4.2 AIR QUALITY

This section is partially based on the Health Risk Assessment (HRA) that was prepared for the Project, which is included as Appendix E (Psomas 2024h). Supporting calculations related to air quality are provided in Appendix E.

4.2.1 EXISTING CONDITIONS

Climate and Meteorology

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features. Atmospheric conditions such as wind speed, wind direction, and air temperature inversions interact with the physical features of the landscape to determine the movement and dispersal of air pollutant emissions and, consequently, their effect on air quality.

The Project Site is located within the South Coast Air Basin (SoCAB), which includes all of Orange County and the urbanized portions of Los Angeles, Riverside, and San Bernardino Counties. The SoCAB is arid, with virtually no rainfall and abundant sunshine during the summer months. The SoCAB has light winds and poor vertical mixing compared to the other large urban areas in the United States. The combination of poor dispersion and abundant sunshine drives the photochemical reactions that form pollutants (such as ozone [O3]) and provide conditions especially favorable to the formation of smog. The SoCAB is bound to the north and east by mountains with maximum elevations exceeding 10,000 feet. The unfavorable combination of meteorology, topography, and emissions from the nation's second largest urban area results in the SoCAB having some of the worst air quality in the U.S.

Criteria Air Pollutants

Air quality is defined by ambient air concentrations of seven criteria air pollutants, which are a group of common air pollutants identified by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. The Federal and State governments regulate criteria pollutants by using ambient standards based on criteria regarding the health and/or environmental effects of each pollutant. These pollutants include nitrogen dioxide (NO_2); O_3; particulate matter, including both particles equal to or smaller than 10 microns in size (PM10) and particles equal to or smaller than 2.5 microns in size (PM2.5); carbon monoxide (CO); sulfur dioxide (SO_2); and lead. Particulate matter size refers to the aerodynamic diameter of the particle. A description of each criteria pollutant, including source types and health effects, is provided below.

Nitrogen Dioxide

Nitrogen gas, normally relatively inert (i.e., nonreactive), comprises about 80 percent of the air. At high temperatures (e.g., in combustion processes) and under certain other conditions, nitrogen can combine with oxygen to form several different gaseous compounds collectively called nitrogen oxides (NOx). Nitric oxide (NO), NO_2, and nitrous oxide (N_2O) are important

constituents of NOx. NO is converted to NO_2 in the atmosphere. Motor vehicle emissions are the main source of NOx in urban areas.

NO_2 is a red-brown pungent gas and is toxic to various animals and to humans because of its ability to form nitric acid with water in the eyes, lungs, mucus membranes, and skin. In animals, long-term exposure to NO_2 increases susceptibility to respiratory infections, lowering resistance to such diseases as pneumonia and influenza. Laboratory studies show that susceptible humans, such as asthmatics, who are exposed to high concentrations of NO_2 can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes, and with hospital admissions for respiratory conditions.

While the National Ambient Air Quality Standards (NAAQS) only address NO_2, NO and NO_2 are both precursors in the formation of O_3 and PM2.5, as discussed below. Because of this and the fact that NO emissions largely convert to NO_2, NOx emissions are typically examined when assessing potential air quality impacts.

Ozone

O_3 is a secondary pollutant, meaning that it is not directly emitted. It is a gas that is formed when volatile organic compounds (VOCs) (also referred to as reactive organic gases (ROGs)) and NO_x undergo photochemical reactions that occur only in the presence of sunlight. The primary source of VOC emissions is unburned hydrocarbons in motor vehicle and other internal combustion engine exhaust. NOx also form as a result of the combustion process, most notably due to the operation of motor vehicles. Sunlight and hot weather cause ground-level O_3 to form; as a result, ozone is known as a summertime air pollutant. Ground-level O_3 is not to be confused with atmospheric O_3 or the "ozone layer", which occurs very high in the atmosphere and shields the planet from some ultraviolet rays. Ground-level O_3 is the primary constituent of smog. Because O_3 formation occurs over extended periods of time, both O_3 and its precursors are transported by wind, and high O_3 concentrations can occur in areas well away from sources of its constituent pollutants.

People with lung disease, children, older adults, and people who are active can be affected when ozone levels exceed ambient air quality standards. Numerous scientific studies have linked ground-level ozone exposure to a variety of problems, including the following:

- lung irritation that can cause inflammation much like a sunburn;
- wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities;
- permanent lung damage to those with repeated exposure to ozone pollution; and
- aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis.

Particulate Matter

Particulate matter includes both aerosols and solid particles of a wide range of size and composition. Of particular concern are PM10 and PM2.5. Particulate matter tends to occur primarily in the form of fugitive dust. This dust appears to be generated by both local sources and by region-wide dust during moderate to high wind episodes. These regional episodes tend to be multi-district and sometimes interstate in scope. The principal sources of dust in urban areas are from grading, construction, disturbed areas of soil, and dust entrained by vehicles on roadways.

PM10 is generally emitted directly as a result of mechanical processes that crush or grind larger particles or from the re-suspension of dusts, most typically through construction activities and vehicular travels. PM10 generally settles out of the atmosphere rapidly and is not readily transported over large distances.

PM2.5 is directly emitted in combustion exhaust and is formed in atmospheric reactions between various gaseous pollutants including NOx, sulfur oxides (SOx), and VOCs. PM2.5 can remain suspended in the atmosphere for days and/or weeks and can be transported long distances, as many as several hundred miles.

The principal health effects of airborne particulate matter are on the respiratory system. Short-term exposure, lasting several days or weeks, to high PM2.5 and PM10 levels is associated with premature mortality and increased hospital admissions and emergency room visits; increased respiratory symptoms are also associated with short-term exposure to high PM10 levels. Long-term exposure, lasting years to decades, to high PM2.5 levels is associated with premature mortality and development of chronic respiratory disease. According to the USEPA, some people are much more sensitive than others to breathing PM10 and PM2.5. People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worse illnesses; people with bronchitis can expect aggravated symptoms; and children may experience decline in lung function due to breathing in PM10 and PM2.5. Other groups considered sensitive include smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive because many breathe through their mouths.

Carbon Monoxide

CO is a colorless and odorless gas which, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. CO combines with hemoglobin in the bloodstream and reduces the amount of oxygen that can be circulated through the body. High CO concentrations can cause headaches, aggravate cardiovascular disease, and impair central nervous system functions.

CO concentrations can vary greatly over comparatively short distances. Relatively high concentrations are typically found near crowded intersections; along heavily used roadways carrying slow-moving traffic; and at or near ground level. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations

within a relatively short distance (i.e., up to 600 feet or 185 meters) of heavily traveled roadways.

Sulfur Dioxide

SOx constitute a class of compounds of which SO_2 and sulfur trioxide (SO_3) are of greatest importance. Ninety-five percent of pollution-related SO_x emissions are in the form of SO_2. SO_x emissions are typically examined when assessing potential air quality impacts of SO_2. The primary contributor of SO_x emissions is fossil fuel combustion for generating electric power. Industrial processes, such as nonferrous metal smelting, also contribute to SO_x emissions. SO_x is also formed during combustion of motor fuels; however, most of the sulfur has been removed from fuels, greatly reducing SO_x emissions from vehicles.

SO_2 combines easily with water vapor, forming aerosols of sulfurous acid (H_2SO_3), a colorless, mildly corrosive liquid. This liquid may then combine with oxygen in the air, forming the even more irritating and corrosive sulfuric acid (H_2SO_4). Peak levels of SO_2 in the air can cause temporary breathing difficulty for people with asthma who are active outdoors. Longer-term exposures, lasting years to decades, to high levels of SO_2 gas and particles cause respiratory illness and aggravate existing heart disease. SO_2 reacts with other chemicals in the air to form tiny sulfate particles which are measured as PM2.5.

