $PM_{2.5}$.

2.1.4 Local Regulations

2.1.4.1 South Coast Air Quality Management District

Air quality in the non-desert portion of the County is regulated by the SCAQMD. As a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), County transportation commissions, and local governments and cooperates actively with all federal and state government agencies. The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary.

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMP).

On March 3, 2017, the SCAQMD adopted the 2016 AQMP, which is a regional and multi-agency effort (SCAQMD, CARB, SCAG, and USEPA). The 2016 AQMP represents a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures. The plan seeks to achieve multiple goals in partnership with other entities promoting reductions in criteria pollutant, GHGs, and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017).

The AQMP, in combination with those from all other California nonattainment areas with serious (or worse) air quality problems, is submitted to CARB, which develops the California SIP. The SIP relies on the same information from SCAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The current federal and state attainment status for the SCAB is presented above, in Table 2.

2.2 GREENHOUSE GASES

2.2.1 Climate Change Overview

Global climate change refers to changes in average climatic conditions on Earth including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by atmospheric gases. These gases are commonly referred to as GHGs because they function like a greenhouse by letting sunlight in but preventing heat from escaping, thus warming the Earth's atmosphere.

GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The temperature record shows a decades-long trend of warming, with 2016 global surface temperatures ranking as the warmest year on record (National Aeronautics and Space Administration [NASA] 2016). The newest release in long-term warming trends ranked 2017 as the second warmest year on record with an increase of 1.62 degrees Fahrenheit compared to the 1951-1980 average (NASA 2018). GHG emissions from human activities are the most significant driver of observed climate change since the mid-20th century (Intergovernmental Panel on Climate Change [IPCC] 2013). The IPCC constructed

several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The statistical models show a "high confidence" that temperature increase caused by anthropogenic GHG emissions could be kept to less than two degrees Celsius relative to pre-industrial levels if atmospheric concentrations are stabilized at about 450 parts per million (ppm) carbon dioxide equivalent (CO_2e) by the year 2100 (IPCC 2014).

2.2.2 Types of Greenhouse Gases

The GHGs defined under California's AB 32 include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Carbon Dioxide. CO_2 is the most important and common anthropogenic GHG. CO_2 is an odorless, colorless GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of CO_2 include burning fuels, such as coal, oil, natural gas, and wood. Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. The atmospheric CO_2 concentration in 2010 was 390 ppm, 39 percent above the concentration at the start of the Industrial Revolution (approximately 280 ppm in 1750). As of April 2018, the CO_2 concentration exceeded 408 ppm, a 46 percent increase since 1750 (National Oceanic and Atmospheric Administration, Earth System Research Laboratory 2018).

Methane. CH_4 is the main component of natural gas used in homes. A natural source of methane is from the decay of organic matter. Geological deposits known as natural gas fields contain methane, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

Nitrous Oxide. N_2O is produced by both natural and human-related sources. N_2O is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic (fatty) acid production, and nitric acid production.

Hydrofluorocarbons. Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons (CFCs) are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped as required by the 1989 Montreal Protocol.

Sulfur Hexafluoride. SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHG emissions to disperse around the globe. Because GHG emissions vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, because methane and N_2O are approximately 25 and 298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they

have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). CO_2e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 3, *Global Warming Potentials and Atmospheric Lifetimes*.

Table 3
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-134a	14	1,430
PFC: Tetraflouromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC 2007
HFC: hydrofluorocarbon; PFC: perfluorocarbon

2.2.3 Federal Greenhouse Gas Regulations

2.2.3.1 Federal Clean Air Act

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. U.S. Environmental Protection Agency* that CO_2 is an air pollutant, as defined under the CAA, and that the USEPA has the authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO_2, CH_4, N_2O, HFC, PFC, and SF_6) threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the USEPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA). The standards were established on April 1, 2010 for 2012 through 2016 model year vehicles and on October 15, 2012 for 2017 through 2025 model year vehicles (USEPA 2017b; USEPA and NHTSA 2012).

2.2.3.2 Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

The USEPA and the NHTSA have been working together on developing a national program of regulations to reduce GHG emissions and to improve fuel economy of light-duty vehicles. The USEPA is finalizing the first-ever national GHG emissions standards under the CAA, and the NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. On April 1, 2010, the USEPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025. The rules required these vehicles to meet an estimated combined average emissions level of 250 grams per mile by 2016, decreasing to an average industry fleet-wide level of 163 grams per mile in model year 2025. The 2016 standard is equivalent to 35.5 miles per gallon (mpg), and the 2025 standard is equivalent to 54.5 mpg if the levels were achieved solely through improvements in fuel efficiency. The agencies expect, however, that a portion of these improvements will be made through improvements in air conditioning leakage and the

use of alternative refrigerants that would not contribute to fuel economy. These standards would cut GHG emissions by an estimated 2 billion metric tons (MT) and 4 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2017–2025). The combined USEPA GHG emission standards and NHTSA CAFE standards resolve previously conflicting requirements under both federal programs and the standards of the State of California and other states that have adopted the California standards (USEPA 2017b; USEPA and NHTSA 2012).

2.2.4 California Greenhouse Gas Regulations

2.2.4.1 California Code of Regulations, Title 24, Part 6

California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions.

The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. The latest update to the Title 24 standards occurred in 2016 and went into effect on January 1, 2017. The 2016 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvements to the residential standards include improvements for attics, walls, water heating, and lighting. The Energy Efficiency Standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards – the energy budgets – that vary by climate zone (of which there are 16 in California) and building type; thus, the Energy Efficiency Standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach. The next update to Title 24 will occur in 2019 and go into effect on January 1, 2020. The 2019 Standards will continue to improve the energy efficiency of new buildings and alterations to existing buildings.

2.2.4.2 California Green Building Standards Code

The CALGreen Building Standards Code (CCR Title 24, Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including industrial buildings) throughout California. The code is Part 11 of the California Building Standards Code in Title 24 of the CCR (California Building Standards Commission 2017). The current 2016 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings went into effect on January 1, 2017. The 2019 Standards, which will go into effect January 2020, will continue to improve upon the current 2016 Standards.

The development of CALGreen is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

CALGreen contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

2.2.4.3 Executive Order S-3-05

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

2.2.4.4 Assembly Bill 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that CARB develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed by AB 32 to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

2.2.4.5 Executive Order B-30-15

On April 29, 2015, EO B-30-15 established a California GHG emission reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG emission reduction targets with those of leading international governments, including the 28 nation European Union. California is on track to meet or exceed the target of reducing GHGs emissions to 1990 levels by 2020, as established in AB 32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

2.2.4.6 Senate Bill 32

Senate Bill (SB) 32 (Amendments to the California Global Warming Solutions Action of 2006) extends California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EO B-30-15 of 80 percent below 1990 emissions levels by 2050.

2.2.4.7 Assembly Bill 197

A condition of approval for SB 32 was the passage of AB 197. AB 197 requires that CARB consider the social costs of GHG emissions and prioritize direct reductions in GHG emissions at mobile sources and large stationary sources. AB 197 also gives the California legislature more oversight over CARB through the addition of two legislatively appointed members to the CARB Board and the establishment a legislative committee to make recommendations about CARB programs to the legislature.