Lead

Lead is a stable compound, which persists and accumulates both in the environment and in animals. In humans, it affects the body's blood-forming (or hematopoietic), nervous, and renal systems. In addition, lead has been shown to affect the normal functions of the reproductive, endocrine, hepatic, cardiovascular, immunological and gastrointestinal systems, although there is significant individual variability in response to lead exposure. In general, an analysis of lead is limited to projects that emit significant quantities of the pollutant (i.e., lead smelters) and are not applied to residential projects.

Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. TACs may be emitted from a variety of common sources, including motor vehicles, gasoline stations, dry cleaners, industrial operations, painting operations, and research and teaching facilities. The USEPA uses the term "hazardous air pollutants" for TACs.

TACs are different than the criteria pollutants previously discussed in that ambient air quality standards have not been established for them, although air pollutant human exposure standards are identified for many TACs, including the following common TACs relevant to development projects: PM, fugitive dust, lead, and asbestos (as discussed below). TACs occurring at extremely low concentrations may still cause health effects, and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic (i.e., cancer) risk: chronic (i.e., of long duration)

and acute (i.e., severe but of short duration) adverse effects on human health. Diesel particulate matter (diesel PM) is a TAC and is responsible for the majority of California's known cancer risk from outdoor air pollutants.

Two TACs of common concern during construction and development activities are diesel particulate matter (DPM) and asbestos.

Diesel Particulate Matter

Fine particle pollution can be emitted directly or formed secondarily in the atmosphere. PM2.5 health impacts are important because their size can be deposited deep in the lungs, causing respiratory effects. For the purposes of this analysis, exhaust emissions of DPM are represented as exhaust emissions of PM10. Studies indicate that DPM poses the greatest health risk among airborne TACs. A 10-year CARB research program demonstrated that DPM from diesel fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic long-term health risk. DPM differs from other TACs in that it is not a single substance but a complex mixture of hundreds of substances. Although diesel fueled internal combustion engines emit DPM, the composition of the emissions varies depending on engine type and age, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

DPM has a significant impact on California's population. It is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM.[1] Within these toxics, DPM is the overwhelming contributor. Diesel engine emissions are believed to be responsible for about 70 percent of California's estimated known cancer risk attributable to TACs.[2] Diesel in particular, because of its high toxicity, may pose a threat to public health even at very low concentrations.

Asbestos

Asbestos is also another TAC and federal HAP of concern during construction and development. Asbestos is the common name for a group of naturally occurring fibrous minerals that can separate into thin, inhalable fibers. Asbestos found in many parts of California and its emissions present a significant risk to human health on a Statewide and local level. When rock containing asbestos is broken or crushed, asbestos fibers may be released and become airborne. While there are many different types of asbestos; all forms of asbestos are harmful to human health. Asbestos has been known to cause lung cancer and mesothelioma, a cancer of the lining of lung tissue that is nearly always fatal.[3] Since asbestos

[1] California Air Resources Board (ARB). Overview: Diesel Exhaust and Health. Website: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed February 9, 2024.

[2] California Air Resources Board (ARB). 2023 Summary: Diesel Particulate Matter Health Impacts. Website: https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts. Accessed February 9, 2024.

[3] United States Environmental Protection Agency (EPA). 2023. Learn About Asbestos. Website: https://www.epa.gov/asbestos/learn-about-asbestos#find. Accessed February 9, 2024.

is naturally occurring in rock structures it is a concern during construction and mining operations when it has the potential to be present.

Because of its properties (fiber strength and heat resistance) asbestos has been used in a variety of building construction materials as insulation and as a fire retardant. It historically was used in roofing shingles, ceiling and floor tiles; it also may be in utility pipes (e.g., concrete reinforced storm drain/sewer pipe located on the Project Site). It is only a health concern when asbestos containing material is disturbed or damaged in some way releasing the particles and inhalable the fibers into the air. Exposure to asbestos can occur during demolition or remodeling of buildings or related improvements that were constructed prior to the 1977 ban on asbestos for use in buildings. Exposure to naturally occurring asbestos can occur during soil-disturbing activities in areas with deposits present.

Valley Fever

Valley fever, also called coccidioidomycosis, is a disease caused by a fungus that grows in the soil and dirt in some areas of California and elsewhere in the southwestern United States. People and animals can get sick when they breathe in dust that contains the Valley fever fungus. This fungus usually infects the lungs and can cause respiratory symptoms including cough, fever, chest pain, and tiredness (CDPH 2024a). According to the CDPH, most cases of Valley fever in California are reported from the Central Valley and Central Coast regions (CDPH 2024a). However, according to CDPH, Valley fever cases have also been increasing outside of these regions as California experiences more drought (CDPH 2024a). Valley fever cases are on the rise in California, including in the northern Central Valley and southern coastal areas of California. According to the CDPH's *Valley Fever in California Dashboard*, Orange County had approximately 297 cases of Valley Fever in 2022 (CDPH 2024b). Therefore, there is potential that ground disturbance at the Project Site could potentially lead to exposure to Valley Fever for construction workers and individuals in the Project Site vicinity, if Valley Fever were to be present in soils or decaying vegetative materials within the Project Site.

Existing Air Quality

Regional Attainment Status

Both the EPA and CARB use ambient air quality monitoring data to designate areas according to their attainment status for criteria air pollutants. Based on monitored air pollutant concentrations, the USEPA and the California Air Resources Board (CARB) designate an area's status in attaining the NAAQS and California Ambient Air Quality Standards (CAAQS), respectively, for the criteria pollutants. These designations identify the areas with air quality problems and initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. "Attainment" status refers to those regions that are meeting federal and/or State standards for a specified criteria pollutant. "Nonattainment" refers to regions that do not meet federal and/or State standards for a specified criteria pollutant. "Unclassified" refers to regions with insufficient data to determine the region's attainment status for a specified criteria air pollutant. When an area has been reclassified from a nonattainment to an attainment area for a federal standard, the

status is identified as "maintenance", and there must be a plan and measures that will keep the region in attainment for the following ten years.

Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring value exceeds the threshold per year. In contrast, the federal annual $PM_{2.5}$ standard is met if the 3-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

Table 4.2-1, provided below summarizes the attainment status in the SoCAB for the criteria pollutants.

TABLE 4.2-1
ATTAINMENT STATUS OF CRITERIA POLLUTANTS
IN THE SOUTH COAST AIR BASIN

Pollutant	State	Federal
O_3 (1 hour)	Nonattainment	No standard
O_3 (8 hour)		Extreme Nonattainment
PM10	Nonattainment	Attainment/Maintenance
PM2.5	Nonattainment	Moderate Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment [a]	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Attainment/Nonattainment [b]
All others	Attainment/Unclassified	No Standards

O_3: ozone; PM10: particulate matter 10 microns or less in diameter; PM2.5: particulate matter 2.5 microns or less in diameter; CO: carbon monoxide; NO_2: nitrogen dioxide; SO_2: sulfur dioxide.

[a] The SoCAB is designated as attainment for NO_2 for all areas except for the California 60 portion of the freeway, in Los Angeles County, which is designated as nonattainment.

[b] The Los Angeles County portion of the SoCAB is designated nonattainment for lead; the remainder of the SoCAB is designated attainment.

Source: CARB 2019; USEPA 2021.

Local Air Quality

As discussed previously, the Project Site is located within the SoCAB. Air quality in the SoCAB is regulated by the USEPA, CARB, and the South Coast Air Quality Management District (SCAQMD). Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although federal law/USEPA regulations may not be superseded, both State and local laws and regulations may be more stringent. The Southern California Association of Governments (SCAG) is an important partner to the SCAQMD and produces estimates of anticipated future growth and vehicular travel in the SoCAB that are used for air quality planning. The SCAQMD has divided the SoCAB into 38 source receptor (air monitoring) areas (SRAs), with a designated ambient air monitoring station

representative of each area. The Project Site is located within the Inland Orange County general forecast area, and specifically, within SRA 17, Central Orange County (SCAQMD 1999).

The Project Site is in the area represented by measurements made at the Anaheim Monitoring Station, located approximately 10.6 miles northwest of the Project Site. The monitored air quality data is from 2019 to 2022,[4] and a comparison to the NAAQS and CAAQS from the Anaheim Monitoring Station is presented in Table 4.2-2.

TABLE 4.2-2
AIR POLLUTANT LEVELS MEASURED AT THE ANAHEIM MONITORING STATION

Pollutant	California Standard	National Standard	Year	Max. Level[a]	State Standard Days Exceeded [b]	National Standard Days Exceeded [b, c]
O_3 (1 hour)	0.09 ppm	None	2019	0.096	1	0
			2020	0.142	1	0
			2021	.089	0	0
			2022	0.102	1	1
O_3 (8 hour)	0.070 ppm	0.070 ppm	2019	0.082	1	1
			2020	0.098	1	1
			2021	0.068	0	0
			2022	0.076	1	1
PM10 (24 hour)	50 µg/m^3	150 µg/m^3	2019	127.6	12.0	0
			2020	74.8	24.4	0
			2021	63.6	5.7	0
			2022	67.0	NA	NA
PM10 (AAM)	20 µg/m^3	None	2019	24.6	NA	NA
			2020	30.8	NA	NA
			2021	23.4	NA	NA
			2022	20.9	NA	NA
NO_2 (1 hour)	0.18 ppm	0.100 ppm	2019	0.059	0	0
			2020	0.070	0	0
			2021	0.067	0	0
			2022	0.053	0	0
NO_2 (AAM)	0.030 ppm	0.053 ppm	2019	0.013	–	–
			2020	0.013	–	–
			2021	0.012	–	–
			2022	0.011	–	–
CO (1 hour)	20 ppm	35 ppm	2019	2.4	0	0
			2020	2.3	0	0
			2021	NA	NA	NA
			2022	2.4	0	0
CO	9 ppm	9 ppm	2019	1.3	0	0

[4] 2022 data were the latest available as of the time environmental review commenced for the Project.

TABLE 4.2-2
AIR POLLUTANT LEVELS MEASURED AT THE ANAHEIM MONITORING STATION

Pollutant	California Standard	National Standard	Year	Max. Level[a]	State Standard Days Exceeded [b]	National Standard Days Exceeded [b, c]
(8 hour)			2020	1.7	0	0
			2021	NA	NA	NA
			2022	1.4	0	0
PM2.5 (24 Hour)	None	35 µg/m^3	2019	37.1	NA	4
			2020	64.8	NA	12
			2021	54.4	NA	10
			2022	33.1	NA	0
PM2.5 (AAM)	12 µg/m^3	15 µg/m^3	2019	9.4	NA	NA
			2020	12.4	NA	NA
			2021	11.6	NA	NA
			2022	9.8	NA	NA

O_3: ozone; ppm: parts per million; µg/m^3: micrograms per cubic meter; PM10: respirable particulate matter with a diameter of 10 microns or less; mg/m^3: milligrams per cubic meter; AAM: Annual Arithmetic Mean; NO_2: nitrogen dioxide; NA: Not Available; –: No Standard; CO: carbon monoxide; PM2.5: fine particulate matter with a diameter of 2.5 microns or less.

Source: CARB 2022 and SCAQMD 2022.

Sensitive Receptors

Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when evaluating air quality impacts from projects. These people include children, elderly, persons with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. The SCAQMD defines sites that house these persons or places where they gather (i.e., residences, schools, playgrounds, child-care centers, convalescent centers, retirement homes, and athletic fields) as "sensitive receptors."

The area surrounding the Project Site consists primarily of residential uses. The nearest sensitive receptors to the Project Site are located to the west, east, and south of the Project Site, with the nearest sensitive receptors located as close as 30 feet to the west.

Existing Emissions

The Project Site is currently primarily undeveloped with no buildings. Therefore, there are no existing pollutant sources that are considered for CEQA disclosure purposes.

In the Project vicinity, the primary sources of air pollutants (both criteria air pollutant and TACs) include the surrounding residential and commercial properties, and their building-related energy use and motor-related vehicle trips. Other existing activities that result in

emissions include space and water heating, landscape maintenance, and any surrounding uses that can store, produce, decommission, or otherwise handle hazardous materials.

4.2.2 REGULATORY SETTING

In addition to the below summary of the relevant regulatory setting, see also discussion in Sections 4.5, Energy, and 4.7, Greenhouse Gas Emissions, of this Draft EIR.

Federal

Clean Air Act

Congress established much of the basic structure of the Clean Air Act (CAA) in 1970, and made major revisions in 1977 and 1990. Six common air pollutants (also known as criteria pollutants) are addressed in the CAA. These are particulate matter, ground level ozone, CO, sulfur oxides, nitrogen oxides, and lead. The EPA calls these pollutants criteria air pollutants, because it regulates them by developing human health-based and/or environmentally based criteria (science-based guidelines) for setting permissible levels. The air quality standards provide benchmarks for determining whether air quality is healthy at specific locations and whether development activities will cause or contribute to a violation of the standards.

The Federal CAA requires the adoption of NAAQS, which are periodically updated to protect the public health and welfare from the effects of air pollution. The USEPA is responsible for setting and enforcing the NAAQS for criteria pollutants. Primary standards set limits to protect public health, including the health of at-risk populations such as people with pre-existing heart or lung disease (such as asthmatics), children, and older adults. Secondary standards set limits to protect public welfare, including protection against visibility impairment as well as damage to animals, crops, vegetation, and buildings. Current federal standards are set for SO_2, CO, NO_2, O_3, PM10, PM2.5, and lead. NAAQS are shown in Table 4.2-3.

The USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives.

As noted above, specific geographic areas are classified as either "attainment" or "nonattainment" areas for each pollutant based upon the comparison of measured data with the NAAQS. "Attainment" areas have concentrations of the criteria pollutant that are below the NAAQS, and a "nonattainment" classification indicates the criteria pollutant concentrations have exceeded the NAAQS. When an area has been reclassified from a nonattainment to an attainment area for a federal standard, the status is identified as "maintenance", and there must be a plan and measures that will keep the region in attainment for the following ten years. The CAA also requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal CAA amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The purpose of the federal SIPs is to (1) demonstrate a state has the basic air quality management program components in place to implement a new or revised NAAQS; (2) identify the emissions

control requirements that a state will rely on to attain and/or maintain the primary and secondary NAAQS; and (3) prevent air quality deterioration for areas that are in attainment with the NAAS, and to reduce common or criteria pollutants emitted in nonattainment updating the standards as more medical research is available regarding the health effects of the criteria pollutants. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. As noted above, areas designated as "nonattainment" are required to incorporate additional control measures into the subject SIP to set forth a strategy for bringing an area into compliance with the standards. The SoCAB SIP Status and Orange County's attainment status are described in Tables 4.2-1 and 4.2-3 and discussed further below.

EPA Emission Standards for New Off-Road Equipment

Before 1994, there were no standards to limit the amount of emissions from off-road equipment. In 1994, the EPA established emission standards for hydrocarbons, NO_X, CO, and PM to regulate new pieces of off-road equipment. These emission standards came to be known as Tier 1. Since that time, increasingly more stringent Tier 2, Tier 3, and Tier 4 (interim and final) standards were adopted by the EPA, as well as by the ARB. Each adopted emission standard was phased in over time. New engines built in and after 2015 across all horsepower sizes must meet Tier 4 final emission standards. In other words, new manufactured engines cannot exceed the emissions established for Tier 4 final emissions standards.