2.2.4.8 Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to merge its rules with the federal CAFE rules for passenger vehicles (CARB 2013). In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single packet of standards called Advanced Clean Cars (CARB 2013).

2.2.4.9 Assembly Bill 341

The state legislature enacted AB 341 (California Public Resource Code Section 42649.2), increasing the diversion target to 75 percent statewide. AB 341 requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The final regulation was approved by the Office of Administrative Law on May 7, 2012, and went into effect on July 1, 2012.

2.2.4.10 Executive Order S-01-07

This EO, signed by Governor Schwarzenegger on January 18, 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in April 2010. Although challenged in 2011, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause in September 2013. CARB is therefore continuing to implement the LCFS statewide.

2.2.4.11 Senate Bill 350

Approved by Governor Brown on October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard eligible resources, including solar, wind, biomass, and geothermal. In addition, large utilities are required to develop and submit Integrated Resource Plans to detail how each entity will meet their customers resource needs, reduce GHG emissions, and increase the use of clean energy.

2.2.4.12 Senate Bill 375

SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy categorized as "transit priority projects" would receive incentives to streamline California Environmental Quality Act (CEQA) processing.

2.2.4.13 Senate Bill 100

Approved by Governor Brown on September 10, 2018, SB 100 extends the renewable electricity procurement goals and requirements of SB 350. SB 100 requires that all retail sale of electricity to California end-use customers be procured from 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045.

2.2.4.14 California Air Resources Board: Scoping Plan

On December 11, 2008, the CARB adopted the Scoping Plan (CARB 2008) as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. Measures applicable to development projects include those related to energy-efficiency building and appliance standards, the use of renewable sources for electricity generation, regional transportation targets, and green building strategy. Relative to transportation, the Scoping Plan includes nine measures or recommended actions related to reducing VMT and vehicle GHGs through fuel and efficiency measures. These measures would be implemented statewide rather than on a project-by-project basis.

In response to EO B-30-15 and SB 32, all state agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the Scoping Plan to reflect the 2030 target and, therefore, is moving forward with the update process (CARB 2014). The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue driving down emissions. CARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target set by EO B-30-15 and codified by SB 32. The 2017 Climate Change Scoping Plan Update, Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target, was adopted in December 2017. The Scoping Plan Update establishes a proposed framework for California to meet a 40 percent reduction in GHGs by 2030 compared to 1990 levels (CARB 2017).

2.2.5 Local Regulations

2.2.5.1 Riverside County

The County developed a Climate Action Plan (CAP) that was adopted in December 2015 (County 2015b). The implementation of the CAP will also help lead agencies to assess cumulative impacts of a project and provide a means for future projects to address GHG impacts under CEQA. A lead agency may conclude that a project's GHG impact is not cumulatively significant if the project demonstrates consistency with the CAP (CEQA Guidelines Section 15183.5[h][3]).

Through the CAP, the County has established goals and policies that incorporate environmental responsibility into its daily management of residential, commercial and industrial growth, education, energy and water use, air quality, transportation, waste reduction, economic development and open space and natural habitats to further their commitment. Following the state's adopted AB 32 GHG reduction target, the County has set a goal to reduce emissions back to 1990 levels by the year 2020. This target was calculated as a 15 percent decrease from 2008 levels, as recommended in the AB 32 Scoping Plan. The estimated community-wide emissions for the year 2020, based on population and housing growth projections associated with the assumptions used in the proposed General Plan Update, are 12,129,497 MT CO_2e. To reach the reduction target, the County must offset this growth in emissions and reduce community-wide emissions to 5,960,998 MT CO_2e by the year 2020. The development of the

CAP coincides with Riverside County's General Plan Update. A community-wide emissions inventory is also calculated for the horizon year of 2035. The socioeconomic growth rates from the General Plan Update were used to estimate the 2035 emissions.

To reach the reduction target, the County has included additional local reduction measures in the CAP that encourage energy efficiency and renewable energy in buildings, transit-oriented planning, water conservation, and increased waste diversion.

3.0 EXISTING CONDITIONS

3.1 CLIMATE AND METEOROLOGY

The project site is in the SCAB, which consists of all or part of four counties: Los Angeles, San Bernardino, Riverside, and Orange. The distinctive climate of the SCAB is determined by its terrain and geographic location. The SCAB is a coastal plain with connecting broad valleys and low hills. It is bound by the Pacific Ocean to the southwest and high mountains around the rest of its perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light, average wind speeds.

The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. Winds in the project area are usually driven by the dominant land/ sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night, the wind generally slows and reverses direction traveling toward the sea. Local canyons can also alter wind direction, with wind tending to flow parallel to the canyons. The vertical dispersion of air pollutants in the SCAB is hampered by the presence of persistent temperature inversions. High pressure systems, such as the semi-permanent high-pressure zone in which the SCAB is located, are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. Such inversions restrict the vertical dispersion of air pollutants released into the marine layer and, together with strong sunlight, can produce worst-case conditions for the formation of photochemical smog. The basin-wide occurrence of inversions at 3,500 feet above mean sea level or less averages 191 days per year (SCAQMD 1993).

The annual average maximum temperature as measured at the Bell Canyon climatic station, approximately 26 miles east of the project site, is 76.6°Farenheit (F). The highest monthly average maximum temperature (84.6°F to 87.6°F) occurred in September of 2015 and in August of 2016 and 2017. The lowest monthly average minimum temperature (48.7°F to 49.5°F) occurred in December of 2015 and in January of 2016 and 2017. The average annual precipitation over the last three years was approximately 11.6 inches (Western Regional Climate Center 2018).

3.2 EXISTING AIR QUALITY

3.2.1 Criteria Pollutants

3.2.1.1 Attainment Designations

Attainment designations are discussed in Section 2.1 and Table 2. The SCAB is a federal and state nonattainment area for 8-hour ozone and $PM_{2.5}$. The SCAB is also a state nonattainment area for 1-hour ozone and PM_{10}.

3.2.1.2 Monitored Air Quality

The SCAQMD maintains monitoring stations to measure ambient concentrations of pollutants in the SCAB. The nearest monitoring station, approximately 4 miles northeast of the project site, is the Winchester 33700 Borel Road monitoring station which monitors ozone and $PM_{2.5}$. The Perris monitoring station, approximately 15 miles northeast of the project site, was used for PM_{10} and the Lake Elsinore monitoring station, approximately 18 miles northeast of the project site, was used for NO_2 monitoring data. Table 4, *Air Quality Monitoring Data*, presents a summary of the ambient pollutant concentrations monitored at the three air quality monitoring stations during the last three years (2015 through 2017) for which the SCAQMD has reported data.