State

California Ambient Air Quality Standards (CAAQS); SIPs

CARB also has established the CAAQS shown in Table 4.2-3, which are generally more restrictive than the NAAQS. Other CARB responsibilities include but are not limited to overseeing local air district compliance with California and federal laws; approving local air quality plans; CARB conducts basic research aimed at providing a better understanding between emissions and public well-being; compiles emissions inventories and monitor air quality; determine and update area designations and maps; develops suggested control measures; provides oversight of local programs; and prepares the SIPs and submits them to the EPA. For regions that do not attain the CAAQS, CARB requires the air districts to prepare plans for attaining the standards. CARB establishes emissions standards for motor vehicles sold in California, consumer products (e.g., hair spray, aerosol paints, and barbecue lighter fluid), small utility engines, off-road vehicles, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

As noted above, a SIP is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The SIP for the State of California is administered by the CARB, which has overall responsibility for Statewide air quality maintenance and air pollution prevention. California's SIP incorporates individual federal attainment plans for regional air districts—an air district prepares their federal attainment plan, which is sent to the CARB to be approved and

incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms for attaining and maintaining air quality standards.

Areas designated nonattainment must develop air quality plans and regulations to achieve standards by specified dates, depending on the severity of the exceedances. For much of the country, implementation of federal motor vehicle standards and compliance with federal permitting requirements for industrial sources are adequate to attain air quality standards on schedule. For many areas of California, however, additional State and local regulation is required to achieve the standards.

California Clean Air Act

The California Legislature enacted the California Clean Air Act (CCAA) in 1988 to address air quality issues of concern not adequately addressed by the federal CAA at the time. California's air quality problems were and continue to be some of the most severe in the nation and required additional actions beyond the federal mandates. As discussed above, the CARB administers the CAAQS for the 10 air pollutants designated in the CCAA. The 10 State air pollutants are the six federal standards listed above as well as visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The EPA authorized California to adopt its own regulations for motor vehicles and other sources that are more stringent than similar federal regulations implementing the CAA. Generally, the planning requirements of the CCAA are more stringent than the federal CAA; therefore, consistency with the CCAA will also demonstrate consistency with the CAA.

Advanced Clean Cars

The CARB first adopted Low Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 SIP. In January 2012, CARB approved the LEV III amendments to California's LEV regulations, also known as the Advanced Clean Cars program, included more stringent emissions standards for model years 2017 through 2025 for both criteria pollutants and greenhouse gas (GHG) emissions for new passenger vehicles.[5] The program combines the control of smog, soot, and greenhouse gas (GHG) emissions with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, 2025 model year automobiles will emit 75 percent fewer smog-forming

[5] California Air Resources Board (ARB). 2013. Clean Car Standards—Pavley, Assembly Bill 1493. Website: https://ww2.arb.ca.gov/californias-greenhouse-gas-vehicle-emission-standards-under-assembly-bill-1493-2002-pavley. Accessed February 9, 2024.

emissions and 34 percent fewer global warming gases than the average 2012 model year automobile.

The most recent amendments in 2022, the Advanced Clean Cars II Regulations, applies to light-duty passenger car, truck and SUV emissions starting with the 2026 model year through 2035. It will take the State's already growing Zero-Emission Vehicle (ZEV) market and robust motor vehicle emission control rules and augment them to meet more aggressive tailpipe emissions standards and ramp up to 100 percent zero-emission vehicles. By 2035 all new passenger cars, trucks and SUVs sold in California will be zero emissions.

California On-Road Heavy-Duty Vehicle Program

The CARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures. The CARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others.[6]

California In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, the CARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. Performance requirements of the rule are based on a fleet's average NO_X emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. More recent 2022 amendments to the regulation include:[7]

- Phase-out of the oldest off-road engines from operation—Tier 2 and model year 2003 or older on-road engines must be phased out from large/medium/small/ultra-small fleets in 2028/30/32/36, respectively.
- Restrictions on the addition of older engines to the fleet—Vehicles with Tier 3/4i and model year 2006 or older on-road engines cannot be added to a fleet from 2024/28/35 for large & medium/small/ultra-small fleets, respectively.

[6] California Air Resources Board (ARB). 2013. The California Almanac of Air Quality and Emissions—2013 Edition. Website: http://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm. Accessed February 9, 2024.

[7] California Air Resources Board (ARB). 2024. Rulemaking Documents. Website: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation/rulemaking-documents. Accessed February 9, 2024.

All fleets must use R99 or R100 Renewable Diesel Fuel starting January 1, 2024.California Truck and Bus Regulation

The latest amendments to the Truck and Bus regulation became effective on December 31, 2014. The amended regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses must have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks.[8]

Small Off-Road Engine Regulation

Small Off-road Engines (SORE) are spark-ignition engines with rated power at or below 19 kilowatts (25 horsepower). The SORE regulations require new engines to be certified and labeled to meet emission standards and other requirements. Typical equipment types that use SORE include lawn and garden equipment, portable generators, and pressure washers. Recent amendments to the SORE regulations will require most landscaping equipment to be zero emissions beginning in 2024. Despite their small size, these engines are highly polluting. The volume of smog-forming emissions from this type of equipment has surpassed emissions from light-duty passenger cars and is projected to be nearly twice those of passenger cars by 2031. Portable generators, including those in recreational vehicles, would be required to meet more stringent standards in 2024 and meet zero-emission standards starting in 2028.[9] Engines that use diesel fuel and engines that are used in stationary equipment, including standby generators, are not subject to the SORE regulations.

California Airborne Toxic Control Measures

As of December 2022, the CARB had developed 26 mobile and stationary source Airborne Toxic Control Measures (ATCMs).[10] The following summarizes the ATCMs that are potentially applicable for land use development projects such as logistics, warehouse, residential, mixed use, and retail development. Source and industry-specific requirements

[8] California Air Resources Board (ARB). 2015. On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation. Website: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed February 9, 2024.

[9] California Air Resources Board (ARB). 2021. Website: https://ww2.arb.ca.gov/news/carb-approves-updated-regulations-requiring-most-new-small-road-engines-be-zero-emission-2024. Accessed February 9, 2024.

[10] California Air Resources Board (ARB). 2023. Website: https://ww2.arb.ca.gov/resources/documents/airborne-toxic-control-measures. Accessed February 9, 2024.

apply to industrial projects, gas stations, dry cleaners, and other types of facilities which are significant sources of TACs.

Asbestos ATCM

In July 2001, CARB approved an ATCM for construction, grading, quarrying, and surface mining operations to minimize emissions of naturally occurring asbestos. The regulation requires application of Best Management Practices (BMPs) to control fugitive dust in areas known to have naturally occurring asbestos and requires notification to the local air district prior to commencement of ground-disturbing activities. The measure establishes specific testing, notification, and engineering controls prior to grading, quarrying, or surface mining in construction zones where naturally occurring asbestos is located on projects of any size. There are additional notification and engineering controls at work sites larger than 1 acre. These projects require the submittal of a "Dust Mitigation Plan" and approval by the CARB prior to the start of a project.

As noted above, asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers into the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

Areas are subject to the regulation if they are identified on maps published by the Department of Conservation as ultramafic rock units or if the Air Pollution Control Officer or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or naturally occurring asbestos on the site. The measure also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity. Review of the Department of Conservation maps indicates that there are no known ultramafic rock on or near the Project Site (DOC 2024b).

Verified Diesel Emission Control Strategies

The EPA and the CARB tiered off-road emission standards only apply to new engines and off-road equipment can last several years. The CARB has developed Verified Diesel Emission Control Strategies (VDECS), which are devices, systems, or strategies used to achieve the highest level of pollution control from existing off-road vehicles, to help reduce emissions from existing engines. VDECS are designed primarily for the reduction of DPM emissions and have been verified by CARB. There are three levels of VDECS, the most effective of which is the Level 3 VDECS. Tier 4 engines are not required to install VDECS because they already meet the emissions standards for lower tiered equipment with installed controls.

Tanner Air Toxics Act and Air Toxics Hot Spots Information and Assessment Act

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Assembly Bill 2588), also known as the Hot Spots Act. To date, as noted above, the CARB has identified more than 21 TACs, and has adopted the EPA's list of Hazardous Air Pollutants (HAPs) as TACs.

Title 24 Green Building Standards

The 2022 California Green Building Standards Code (CCR, Title 24, Part 11), also known as the "CALGreen Code," contains mandatory requirements and voluntary measures for new residential and non-residential buildings (including buildings for retail uses, office uses, public schools, and hospitals) throughout California (CBSC 2022). Development of the CALGreen Code 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. The CALGreen Code was established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction. The City has adopted the CALGreen Code in AMC Section 15.03.010 Adoption of Building Standards Codes.

The CALGreen Code provides standards for bicycle parking, carpool/vanpool/electric vehicle spaces, light and glare reduction, grading and paving, energy-efficient appliances, renewable energy, graywater systems, water efficient plumbing fixtures, recycling and recycled materials, pollutant controls (including moisture control and indoor air quality), acoustical controls, storm water management, building design, insulation, flooring, and framing, among others. Implementation of the CALGreen Code measures reduces energy consumption and vehicle trips and encourages the use of alternative-fuel vehicles which, in turn, reduces pollutant emissions.

TABLE 4.2-3
CALIFORNIA AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California [a] Standards	Federal Standards	
			Primary [b]	Secondary [c]
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
PM10	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	–
PM2.5	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)	–

TABLE 4.2-3
CALIFORNIA AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California [a] Standards	Federal Standards	
			Primary [b]	Secondary [c]
NO_2	AAM	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	Same as Primary
	1 Hour	0.18 ppm (339 µg/m³)	0.100 ppm (188 µg/m³)	–
SO_2	24 Hour	0.04 ppm (105 µg/m³)	–	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m³)
	1 Hour	0.25 ppm (655 µg/m³)	0.075 ppm (196 µg/m³)	–
Lead	30-day Avg.	1.5 µg/m³	–	–
	Calendar Quarter	–	1.5 µg/m³	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m³	
Visibility Reducing Particles	8 hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m³		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m³)		

O_3: ozone; ppm: parts per million; µg/m³: micrograms per cubic meter; –: No Standard; PM10: respirable particulate matter with a diameter of 10 microns or less; AAM: Annual Arithmetic Mean; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; CO: carbon monoxide; mg/m³: milligrams per cubic meter; NO_2: nitrogen dioxide; SO_2: sulfur dioxide; km: kilometer.

[a] *California Air Quality Standards:* California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded.

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

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

Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).

Source: CARB 2016a.

California Health and Safety Code Section 39655 and California Code of Regulations Title 17 Section 93000 (Substances Identified as Toxic Air Contaminants)

The CARB identifies substances as TACs as defined in Health and Safety Code Section 39655 and listed in Title 17, Section 93000 of the California Code of Regulations, "Substances Identified As Toxic Air Contaminants." As explained above, a TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. In general, for those TACs that may cause cancer, there are thresholds set by regulatory agencies below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the State and federal governments have set ambient air quality standards. According to the California Almanac of Emissions and Air Quality, the majority of the estimated health risk from TACs for the State of California can be attributed to relatively few compounds, the most important of which is DPM from diesel fueled engines.

Regional

South Coast Air Quality Management District

In the SoCAB, the SCAQMD is the agency responsible for protecting public health and welfare through the administration of federal and State air quality laws, regulations, and policies. Included in the SCAQMD's tasks are the monitoring of air pollution, the preparation of the Air Quality Management Plan (AQMP) for the SoCAB, and the promulgation of rules and regulations related to its regulatory responsibilities.

SCAG is the federally designated Metropolitan Planning Organization (MPO) and the State-designated transportation planning agency for six counties: Riverside, San Bernardino, Los Angeles, Ventura, Imperial, and Orange.

The SCAQMD and SCAG are jointly responsible for formulating and implementing the AQMP for the SoCAB. SCAG's Regional Mobility Plan and Growth Management Plan form the basis for the land use and transportation control portion of the AQMP.

Air Quality Management Plan

The current regional plan applicable to the Project is the SCAQMD's 2022 AQMP. The SCAQMD is responsible for ensuring that the SoCAB meets the NAAQS and CAAQS by reducing emissions from stationary (area and point), mobile, and indirect sources. To accomplish this goal, the SCAQMD prepares AQMPs in conjunction with the SCAG, County transportation commissions, and local governments; 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 2022 AQMP was adopted on December 2, 2022, by the SCAQMD Governing Board. The 2022 AQMP evaluates integrated strategies and measures to meet the following NAAQS (SCAQMD 2022a):

- 8-hour O_3 target of 80 parts per billion (ppb) by 2024, 75 ppb by 2032, 70 ppb by 2038;
- Annual PM2.5 (12 micrograms per cubic meter [$\mu g/m^3$]) by 2025;
- 1-hour O_3 (120 ppb) by 2023; and
- 24-hour PM2.5 (35 $\mu g/m^3$) by 2023.

South Coast Air Quality Management District Rules

The Project would be required to comply with existing SCAQMD rules for the reduction of fugitive dust and criteria pollutant emissions. The following rules are the most relevant to the Project.

SCAQMD Rule 201 requires a "Permit to Construct" prior to the installation of any equipment "the use of which may cause the issuance of air contaminants…".

SCAQMD Rule 402, Nuisance states that a project shall not "discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

SCAQMD Rule 403, Fugitive Dust requires actions to prevent, reduce, or mitigate fugitive particulate matter emissions. These actions include applying water or chemical stabilizers to disturbed soils; managing haul road dust by applying water; covering all haul vehicles before transporting materials; restricting vehicle speeds on unpaved roads to 15 miles per hour (mph); and sweeping loose dirt from paved site access roadways used by construction vehicles. In addition, Rule 403 requires that vegetative ground cover be established on disturbance areas that are inactive within 30 days after active operations have ceased. Alternatively, an application of dust suppressants can be applied in sufficient quantity and frequency to maintain a stable surface. Rule 403 also requires grading and excavation activities to cease when winds exceed 25 mph.

SCAQMD Rule 445 has been adopted to reduce the emissions of particulate matter from wood-burning devices and prohibits the installation of such devices in any new development.

SCAQMD Rule 1113 governs the sale of architectural coatings and limits the VOC content in paints and paint solvents. Although this rule does not directly apply to the proposed Project, it does dictate the VOC content of paints available for use during building construction and ongoing maintenance.

SCAQMD Rule 1401 under Regulation XIV requires new source review of any new, relocated, or modified facilities that emit TACs. The rule establishes allowable risks for permit units requiring permits pursuant to Rule 201 discussed above.

SCAQMD Rule 1403, Asbestos Emissions from Demolition/Renovation Activities, specifies work practice requirements to limit asbestos emissions from demolition of buildings and other improvements and renovation activities, including the removal and associated disturbance of asbestos-containing materials. All operators are required to maintain records, including waste shipment records, and are required to use appropriate warning labels, signs, and markings. The Project would require the demolition of limited facilities including portions of the existing access road in the Project Site as well as existing underground sewer and stormwater facilities.

Southern California Association of Governments

As noted above, SCAG is the regional planning agency for Orange, Los Angeles, Ventura, Riverside, San Bernardino, and Imperial Counties and, among other things, serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated MPO for the Southern California region. On April 4, 2024, SCAG's Regional Council adopted Connect SoCal 2024, which is SCAG's latest RTP/SCS covering the Southern California region. The RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. The RTP/SCS includes a strong commitment to reduce emissions from transportation sources to improve public health, to meet the NAAQS.