Table 4
AIR QUALITY MONITORING DATA

Pollutant Standards	2015	2016	2017
Ozone (O_3) – *Winchester Station*			
Maximum concentration 1-hour period (ppm)	0.100	0.092	0.104
Maximum concentration 8-hour period (ppm)	0.087	0.081	0.088
Days above 1-hour state standard (>0.09 ppm)	1	0	4
Days above 8-hour state/federal standard (>0.070 ppm)	23/20	20/19	49/47
Nitrogen Dioxide (NO_2) - *Lake Elsinore Station*			
Maximum 1-hour concentration (ppm)	47.2	51.3	49.0
Days above state 1-hour standard (0.18 ppm)	0	0	0
Days above federal 1-hour standard (0.100 ppm)	0	0	0
Suspended Particulates (PM_{10}) – *Perris Station*			
Maximum 24-hour concentration ($\mu g/m^3$)	188.0	76.0	75.4
Estimated days above state standard (>50 $\mu g/m^3$)	25.7	*	*
Estimated days above federal standard (>150 $\mu g/m^3$)	6.6	0	0
Suspended Particulates ($PM_{2.5}$) – *Winchester Station*			
Maximum 24-hour concentration ($\mu g/m^3$)	24.5	26.9	21.6
Days above federal standard (>35 $\mu g/m^3$)	*	*	*

Source: CARB 2018a
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter
*insufficient data available to determine the value

The 1- and 8-hour ozone standards were exceeded numerous times in each of the sample years. It was estimated that the state PM_{10} standard was exceeded 25.7 times in 2015 and the federal PM_{10} standard was exceeded 6.6 times in 2015. Data for NO_2 and $PM_{2.5}$ showed no exceedance or insufficient data.

3.2.2 Greenhouse Gases

For 2014, total GHG emissions worldwide were estimated at 45.7 billion MT CO_2e (World Resources Institute 2017). The U.S. contributed the second largest portion of GHG emissions (behind China) at 14 percent of global emissions, with 6.4 billion MT CO_2e in 2014. On a national level in 2014, approximately 27 percent of GHG emissions are associated with transportation and about 31 percent are associated with electricity generation (USEPA 2018).

CARB performs statewide GHG inventories. The inventory is divided into six broad sectors; agriculture and forestry, commercial, electricity generation, industrial, residential, and transportation. Emissions are quantified in MMT CO_2e. Table 5, *California Greenhouse Gas Emissions by Sector*, shows the estimated statewide GHG emissions for the years 1990, 2000, 2010, and 2016.

Table 5
CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR
(MMT CO_2e)

Sector	1990	2000	2010	2016
Agriculture and Forestry	23.6 (5%)	32.1 (7%)	34.5 (8%)	33.8 (8%)
Commercial	14.4 (3%)	15.0 (3%)	21.6 (5%)	23.0 (5%)
Electricity Generation	110.6 (26%)	105.2 (22%)	90.5 (20%)	69.0 (16%)
Industrial	103.0 (24%)	105.4 (22%)	102.7 (23%)	100.4 (23%)
Residential	29.7 (7%)	31.8 (7%)	32.2 (7%)	28.3 (7%)
Transportation	150.7 (35%)	178.1 (38%)	173.7 (38%)	174.0 (41%)
Unspecified Remaining	1.3 (<1%)	1.2 (<1%)	0.8 (<1%)	0.8 (<1%)
TOTAL	**433.3**	**468.8**	**456.0**	**429.4**

Source: CARB 2007 and CARB 2018b

As shown in Table 5, statewide GHG emissions totaled 433 MMT CO_2e in 1990, 469 MMT CO_2e in 2000, 456 MMT CO_2e in 2010, and 429 MMT CO_2e in 2016. Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

A Riverside County regional emissions inventory was prepared as part of their CAP. The 2008 emissions inventory for the County is duplicated below in Table 6, *Riverside County Greenhouse Gas Emissions by Sector*. The sectors included in this inventory are somewhat different from those in the statewide inventory.

Table 6
RIVERSIDE COUNTY GREENHOUSE GAS EMISSIONS
BY SECTOR (MMT CO_2e)

Sector	2010
Transportation	2.85
Energy	1.58
Area Sources	0.27
Purchased Water	0.15
Solid Waste	0.13
Agriculture	2.03
TOTAL	**7.01**

Source: County 2015b

Similar to the statewide emissions, transportation-related GHG emissions contributed the most countywide with 29 percent. Agriculture followed with approximately 23 percent.

4.0 METHODOLOGY AND SIGNIFICANCE CRITERIA

4.1 METHODOLOGY

Criteria pollutant and GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2. CalEEMod is a computer model used to estimate criteria air pollutant and GHG emissions resulting from construction and operation of land development projects throughout the state of California. CalEEMod was developed by the SCAQMD with the input of several air quality management and pollution control districts. The input data and subsequent construction and operation emission estimates for the proposed project are discussed below. CalEEMod output files are included in Appendix A.

4.1.1 Construction Emissions

As described above, construction emissions are assessed using the CalEEMod. CalEEMod contains OFFROAD2011 emission factors and EMFAC2014 emission factors from CARB's models for off-road equipment and on-road vehicles, respectively. The construction analysis included modeling of the projected construction equipment that would be used during each construction activity and quantities of earth and debris to be moved. The model calculates emissions of CO, PM_{10}, $PM_{2.5}$, SO_2, and the ozone precursors ROG and NO_X.

Construction input data for CalEEMod include, but are not limited to, (1) the anticipated start and finish dates of construction activity; (2) inventories of construction equipment to be used; (3) areas to be excavated and graded; and (4) volumes of materials to be exported from and imported to the project area. The analysis assessed maximum daily emissions from individual construction activities, including site preparation, grading, underground utility installation, building construction, paving, and architectural coating. Construction would require heavy equipment during site preparation, grading, trenching for underground infrastructure, building construction, and paving. Construction equipment estimates are based on CalEEMod defaults. Table 7, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each phase of construction.

Table 7
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Phase	Equipment	Number
Site Preparation	Rubber Tired Dozers	3
	Tractors/Loaders/Backhoes	4
Grading	Excavators	1
	Graders	1
	Rubber Tired Dozers	1
	Tractors/Loaders/Backhoes	3
Underground Utilities/Infrastructure	Excavators	2
Building Construction	Cranes	1
	Forklifts	3
	Generator Sets	1
	Tractors/Loaders/Backhoes	3
	Welders	1
Paving	Pavers	2
	Paving Equipment	2
	Rollers	2
Architectural Coating	Air Compressors	1

Source: CalEEMod Defaults supplemented with basic equipment for utilities subphase.
Note: Output data, including equipment horsepower, is provided in Appendix A

The construction schedule was based on information provided by Proactive Engineering Consultants West, Inc. (Proactive Engineering) and CalEEMod defaults. As shown in Table 8, *Anticipated Construction Schedule*, project development is estimated to start in July 2019 and be complete by March 2021. Grading and hauling activity would overlap underground utilities installation for 20 days in November 2019 and underground utilities installation would overlap building construction in December 2019 for 20 days.

Table 8
ANTICIPATED CONSTRUCTION SCHEDULE

Construction Activity	Construction Period		
	Start	End	Number of Working Days
Site Preparation	7/1/2019	7/26/2019	20
Grading	10/1/2019	11/25/2019	40
Underground Utilities/Infrastructure	11/1/2019	12/26/2019	40
Building Construction	12/1/2019	12/31/2020	284
Paving	1/1/2021	2/25/2021	40
Architectural Coating	2/26/2021	3/25/2021	20

Source: Schedule provided by Proactive Engineering and CalEEMod defaults
Note: Output data is provided in Appendix A

The quantity, duration, and the intensity of construction activity influence the amount of construction emissions and their related pollutant concentrations that occur at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer time period, emissions could be reduced

because of (1) a more modern and cleaner-burning construction equipment fleet mix than incorporated in the CalEEMod, and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval). A complete listing of the assumptions used in the analysis and model output is provided in Appendix A of this report.

CalEEMod has the capability to calculate reductions in construction emissions from the effects of dust control, diesel-engine classifications, and other selected emissions reduction measures. Emissions calculations assume application of water during grading and a 15-mph speed limit on unpaved surfaces in compliance with SCAQMD Rule 403, Fugitive Dust. Based on CalEEMod, Version 2016.3.2, the control efficiency for watering two times per day is 55 percent.

CalEEMod estimates construction emissions for each year of construction activity based on the annual construction equipment profile and other factors determined as needed to complete all phases of construction by the target completion year. As such, each year of construction activity has varying quantities of GHG emissions. Per County Guidance, total construction GHG emissions resulting from the project are amortized over 30 years and added to operational GHG emissions.

4.1.2 Operation Emissions

Operational impacts were estimated using CalEEMod. Operational sources of emissions include area, energy, transportation, water use, and solid waste.

4.1.2.1 Area Source Emissions

Project area sources include emissions from landscaping equipment. Emissions associated with area sources were estimated using the CalEEMod default values for the project.

4.1.2.2 Energy Emissions

The project would use electricity for lighting, heating and cooling. Electricity generation typically entails the combustion of fossil fuels, including natural gas and coal, which are then stored and transported to end users. A building's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant). Project electricity would be supplied by Southern California Edison. Energy source emissions were estimated assuming implementation of energy-reducing project design features to comply with 2016 Title 24 standards.

4.1.2.3 Vehicular (Mobile) Sources

Operational emissions from mobile source emissions are associated with project-related vehicle trip generation and trip length. Based on the trip generation rate from the TIA (LLG 2018) prepared for the project, the project would generate 4,652 average daily trips. CalEEMod default vehicle speeds, trip purpose, and distance were used. As described in Section 1.2, LUT-3, *Increase Diversity of Urban and Suburban Developments (Mixed Use),* LUT-5, *Increased Transit Accessibility*, and SDT-1, *Improve Pedestrian Network*, were incorporated in CalEEMod.

4.1.2.4 Solid Waste Sources

Solid waste generated by the project would also contribute to GHG emissions. Treatment and disposal of solid waste produces emissions of methane. Modeling was conducted using CalEEMod defaults.

4.1.2.5 Water Sources

Water-related GHG emissions are from the conveyance and treatment of water. The California Energy Commission's 2006 Refining Estimates of Water-Related Energy Use in California defines average energy values for water in southern California. These values are used in CalEEMod to establish default water-related emission factors. Modeling was conducted using these defaults and a 20 percent reduction in potable water use and wastewater generation in accordance with CALGreen.

4.1.3 Localized Significance Threshold Methodology

As part of the SCAQMD's environmental justice program, more attention has been focused on localized air quality effects. In addition to the CEQA significance thresholds for mass daily emissions and regional conditions, the SCAQMD has established thresholds for ambient air quality (Table 9, *SCAQMD Thresholds of Significance*) to address localized impacts. Also, while regional impact analysis is based on attaining or maintaining regional emissions standards, localized impact analysis compares the concentration of a pollutant at a receptor site to a health-based standard.

SCAQMD staff then developed localized significance threshold (LST) methodology and mass rate look-up tables by source receptor area (SRA) that can be used by public agencies to determine whether a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard; they are developed based on the ambient concentrations of that pollutant for each SRA (SCAQMD 2009). The LST methodology translates the concentration standards into emissions thresholds that are a function of project site area, source to receptor distance, and the location within the SCAB. The LST methodology is recommended to be limited to projects of 5 acres or less and to avoid the need for complex dispersion modeling. For projects that exceed 5 acres, such as the proposed project, the 5-acre LST look-up values can be used as a screening tool to determine which pollutants require detailed analysis (Sun 2017). This approach is conservative as it assumes that all on-site emissions would occur within a 5-acre area and over-predicts potential localized impacts (i.e., more pollutant emissions occurring within a smaller area and within closer proximity to potential sensitive receptors). If a project exceeds the LST look up values, then the SCAQMD recommends that project-specific localized air quality modeling be performed.

The proposed project is within SRA 26, Temecula Valley. The closest sensitive receptors are the single-family residences approximately 200 feet (61 meters) east of the project site and east of Highway 79. Therefore, the LSTs in SRA 26 for receptors located at 164 feet (50 meters) are used for project sites greater than 5 acres.

Table 9
SCAQMD THRESHOLDS OF SIGNIFICANCE

Mass Daily Thresholds (pounds per day)		
Pollutant	**Construction**	**Operation**
VOC	75	55
NO_X	100	55
CO	550	550
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_X	150	150
Lead	3	3
Toxic Air Contaminants		
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Ambient Air Quality for Criteria Pollutants		
NO_2	1-hour average ≥ 0.18 ppm Annual average ≥ 0.03 ppm	
CO	1-hour average ≥ 20.0 ppm (state) 8-hour average ≥ 9.0 ppm (state/federal)	
PM_{10}	24-hour average ≥ 10.4 µg/m^3 (construction) 24-hour average ≥ 2.5 µg/m^3 (operation) Annual average ≥ 1.0 µg/m^3	
$PM_{2.5}$	24-hour average ≥ 10.4 µg/m^3 (construction) 24-hour average ≥ 2.5 µg/m^3 (operation)	
SO_2	1-hour average ≥ 0.075 ppm 24-hour average ≥ 0.04 ppm	

Source: SCAQMD 2015
lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; PM_{10}: respirable particulate matter with a diameter of 10 microns or less; $PM_{2.5}$: fine particulate matter with a diameter of 2.5 microns or less; SO_X: sulfur oxides; TACs: toxic air contaminants; GHG: greenhouse gas emissions; MT/yr: metric tons per year; CO_2e: carbon dioxide equivalent; NO_2: nitrogen dioxide; ppm: parts per million; µg/m^3: micrograms per cubic meter.

4.2 SIGNIFICANCE CRITERIA

4.2.1 Air Quality

The following significance thresholds are based on Appendix G of the state CEQA Guidelines. A significant impact is identified if the project would result in any of the following:

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

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

(3) Expose sensitive receptors to substantial pollutant concentrations;

(4) Result in a cumulatively-considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality

standard (including releasing emissions which exceed quantitative standards for ozone precursors); or

(5) Create objectionable odors affecting a substantial number of people.