Local

City of Anaheim

The City of Anaheim General Plan's Green Element, adopted in 2004, contains goals that focus on the reduction of vehicle trips and vehicle emissions (Anaheim 2004a). The Green Element comprehensively addresses topics concerning conservation, open space, parks and recreation, trails, and public landscaping. Applicable goals and policies from the Green Element that are related to the reduction of vehicle trips and vehicle emissions and that are relevant to this analysis are provided in Table 4.10-1 in Section 4.10, Land Use and Planning, with a project consistency analysis.

City of Anaheim Greenhouse Gas Reduction Plan

The most recent version of the City of Anaheim's Greenhouse Gas Reduction Plan, developed by Anaheim Public Utilities Department, was adopted in May 2020. The City's Greenhouse Gas Reduction Plan is a vision for the future of Anaheim's electric and water resources to be sustainable and environmentally friendly, while continuing to be affordable and reliable for the benefit of Anaheim Public Utilities Department residential and business customers. The plan outlines baseline metrics and goals for GHG reduction and establishes timelines that are consistent with state policies and SB 100. The GHGRP identifies renewables portfolio targets for increasing the APU power supply generated from renewable sources and also establishes

transportation-related goals for APU to convert its fleet vehicles to result in emissions reductions. It should be noted that the City's GHGRP is applicable to the City's electric and water resources and would not be directly applicable to the Project.

4.2.3 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the Project would result in significant impacts related to air quality if it would:

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

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State Ambient Air Quality Standard;

c) Expose sensitive receptors to substantial pollutant concentrations; or

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

South Coast Air Quality Management District CEQA Significance Thresholds

Table 4.2-4 presents the most current SCAQMD CEQA significance thresholds for daily emissions, TACS, and criteria pollutants applicable to the Project. 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. These regional emission thresholds cannot be used to correlate whether a specific health impact would occur to an individual receptor. These thresholds were developed to assist Lead Agencies by providing a consistent threshold, based on evidence-based scientific criteria and considerations, which could be used to determine whether a project's emissions could significantly contribute to the total emissions occurring within an air basin. The totality of the SoCAB's emissions would determine whether it would be in attainment of the CAAQS and NAAQS.

In *Sierra Club v. County of Fresno* (Friant Ranch, L.P.) (2018) Cal.5th 502, 510, 517-522, the California Supreme Court held generally that an EIR should "make[s] a reasonable effort to substantively connect a project's air quality impacts to likely health consequences." A possible example of such a connection would be to calculate a project's "impact on the days of nonattainment per year" (id. at pp. 521). But the court recognized that there might be scientific limitations on an agency's ability to make the connection between air pollutant emissions and public health consequences in a credible fashion, given limitations in technical methodologies (id. at pp. 520-521). Thus, the Court acknowledged that another option for an agency preparing an EIR might be "to explain why it was not feasible to provide an analysis that connected the air quality effects to human health consequences" (id. at p. 522).

Here, the SCAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of emissions in the SoCAB. At present, the SCAQMD has not provided any methodology to assist local governments in reasonably and accurately assessing the specific connection between mass emissions of ozone precursors (e.g., ROG and NOX) and other pollutants of concern on a regional basis and any specific

effects on public health or regional air quality concentrations that might result from such mass emissions. For this reason and as explained more fully below, the City, in its discretion, has therefore concluded that it is not feasible to predict how mass emissions of pollutants of regional concern from the Project could lead to specific public health consequences, changes in pollutant concentrations, or changes in the number of days for which the SoCAB will be in nonattainment for regional pollutants. Ozone concentrations, for instance, depend upon various complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Because of the complexities of predicting ground-level ozone concentrations related to the NAAQS and CAAQS, it is not feasible, and thus would be speculative to attempt, to link health risks to the magnitude of emissions exceeding the significance thresholds. To achieve the health-based standards established by the EPA, the air districts prepare AQMPs that detail regional programs to attain NAAQS and CAAQS. However, if a project within the SCAQMD exceeds the regional significance thresholds, the project could contribute to an increase in health effects in the basin until the attainment standards are met in the SoCAB.

TABLE 4.2-4
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds (lbs/day)		
Pollutant	**Construction**	**Operation**
VOC	75	55
NOx	100	55
CO	550	550
PM10	150	150
PM2.5	55	55
SOx	150	150
Lead	3	3
Toxic Air Contaminants		
TACs[a]	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)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO_2eq for industrial facilities	
Ambient Air Quality For Criteria Pollutants[b]		
NO_2	1-hour average ≥ 0.18 ppm Annual average ≥ 0.03 ppm (state) and 0.0534 ppm (federal)	
CO	1-hour average ≥ 20.0 ppm (State) 8-hour average ≥ 9.0 ppm (State/federal)	
PM10	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	
PM2.5	24-hour average ≥ 10.4 µg/m^3 (construction) 24-hour average ≥ 2.5 µg/m^3 (operation)	
Sulfate	24-hour average ≥ 25.0 µg/m^3	
Lead 30-day average Rolling 3-month average	1.5 µg/m^3 (state) 0.15 µg/m^3 (federal)	

lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SOx: sulfur oxides; TAC: toxic air contaminants; SCAQMD: South Coast Air Quality Management District; GHG: greenhouse gas; MT/yr CO_2eq: metric tons per year of CO_2 equivalents; NO_2: nitrogen dioxide; ppm: parts per million; µg/m3: microgram per cubic meter.

[a] TACs (carcinogenic and noncarcinogenic)
[b] Ambient air quality threshold based on SCAQMD Rule 403.

Source: SCAQMD 2019a.

It is, however, technically feasible to predict with reasonable accuracy the potential localized health consequences of localized pollutants. As discussed below, a HRA that addresses the potential for additional incidences of cancer as well as a non-cancer hazard index resulting from both the construction-related emissions of the Project has been prepared.

Methodology

California Emission Estimator Model

The Project emissions were calculated by using California Emissions Estimator Model (CalEEMod) version 2022.1.1.24 (CAPCOA 2023). CalEEMod is a computer program accepted by the SCAQMD that can be used to estimate criteria pollutant and GHG emissions associated with land development projects in California. CalEEMod has separate databases for specific counties and air districts. The Orange County database was used for the Project. The model calculates emissions of CO, SO2, PM10, PM2.5, and the O_3 precursors VOC and NOx. For this analysis, the results are expressed in pounds per day (lbs/day) and are compared with the SCAQMD mass daily thresholds described in Table 4.2-4 to determine impact significance for Project-related construction and operations phase emissions.

The CARB has published emission factors for on-road mobile vehicles/trucks in the Emission Factor (EMFAC) mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. Activity levels are a measure of how active a piece of equipment is operated and can be represented as the amount of material processed, elapsed time that a piece of equipment is in operation, horsepower of a piece of equipment used, or VMT per day. An air emissions model (or calculator) combines the equipment emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from both on-site and off-site activities. On-site emissions consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Additionally, paving operations and application of architectural coatings would release ROG emissions. Off-site emissions result from motor vehicle exhaust from delivery vehicles, worker traffic and road dust (PM_{10} and $PM_{2.5}$).

Specific inputs to CalEEMod include land uses and acreages. Construction input data include but are not limited to: (1) the anticipated start and finish dates of each construction activity (e.g., demolition, grading, building, and paving); (2) inventories of construction equipment to be used during each Project activity; (3) areas to be graded for development; (4) volumes of materials to be imported to and exported from the Project Site; (5) areas to be paved; and (6) areas to be painted. The input data and assumptions are discussed in Section 4.2.4, Impact Analysis, below and are shown in notes on the CalEEMod data in Appendix E of this Draft EIR. The CalEEMod model has the capability to calculate reductions in construction emissions from the effects of dust control, off-road diesel-engine classifications, low-emission paints, and other selected measures.

Operational inputs to CalEEMod include (1) the specific year for Project operations; (2) vehicle trip generation rates; (3) land use and location characteristics that contribute to reductions in vehicle miles traveled; and (4) Project criteria for energy use. Output operational emissions data are separated into energy use, area sources, and mobile sources.