Appendix G of the State CEQA Guidelines states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. The SCAQMD has established significance thresholds to assess the regional and localized impacts of project-related air pollutant emissions. The significance thresholds are updated, as needed, to appropriately represent the most current technical information and attainment status in the SCAB. Table 9 presents the most current significance thresholds, including regional daily thresholds for short-term construction and long-term operational emissions; maximum incremental cancer risk and hazard indices for TACs; and maximum ambient concentrations for exposure of sensitive receptors to localized pollutants. A project with daily emission rates, risk values, or concentrations below these thresholds is generally considered to have a less than significant effect on air quality.

4.2.2 Greenhouse Gases

Given the relatively small levels of emissions generated by a typical development in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Thus, the potential for a significant GHG impact is limited to cumulative impacts.

According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

(1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

(2) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The County of Riverside's CAP establishes a screening level threshold of 3,000 MT CO_2e per year for commercial projects. County guidance also recommends including construction emissions (amortized over a typical duration of 30 years) in the comparison to the screening threshold. For projects that exceed this screening level, compliance with the CAP Screening Tables or a reduction of 25 percent over the business as usual scenario must be demonstrated.

5.0 AIR QUALITY IMPACT ANALYSIS

This section evaluates potential direct impacts of the proposed project related to the air pollutant emissions. Project-level air quality modeling was completed as part of this analysis. Complete modeling results are included as Appendix A of this report.

5.1 CONSISTENCY WITH AIR QUALITY PLANS

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, economy, community development, and environment. With regard to air quality planning, SCAG has prepared the RTP/SCS, a long-range transportation plan that uses growth forecasts to project trends out over a 20-year period to identify regional transportation strategies to address mobility needs. These growth forecasts form the basis for the land use and transportation control portions of the AQMP. These documents are utilized in the preparation of the air quality forecasts and consistency analysis included in the AQMP. Both the RTP/SCS and AQMP are based, in part, on projections originating with County and City General Plans.[1]

The proposed project is consistent with the County of Riverside General Plan land use of Commercial Retail (County 2015a). Because the project is consistent with the local general plan, pursuant to SCAQMD guidelines, the proposed project is considered consistent with the region's AQMP. As such, proposed project-related emissions are accounted for in the AQMP, which is crafted to bring the basin into attainment for all criteria pollutants. Accordingly, the proposed project would be consistent with the projections in the AQMP, thus resulting in a less than significant impact.

5.2 CONFORMANCE TO FEDERAL AND STATE AIR QUALITY STANDARDS

The project would generate criteria pollutants in the short-term during construction and the long term during operation. To determine whether a project would result in emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation, a project's emissions are evaluated based on the quantitative emission thresholds established by the SCAQMD (as shown in Table 9).

5.2.1 Construction

5.2.1.1 Project Emissions

The project's construction emissions were estimated using the CalEEMod model as described in Section 4.1.1. Project-specific input was based on general information provided in Section 1.0, assumptions provided by Proactive Engineering, and default model settings to estimate reasonably conservative conditions. Additional details of phasing, selection of construction equipment, and other input parameters, including CalEEMod data, are included in Appendix A.

The results of the calculations for project construction are shown in Table 10, *Maximum Daily Construction Emissions*. The data are presented as the maximum anticipated daily emissions for comparison with the SCAQMD thresholds.

[1] SCAG serves as the federally designated metropolitan planning organization for the southern California region.

Table 10
MAXIMUM DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (pounds/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	5	53	24	<0.5	11	7
Grading	4	62	22	<0.5	7	4
Underground Utilities/Infrastructure	1	5	7	<0.5	<0.5	<0.5
Building Construction	3	26	22	<0.5	3	2
Paving	2	13	15	<0.5	1	1
Architectural Coating	15	2	2	<0.5	<0.5	<0.5
Maximum Daily Emissions[1]	**15**	**67**	**29**	**0**	**11**	**7**
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)

[1] Maximum daily emissions for ROG occur during architectural coating; the maximum daily emissions for NO_X and CO, and SO_X occur when grading and underground utilities phases overlap; and the maximum daily emissions for PM occur during site preparation activities.

Note: Totals may not sum due to rounding

As shown in Table 10, emissions of criteria pollutants related to project construction would not exceed the SCAQMD significance thresholds. Therefore, direct impacts from criteria pollutants generated during construction would be less than significant and no mitigation would be required.

5.2.2 Operation

5.2.2.1 Project Emissions

The project's operational emissions were estimated using the CalEEMod model as described in Section 4.1.2. The CalEEMod model input was based on the current vehicle trip generation provided in the project's TIA (LLG 2018) and the building area. Operational emission calculations and model outputs are provided in Appendix A. Table 11, *Maximum Daily Operational Emissions*, presents the summary of operational emissions for the project.

Table 11
MAXIMUM DAILY OPERATIONAL EMISSIONS

Category	Pollutant Emissions (pounds per day)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Area	1	<0.5	<0.5	<0.5	<0.5	<0.5
Energy	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mobile	7	55	67	0	20	6
Maximum Daily Emissions	**8**	**55**	**67**	**<0.5**	**20**	**6**
SCAQMD Thresholds	*55*	*55*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)

Note: Totals may not sum due to rounding

As shown in Table 11, project emissions during operation would not exceed the daily thresholds set by the SCAQMD. Operation of the project would therefore not cause a significant impact on air quality.

5.3 CUMULATIVELY CONSIDERABLE NET INCREASE OF NONATTAINMENT CRITERIA POLLUTANTS

In accordance with CEQA Guidelines Section 15064(h)(3), the SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State Clean Air Acts. If a project is not consistent with the AQMP, which is intended to bring the SCAB into attainment for all criteria pollutants, that project can be considered cumulatively considerable. Additionally, if the mass regional emissions calculated for a project exceed the applicable SCAQMD daily significance thresholds that are designed to assist the region in attaining the applicable state and national ambient air quality standards, that project can be considered cumulatively considerable. As detailed in Section 5.2 and Table 11, operational emissions would not exceed the SCAQMD regional significance thresholds and would therefore not be cumulatively considerable.

For two or more projects within close proximity, that is, 1,640 feet (500 meters[2]) or less from the same sensitive receptor, a local cumulative analysis must be performed. The onsite emissions from the related project must be added to the background concentration, which is then summed with the proposed project emissions for comparison to the SCAQMD LSTs or State and federal AAQS. If the related projects combine with the proposed project to result in an exceedance of the ambient standards, the project is considered cumulatively significant.

If approved, the proposed Murrieta Hot Springs Road Improvements Project (Road Improvements Project), located along Murrieta Hot Springs Road, from the intersection of Margarita Road to the intersection of Winchester Road, would be constructed September 2019 through August 2020. Sensitive receptors that would be within 1,640 feet of both projects are residences located west of the proposed project and south of the easternmost length of the Road Improvements Project. If both projects are approved, construction would overlap September 2019 through August 2020 during the grading, underground utilities installation, and building phases of the proposed project. However, due to the location of the two proposed projects, it would be impossible for the identified sensitive receptors to be downwind of both projects at the same time. That is, to be affected by the proposed project, the wind would have to be blowing from the east, and to be affected by the Road Improvements Project, the wind would have to be blowing from the north. Additionally, as detailed in Table 12 below, localized construction emissions for the proposed project would fall below the SCAQMD LSTs. Therefore, emissions would not be cumulatively considerable, and impacts would be less than significant.

5.4 IMPACTS TO SENSITIVE RECEPTORS

5.4.1 Construction Activities

5.4.1.1 Criteria Pollutants

The localized effects from the on-site portion of daily construction emissions were evaluated at sensitive receptor locations potentially impacted by the project according to the SCAQMD's LST method, described above. The proposed project is within SRA 26, Temecula Valley. Consistent with the LST guidelines, when quantifying mass emissions for localized analysis, only emissions that occur on site are considered. Emissions related to off-site delivery/haul truck activity and construction worker trips are

[2] 500 meters is the greatest distance identified by the SCAQMD in their LST methodology.

not considered in the evaluation of construction-related localized impacts, as these do not contribute to emissions generated on a project site. The closest sensitive receptors are the single-family residences approximately 200 feet (61 meters) east of the project site and east of Highway 79. Therefore, the LSTs in SRA 26 for receptors located at 164 feet (50 meters) are used for project sites greater than 5 acres. As shown in Table 12, *Maximum Localized Daily Construction Emissions*, below, localized emissions for all criteria pollutants would remain below their respective SCAQMD LSTs. Therefore, impacts would be less than significant.

Table 12
MAXIMUM LOCALIZED DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (pounds/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Site Preparation	46	22	11	7
Grading	28	16	4	3
Underground Utilities / Infrastructure	5	7	<0.5	<0.5
Building Construction	21	17	1	1
Paving	13	15	1	1
Architectural Coating	2	2	<0.5	<0.5
Maximum Daily Emissions[1]	**46**	**24**	**11**	**7**
SCAQMD Thresholds	*416*	*2,714*	*40*	*10*
Significant Impact?	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)

[1] Maximum daily emissions of CO occur when the building and underground utilities phases overlap; all other maximum daily emissions occur during site preparation activities.

Note: Totals may not sum due to rounding

5.4.1.2 Toxic Air Contaminants

The greatest potential for TAC emissions during construction would be related to DPM associated with exhaust of off-road, heavy-duty diesel equipment. The SCAQMD does not consider diesel-related cancer risks from construction equipment to be an issue due to the short-term nature of construction activities. Additionally, according to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project.

Construction activities associated with the proposed project would be transitory and short term in nature (i.e., three years). Because there would be relatively few pieces of off-road, heavy-duty diesel equipment used during construction, and the construction period would be relatively short, especially when compared to 30 years, construction of the proposed project is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. Combined with the highly dispersive properties of diesel PM, construction-related emissions would not expose sensitive receptors to substantial emissions of TACs. As such, project-related TAC emission impacts during construction would be less than significant and no mitigation is required.

5.4.2 Operational Activities

5.4.2.1 CO Hotspots

Vehicle exhaust is the primary source of CO. In an urban setting, the highest CO concentrations are generally found within close proximity to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as distance from the emissions source (i.e., congested intersection) increase. Project-generated traffic has the potential of contributing to localized "hot spots" of CO off-site. Because CO is a byproduct of incomplete combustion, exhaust emissions are worse when fossil-fueled vehicles are operated inefficiently, such as in stop-and-go traffic or through heavily congested intersections, where the level of service (LOS) is severely degraded.

CARB recommends evaluation of the potential for the formation of locally high concentrations of CO, known as CO hot spots. A CO hot spot is a localized concentration of CO that is above the state or national 1-hour or 8-hour CO ambient air standards. To verify that the project would not cause or contribute to a violation of the 1-hour and 8-hour CO standards, an evaluation of the potential for CO hot spots at nearby intersections was conducted.

The TIA (LLG 2018) evaluated whether there would be a change in the LOS at the intersections affected by the proposed project. The Transportation Project-Level Carbon Monoxide Protocol (California Department of Transportation [Caltrans] 1998) was followed to determine whether a CO hot spot is likely to form due to project-generated traffic, based upon traffic volumes provided by the TIA. In accordance with the Protocol, CO hot spots are typically evaluated when: (a) the LOS of an intersection decreases to a LOS E or worse; (b) signalization and/or channelization is added to an intersection; and (c) sensitive receptors such as residences, schools, hospitals, etc., are located in the vicinity of the affected intersection or roadway segment.

According to the TIA, two of the intersections evaluated would meet these criteria indicating that there would be a potential CO hotspot and a quantitative screening required. In the scenario, *Existing with Ambient Growth, Project, and Cumulative Projects Peak Hour Intersection Capacity Analysis Summary*, Winchester Road at Murrieta Hot Springs Road and Winchester Road at Margarita Road would operate at an unacceptable LOS: Winchester Road at Murrieta Hot Springs Road would operate at LOS F in AM and PM peak hours and Winchester Road at Margarita Road would operate at LOS E in the PM peak hour. The County of Riverside, City of Murrieta, and City of Temecula consider LOS D to be the minimum acceptable LOS for intersections. These intersections exceed the acceptable threshold of LOS D.

Therefore, consistent with the CO Protocol, these findings indicate that further screening is required. Although the SCAQMD has not, various air quality agencies in California have developed conservative screening methods. The screening methods of the Sacramento Metropolitan Air Quality Management District (SMAQMD) are used for this project because ambient CO concentrations within the SMAQMD jurisdiction are higher than for the project area, as measured by CARB, resulting in a more conservative analysis. The SMAQMD states that a project would not result in a significant impact to local CO concentrations if it meets all of the below criteria:

- The affected intersection carries less than 31,600 vehicles per hour;
- The project does not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, below-grade roadway, or other location where horizontal or vertical mixing of air would be substantially limited; and
- The affected intersection, which includes a mix of vehicle types, is not anticipated to be substantially different from the County average, as identified by EMFAC or CalEEMod models (SMAQMD 2009).

As displayed in Table 13, *Proposed Project Traffic Volumes*, the greatest traffic volume at the affected intersections is estimated to be 8,202 vehicles at the intersection of Winchester Road at Murrieta Hot Springs Road during the PM peak hour; and 7,327 vehicles at the intersection of Winchester Road at Margarita Road during the PM peak hour (LLG 2018). The intersections are not located in a tunnel, urban canyon, or similar area that would limit the mixing of air, nor is the vehicle mix anticipated to be substantially different than the County average. There would be no potential for a CO hot spot or exceedance of state or federal CO ambient air quality standards because the maximum traffic volume would be substantially less than the 31,600 vehicles per hour screening level. In addition, the congested intersection is located where mixing of air would not be limited; and the vehicle mix would not be uncommon. Therefore, impacts from CO hot spots would be less than significant.

Table 13
PROPOSED PROJECT TRAFFIC VOLUMES

Proposed Project Intersection	Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	TOTAL (AM/PM)
Winchester Road at Murrieta Hot Springs Road	909/1,204	1,645/1,939	2,333/1,987	1,942/3,072	6,829/**8,202**
Winchester Road at Margarita Road	1,483/1,396	631/1,358	2,255/1,730	1,239/2,843	5,608/**7,327**

Source: LLG 2018
Note: **bold and underline** = maximum vehicles at specified intersection

5.4.2.2 Toxic Air Contaminants

Based on the SCAQMD's "Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis" (SCAQMD 2003), projects that should be analyzed for diesel particulate emissions include truck stops, distribution centers, and transit centers, which could be sources of DPM from heavy-duty diesel trucks.