The area sources are landscape maintenance equipment, consumer products, and architectural coatings used for routine maintenance. Consumer products (e.g., household cleaners, air fresheners, automotive products, and personal care products) emit VOCs. Mobile sources are the vehicles used by employees, residents, visitors, and vendors at the Project Site. CalEEMod also includes data to calculate emissions reductions based on Project-specific characteristics and resulting from the implementation of mitigation measures.

Construction Equipment Tiers and Emission Factors

As noted above, construction equipment tiers refer to the generation of emission standards established by the EPA and the CARB that apply to off-road diesel equipment engines. The "tier" of an engine depends on the model year and horsepower rating; generally, the newer a piece of equipment is, the greater the tier it is likely to have and the lower the emission standards. Excluding engines greater than 750 horsepower, Tier 1 engines were manufactured generally between 1996 and 2003. Tier 2 engines were manufactured between 2001 and 2007. Tier 3 engines were manufactured between 2006 and 2011. Tier 4 engines are the newest and some incorporate hybrid electric technology; they were manufactured after 2007.

The 2022 amendments of the in-use off-road diesel fueled regulation target the phase-out of high-emitting Tier 0, 1, and 2 engines. Although these older engines only make up about one-third of the Statewide fleet, they account for a consequential 60 percent of oxides of nitrogen emissions Statewide. In fact, a single Tier 0 off-road engine has up to 80 times higher emissions per hour compared to a new Tier 4 Final engine. The implementation of the ARB In-Use Off-Road Diesel Fueled regulation results in construction equipment fleets that will become cleaner each year. The fleet make up and requirements vary across individual fleets as compliance is determined based on calculated fleet averages and the stringency depends on the size of the fleet.

On-site Off-road Construction Equipment

Activity estimates for construction is modeled in CalEEMod utilizing built in default profiles of construction equipment used for a variety of land use construction projects that incorporate estimates of the equipment type, number of equipment, engine tier, hours per day, as well as horsepower and load factors. These equipment profiles were developed based on relevant construction surveys for several land use projects.

Local Concentrations of Criteria Pollutants from On-Site Sources

The SCAQMD has developed an assessment method to evaluate local air quality conditions related to the exposure of persons to criteria pollutants generated on a project site. The SCAQMD developed localized significance threshold (LST) methodology and mass rate look-up tables that public agencies can use to determine whether or not a project may generate significant adverse localized air quality impacts. In addition to the mass daily emissions for regional thresholds, the SCAQMD established CEQA significance thresholds for ambient air quality to address localized impacts. The localized impact analysis is based on the concentration of a pollutant at a receptor site. The concentration standard is either the same

as the NAAQS or CAAQS or is based upon a health-based standard. It is possible for a pollutant to have a significant impact regionally and a less than significant impact locally or vice versa. It is also possible for both impacts (i.e., regional and local) to be significant or less than significant. The look-up tables allow the evaluation of impacts without the complex task of dispersion modeling.

The LST methodology translates the concentration standards into emissions thresholds. The LST methodology is generally recommended to be limited to projects of five acres or less. For projects that exceed five acres, the five-acre LST look-up values can be used as a screening tool to provide a conservative analysis of localized impacts. Use of the LST method for projects that are larger than five acres provides a conservative analysis because equipment operating on a site that is larger than five acres allows for equipment emissions to be distributed over a larger area with a corresponding lower rate of emissions per area (Krause 2018a). Although the Project Site is larger than five acres, SCAQMD recognizes the efficacy of using the LST for larger sites.

The LST methodology addresses NO_2, CO, PM10, and PM2.5 emissions for construction and operational emissions. SO_2 and lead are not included because these pollutants are not generated or produced in negligible amounts in development projects. Ozone is not included because it is a secondary pollutant and local concentrations cannot be estimated from precursor emissions. For NO_2 and CO, the one-hour standards are used and receptors that could be exposed for one hour are considered. For PM10 and PM2.5, the 24-hour standards are used, and the receptors of interest are those where persons could be exposed for 24 hours, such as residences. Because emissions are based on the AAQS, exceedance of the LST represents a potential health impact.

Health Risk Assessment

Health risks represent the increase in cancer and non-cancer risks to sensitive uses within and near the Project associated with exposure to TACs from construction emissions generated from the Project during each of the Project's construction phases. For construction activities, the exposure duration lasts as long as construction activities occur. Cancer risk is expressed as the probability of one person developing cancer out of a million persons due to exposure to TAC emissions for the exposure duration that emissions would occur. A receptor calculated to have a cancer risk of one in one million means that this receptor has a probability of one in one million of developing cancer from the continuous exposure to diesel particulate matter (DPM). The HRA that was prepared for the Project focuses on estimating potential health risk impacts to the nearby land uses from TAC emissions emitted by construction of the proposed Project (Psomas 2024h). DPM released in connection with Project construction were modeled at uses in the vicinity of the Project Site. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including motor vehicles, gasoline stations, dry cleaners, industrial operations, painting operations, and research and teaching facilities. As the Project does not involve development of these typical TAC emitting land uses, an operational HRA was not prepared.

The four steps involved in the risk assessment process are 1) hazard identification, 2) exposure assessment, 3) dose-response assessment, and 4) risk characterization. The following is a brief discussion of each of these steps:

1. **Hazard Identification.** This step involves identification of the emission sources and respective pollutants that may cause adverse health effects at nearby receptors. For this analysis, the primary sources of TACs related to the Project Site are the construction vehicles. The data for diesel exhaust emissions from these vehicles were selected for analysis of potential health risk impacts because it represents the majority of risk associated with the Project.
2. **Exposure Assessment.** Air pollutant dispersion modeling is conducted to determine the extent of pollutant exposure to off-site uses for the emitted pollutants identified from the Hazard Identification step. This involves emission rate quantification, modeling of environmental transport, evaluation of environmental fate, identification of exposure routes, receptor locations, and temporal exposure levels. The exposure assessment for this HRA was conducted using the EPA's American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). This model calculates air pollutant concentrations at receptor locations based on emissions source data, terrain, buildings, and meteorological conditions and is recommended for use in HRAs conducted within the jurisdiction of the SCAQMD.
3. **Dose-Response Assessment.** The dose-response assessment involves characterizing the relationship between a pollutant and the incidence of adverse health effects for exposed populations. For carcinogenic risk, the dose-response relationship indicates the probability of cancer with an estimated exposure, which is also known as the cancer potency factor. Office of Environmental Health Hazard Assessment (OEHHA) has compiled cancer potency factors for use in HRAs. Non-cancer health risks are based on dose-response data developed from animal or human studies to develop acute, 8-hour and chronic Reference Exposure Levels (RELs). Exposure below these RELs is not anticipated to result in adverse health effects. Because the Project Site would be exposed to diesel exhaust from truck, the inhalation pathway was selected for the dose-response assessment. OEHHA has not identified other ingestion pathways for diesel exhaust. The CARB's Hotspots Analysis and Report Program version 2 (HARP2) model was used to assess the dose-response relationship for TACs, as well as the risk characterization for cancer and non-cancer health effects.
4. **Risk Characterization.** Risk characterization is the last step of the HRA, where air pollutant concentrations produced in the exposure assessment are combined with the cancer potency factors and RELs. The population type and exposure period to TACs are selected in this step. The risk characterization uses an OEHHA recommended 30-year exposure period for residential uses.

The OEHHA specifies a significance threshold for chronic (long-term) non-cancer impacts, which is expressed in terms of a hazard index (HI). The HI is based on whether TACs would exceed the Reference Exposure Level, which is the level at which no adverse non-cancer health effects are anticipated. No short-term acute risks have been identified by the CARB

for diesel exhaust exposure. Acute risks for non-cancer thresholds are limited to one to 14 days of exposure. The assumptions applied in calculating cancer risk from the various TACs are based on the methodology published by the SCAQMD and the OEHHA. The HARP2 model developed by the CARB was used to calculate the health risk exposure at the Project Site based on ground-level concentrations of particulate matter developed with the USEPA's AMS/EPA Regulatory Model (AERMOD) air pollutant dispersion modeling. The HRA is included in Appendix E of this Draft EIR (Psomas 2024h).