In addition, CARB siting recommendations within the Air Quality and Land Use Handbook suggest a detailed health risk assessment should be conducted for proposed sensitive receptors within 1,000 feet of a warehouse distribution center, within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater), 50 feet of a typical gas dispensing facilities or within 300 feet of a dry cleaning facility that uses perchloroethlyene (PCE), among other siting recommendations (CARB 2005).

The project would not develop land uses associated with sensitive air pollutant receptors and would not include uses associated with the requirement for a detailed health risk assessment. Therefore, impacts associated with TACs during operation would be less than significant.

5.5 ODORS

5.5.1 Construction

The Air Quality Section of the County's General Plan Update's Environmental Impact Report (County 2015c) provides guidance for defining objectionable odors and "substantial numbers of people." For construction activities, the EIR determined that a substantial number of people would not be impacted, as construction odors are limited to the number of people living and working near the source. The nearest residences are located approximately 200 feet (61 meters) east of the project and across Highway 79. While some components of asphalt and diesel emissions emit odors, construction activities would not cause significant odor impacts due to the short-term duration of exposure. Odor impacts from construction of the project would be less than significant.

5.5.2 Operation

The CARB's Air Quality and Land Use Handbook includes a list of the most common sources of odor complaints received by local air districts. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The proposed project, a commercial and retail center comprising of a grocery store, retail store, tire shop, drive-through restaurant and car wash, would not include these uses. Vehicle exhaust generated by the proposed project may emit odors during operation, however, vehicle exhaust is already prevalent in the area due to its proximity to Highway 79 and I-215 and other major roadways. Additionally, solid waste generated by the proposed on-site uses would be collected by a contracted waste hauler, ensuring that any odors resulting from on-site waste would be managed and collected in a manner to prevent the proliferation of odors. Operational odor impacts would be less than significant.

6.0 GREENHOUSE GAS IMPACT ANALYSIS

This section evaluates potential impacts of the proposed project related to the generation of GHG emissions. Complete modeling results are included as Appendix A of this report.

6.1 GREENHOUSE GAS EMISSIONS

6.1.1 Construction Emissions

Project construction GHG emissions were estimated using the CalEEMod model as described in Section 4.1. Project-specific input was based on general information provided in Section 1.0 and default model settings to estimate reasonably conservative conditions. Additional details of phasing, selection of construction equipment, and other input parameters, including CalEEMod data, are included in Appendix A.

Emissions of GHGs related to the construction of the project would be temporary. As shown in Table 14, *Estimated Construction GHG Emissions*, total GHG emissions associated with construction of the project

are estimated at 876 MT CO_2e. For construction emissions, SCAQMD and County guidance recommends that the emissions be amortized (i.e., averaged) over 30 years and added to operational emissions. Averaged over 30 years, the proposed construction activities would contribute approximately 29 MT CO_2e emissions per year.

Table 14
ESTIMATED CONSTRUCTION GHG EMISSIONS

Phase	Emissions (MT CO_2e)
Site Preparation	57
Grading	152
Underground Utilities / Infrastructure	20
Building Construction	600
Paving	43
Architectural Coating	4
TOTAL[1]	**876**
Amortized Construction Emissions[2]	*29*

Source: CalEEMod (output data is provided in Appendix A)
[1] The total presented is the sum of the unrounded values.
[2] Construction emissions are amortized over 30 years in accordance with SCAQMD and County guidance
Note: Totals may not sum due to rounding

6.1.2 Operational Emissions

Table 15, *Total Estimated Operational GHG Emissions*, includes the total annual emissions for the project. The emissions include the amortized annual construction emissions anticipated for the project. Appendix A contains the CalEEMod output files for the project. As shown in Table 15, the project would result in annual GHG emissions of 5,115 MT CO_2e. This value is more than the County CAP's 3,000 MT CO_2e per year screening threshold.

Table 15
TOTAL ESTIMATED OPERATIONAL GHG EMISSIONS

Emission Sources	Emissions (MT CO_2e)
	2020
Area Sources	<0.5
Energy Sources	251
Vehicular (Mobile) Sources	4,779
Solid Waste Sources	30
Water Sources	26
Operational Subtotal	**5,086**
Construction (Annualized over 30 years)	*29*
TOTAL OPERATIONAL EMISSIONS	**5,115**

Source: CalEEMod (output data is provided in Appendix A)
Note: Totals may not sum due to rounding

For projects that exceed the screening threshold, a less than significant impact can be determined through the completion an additional screening table. The purpose of the screening table is to provide guidance in measuring the reduction of GHG emissions attributable to design and construction

measures incorporated into the project. The table assigns points for each project design feature or mitigation measure. Projects that garner a total of 100 points or greater would be determined to have a less than significant individual and cumulative impact for GHG emissions. Proactive Engineering completed the Screening Table for GHG Implementation Measures for Commercial Development and Public Facilities, with a total of 100 points earned. The following measures would be included as part of project design and would be required as part of project approval. The measures and their associated point values are shown in Table 16, *Screening Table Project Measures*. The full table can be found in Appendix B. The increase in GHG emissions would therefore not be cumulatively considerable, and the impact would be less than significant.

Table 16
SCREENING TABLE PROJECT MEASURES

Feature		Description	Project Points
ES.A.1	*Insulation*	Modestly Enhanced Insulation (walls R-13, roof/attic R-38)	15
E5.A.2	*Windows*	Modestly Enhanced Window Insulation (5 percent > Title 24)	7
E5.A.3	*Cool Roofs*	Modest Cool Roof (CRRC Rated 0.15 aged solar reflectance, 0.75 thermal emittance)	12
E5.A.4	*Air Infiltration*	Modest Building Envelope Leakage (5 percent > Title 24)	4
E5.B.1	*Heating/Cooling Distribution System*	Modest Duct Insulation (R-6)	8
E5.B.2	*Space Heating/ Cooling Equipment*	Improved Efficiency HVAC (EER 14/65 percent AFUE or 8 HSPF)	7
E5.B.4	*Water Heaters*	Improved Efficiency Water Heater (0.675 Energy Factor)	14
E5.B.7	*Appliances*	Star Commercial Refrigerator (new); Energy Star Commercial Dish Washer (new); Energy Star Commercial Cloths Washing	12
E6.A.1	*Photovoltaic*	Solar Ready Roofs (sturdy roof and electric hookups)	2
W1.D.2	*Toilets*	Water Efficient Toilets/Urinals (1.5 gpm); Waterless Urinals (note that commercial buildings having both waterless urinals and high efficiency toilets will have a combined point value of 6 points)	6
W1.D.3	*Faucets*	Water Efficient Faucets (1.28 gpm)	3
T1.A.3	*Employee Bicycle/ Pedestrian Programs*	Complete sidewalk to residential within ½ mile; Bike lockers and secure racks	2
T1.A.4	*Shuttle/Transit Programs*	Local transit within ¼ mile	1
T4.A.1	*Parking*	Provide reserved preferential parking spaces for car-share, carpool, and ultra-low or zero emission vehicles	1
T6.B.1	*Sidewalks*	Provide sidewalks on both sides of the street	1
T7.B.1	*Electric Vehicle Recharging*	Provide circuit and capacity in garages/parking areas for installation of electric vehicle charging stations	2

Table 16 (cont.)
SCREENING TABLE PROJECT MEASURES

Feature		Description	Project Points
SW1.B.1	*Recycling*	Provide separated recycling bins within each commercial building/floor and provide large external recycling collection bins at central location for collection truck pick-up	2
SW2.B.1	*Recycling of Construction/ Demolition Debris*	Recycle 5 percent of debris	1
		TOTAL POINTS	**100**

Source: Full screening table is provided in Appendix B

6.2 CONSISTENCY WITH LOCAL PLANS ADOPTED FOR THE PURPOSE OF REDUCING GHG EMISSIONS

There are numerous State plans, policies, and regulations adopted for the purpose of reducing GHG emissions. The principal overall State plan and policy is AB 32, the California Global Warming Solutions Act of 2006. The quantitative goal of AB 32 is to reduce GHG emissions to 1990 levels by 2020. SB 32 would require further reductions of 40 percent below 1990 levels by 2030. Because the project's operational year is 2021, the project aims to reach the quantitative goals set by AB 32. Statewide plans and regulations such as GHG emissions standards for vehicles (AB 1493), the LCFS, and regulations requiring an increasing fraction of electricity to be generated from renewable sources are being implemented at the statewide level; as such, compliance at the project level is not addressed. Therefore, the proposed project does not conflict with those plans and regulations.

As previously discussed, the County CAP applies a screening threshold of 3,000 MT CO_2e per year to comply with the reduction goals of AB 32. The proposed project's increase in GHG emissions would be greater than the County's screening threshold; therefore, the additional GHG screening tables were applied to this analysis. With adherence to the applicable emissions-reducing measures defined in these tables, the project would be consistent with the County CAP. Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. This would represent a less than significant impact.

7.0 REFERENCES

California Air Pollution Control Officers Association (CAPCOA*).* 2010. *Quantifying Greenhouse Gas Mitigation Measures*. August.

California Air Resources Board (CARB). 2018a. iADAM: Air Quality Data Statistics. Available: https://www.arb.ca.gov/adam. Accessed July 2018.

2018b. California Greenhouse Gas Inventory for 2000-2015 – By Sector and Activity. June 6. Available: https://www.arb.ca.gov/cc/inventory/data/data.htm.

2017. The 2017 Climate Change Scoping Plan Update. January. Available: https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

2016. Ambient Air Quality Standards. May 4. Available: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

2014. First Update to the Climate Change Scoping Plan: Building on the Framework. May. Available: http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf.

2013. Clean Car Standards – Pavley, Assembly Bill 1493. Available: http://www.arb.ca.gov/cc/ccms/ccms.htm.

2011. Health Effects of Diesel Exhaust. Available: http://www.arb.ca.gov/research/diesel/diesel-health.htm. Last reviewed June 21.

2009. ARB Fact Sheet: Air Pollution and Health. December 2. Available: http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm.

2008. Climate Change Scoping Plan – A Framework for Change. December.

2007. California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit. November 16.

2006. Public Workshop to Discuss Establishing the 1990 Emission Level and the California 2020 Limit and Developing Regulations to Require Reporting of Greenhouse Gas Emissions, Sacramento, CA. December 1.

California Building Standards Commission. 2017. CALGreen (CCR Title 24, Part 11). Available: http://www.bsc.ca.gov/Home/CALGreen.aspx.

California Department of Transportation. 1998. Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol.

Intergovernmental Panel on Climate Change (IPCC). 2014. Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

2013. Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

2007. Climate Change 2007: The Physical Science Basis. Summary for Policymakers. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. February.

Linscott, Law & Greenspan, Engineers (LLG). 2018. Sky Canyon Retail Center Traffic Impact Analysis Report (Update of February 27, 2017 Report). October 16.

National Aeronautics and Space Administration, Goddard Institute for Space Studies. 2018. NASA News & Features Releases. Long-Term Warming Trend Continued in 2017: NASA. https://www.giss.nasa.gov/research/news/20180118/. Accessed February 2018.

2016. 2016 Climate Trends Continue to Break Records. July 19. Available: https://www.nasa.gov/feature/goddard/2016/climate-trends-continue-to-break-records.

National Oceanic and Atmospheric Administration, Earth System Research Laboratory. 2018. Trends in Atmospheric Carbon Dioxide. Available: http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html. Accessed January 2018.

Riverside, County of. 2015a. County of Riverside General Plan. December 8.

2015b. County of Riverside Climate Action Plan. December. Available: http://planning.rctlma.org/Portals/0/genplan/general_plan_2016/climate_action_plan/CAP_120815.pdf?ver=2016-04-01-101221-240.

2015c. County of Riverside Environmental Impact Report No. 521. February.

Sacramento Metropolitan Air Quality Management District (SMAQMD). 2009. CEQA Guide – Operational Criteria Air Pollutant and Precursor Emissions. December. Available: http://www.airquality.org/LandUseTransportation/Documents/Ch4OperationalFINAL8-2016.pdf.

South Coast Air Quality Management District (SCAQMD). 2017. Final 2016 Air Quality Management Plan. March. Available: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp.

2016. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin. February. Available: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf.

South Coast Air Quality Management District (SCAQMD) (cont.)
2015. SCAQMD Air Quality Significance Thresholds. March. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

2009. Mass Rate Localized Significance Thresholds Look-up Tables. October. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2.

1993. *CEQA Air Quality Handbook*.

Sun, L. 2017 (December 29). Personal Communication. Telephone Conversation between L. Sun, Program Supervisor (SCAQMD) and V. Ortiz, Senior Air Quality Specialist (HELIX Environmental Planning).

U.S. Environmental Protection Agency (USEPA). 2018. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016. April 12. Available: https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf

2017a. Criteria Air Pollutants. Last updated April 3. Available: https://www.epa.gov/criteria-air-pollutants

2017b. Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act. Last updated July 7. Available: https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-clean

U.S. Environmental Protection Agency and U.S. Department of Transportation, National Highway Traffic Safety Administration. 2012. 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards. October 15.

Western Regional Climate Center. 2018. Period of Record Monthly Climate Summary, Bell Canyon, California (045735). Available: https://wrcc.dri.edu/cgi-bin/rawMAIN.pl?caCBCN. Accessed July 2018.

World Resources Institute. 2017. CAIT Climate Data Explorer. Available: http://cait2.wri.org/wri/.

8.0 LIST OF PREPARERS

Chloe Hood	Air Quality Specialist
Victor Ortiz	Senior Air Quality Specialist
Joanne Dramko	Senior Air Quality Specialist
Bill Vosti	Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

This page intentionally left blank

Appendix A

CalEEMod Output

Appendix B

CAP Screening Table