4.2.4 IMPACT ANALYSIS

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant With Mitigation Incorporated. Pursuant to the SCAQMD's CEQA Air Quality Handbook, a project would be inconsistent with the AQMP if it would (SCAQMD 1993):

- Create an increase in the frequency or severity of air quality violations; cause or contribute to new violations; delay attainment of air quality standards; or
- Exceed the assumptions of the AQMP.

For the first criterion, the main purpose of an AQMP is to bring an area into compliance with the requirements of federal and State air quality standards. For a project to be consistent with the AQMP, the pollutants emitted from the project should not (1) exceed the SCAQMD CEQA air quality significance thresholds or (2) conflict with or exceed the assumptions used for preparing growth forecasts in the AQMP. A project with daily emission rates below the SCAQMD's established air quality significance thresholds (shown in Table 4.2-4) would have a less than significant effect on regional air quality.

To address the criterion of whether the Project would exceed the SCAQMD significance thresholds for ozone precursors and potentially delay the timely attainment of the ambient air quality standards or interim emission reductions of the 2022 AQMP an air quality modeling estimate identified the Project's impact on air quality was performed. As shown in response to Threshold 4.2(b) below, pollutant emissions from the Project would be less than the SCAQMD thresholds with implementation of mitigation measures. Therefore, the Project meets the first criterion with implementation of **MM AQ-1, MM AQ-2, and MM TRANS-1** through **MM TRANS-5**.

With respect to the second criterion, the Project was assessed as to whether it would exceed the assumptions in the AQMP. The SCAQMD's current air quality planning document is the 2022 Air Quality Management Plan (2022 AQMP). The 2022 AQMP is a regional and multiple-agency effort among the SCAQMD, CARB, SCAG, and the USEPA. The 2022 AQMP includes an analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures. The purpose of the 2022 AQMP is to set forth a comprehensive program to promote reductions in criteria pollutants, greenhouse gases, and toxic risk and efficiencies in energy use, transportation, and goods movement. The 2022 AQMP incorporates the latest scientific and technical information and

planning assumptions, including updated emission inventory methods for various source categories; and SCAG's latest growth forecasts that were available in 2022 when the AQMP was developed (SCAQMD 2020a). The 2022 AQMP includes strategies and measures necessary to meet the NAAQS.

The purpose of a consistency finding is to determine whether a project is inconsistent with the policies and regulatory requirements promulgated under regional air quality plans, and thus if it would interfere with the region's ability to comply with federal and State air quality standards. In general, projects are considered consistent with, and would not conflict with or obstruct implementation of the air quality plan if the growth in socioeconomic factors is consistent with the underlying regional plans used to develop the air quality management plan. The AQMP is based on projections of energy usage and vehicle trips from land uses designated by local governments that are within the SoCAB. Implementation of the Project would result in a change in land use compared to existing conditions. However, as discussed in Section 4.12 Population and Housing, of this Draft EIR, the Project would not represent a substantial amount of new housing nor would represent a substantial increase or result in a significant impact when compared to local and regional population projections (residents/employees). Additionally, the City is currently updating the Housing Element of its General Plan to meet the City of Anaheim's Regional Housing Needs Allocation (RHNA) allocation for the Sixth Cycle Housing Element Update, which is a total of 17,453 units of total new construction. The Project would assist the City in achieving their Above Average Income housing units for the 6th RHNA cycle.

In conclusion, with implementation of **MM AQ-1, MM AQ-2, and MM TRANS-1** through **MM TRANS-5**, the Project would result in a less than significant impact related to this threshold.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant With Mitigation Incorporated. Orange County is a nonattainment area for O_3, PM10, and PM2.5, as shown in Table 4.2-1. The Project would generate PM10, PM2.5, NO_2, and O_3 precursors (NOx and VOC) during short-term construction and long-term operations.

Construction-Related Regional Impacts

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. During the construction of the Project, air pollutants would be emitted by off-road and on-road construction equipment and worker vehicles, and fugitive dust would be generated during earth-moving and grading activities on site. Project construction would be completed over three phases, consisting of development of the proposed multiple-family residential uses as Phase 1, followed by the commercial uses as Phase 2, and the single-family residential uses as Phase 3. Relevant elements of each phase related to the analysis of potential air quality construction impacts include (1) site preparation activities to remove vegetation from the

Project Site; (2) on-site grading, demolition and excavation; (3) trenching activities; (4) building construction; (5) architectural coating; and (6) paving activities for asphalt and pavement. Construction of the entire Project is anticipated to take approximately 7 years and 1 month. There would be approximately 513,915 cubic yards of soil export during the first phase of Project construction, approximately 330,283 cubic yards of soil export during second phase of Project construction, and 227,509 cubic yards of soil export during the third phase of Project construction.

Project construction emissions were estimated for the Project's three construction phases using the CalEEMod model described in Section 4.2.3, Thresholds of Significance. Project-specific input was based on Project improvements and construction information described in Section 3.0, Project Description; additional data that was provided by the Applicant and default model settings to estimate reasonable worst-case conditions. The details of phasing, selection of construction equipment, areas to be paved, and other input parameters, including CalEEMod data, are included in Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, of this Draft EIR. Construction related emissions include off-road equipment exhaust; on-road vehicle exhaust; fugitive dust from grading and vehicle travel on paved and unpaved roads; and VOCs from asphalt and architectural coatings. The model inputs reflect compliance with SCAQMD Rules 403 and 402. SCAQMD Rule 403, Fugitive Dust, requires measures such as watering and control of track-out from the site. Dust-control measures are included in the emissions calculations. Construction would also be required to comply with SCAQMD Rule 402, Nuisance, which prohibits the emission of quantities of air contaminants that could cause injury, detriment, nuisance, or annoyance to the public, or that endanger the comfort, repose, health, or safety of the public. The Project would also be required to comply with SCAQMD Rule 1113, Architectural Coatings, which places limits on the VOC content of coatings sold and used, and thus the model inputs reflect adherence with Rule 1113.

Estimated daily construction emissions for each of the Project's phases are shown in Table 4.2-5. The primary source of the VOC emissions generated during construction would be off gassing from architectural coatings that would be applied to new buildings. The primary source of NO_x emissions would be diesel engines from construction equipment during site preparation and grading activities. The primary source of CO emissions would be on-road vehicles from vendor and worker trips during concurrent grading, building, and paving activities. The primary source of PM10 and PM2.5 emissions would be fugitive dust and vehicle exhaust during the concurrent grading, demolition, building, and paving activities. As shown in Table 4.2-5, Project construction mass daily emissions would be less than the SCAQMD's thresholds for CO, SOx, PM10, and PM2.5 but would exceed the SCAQMD's thresholds for VOCs and NOx prior to the implementation of CEQA mitigation measures.

TABLE 4.2-5
ESTIMATED UNMITIGATED MAXIMUM
DAILY CONSTRUCTION EMISSIONS

Year	Emissions (lbs/day)					
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
2024 (Phase 1)	5	102	60	<1	18	7
2025 (Phase 1)	3	17	45	<1	8	2
2026 (Phase 1)	3	16	43	<1	8	2
2027 (Phases 1 and 2)	165	82	96	<1	21	7
2028 (Phase 2)	1	10	17	<1	2	1
2029 (Phases 2 and 3)	14	48	46	<1	1 1	4
2030 (Phases 2 and 3)	13	9	15	<1	<1	<1
2031 (Phase 3)	4	8	13	<1	<1	<1
Maximum Emissions	**165**	**102**	**96**	**<1**	**21**	**7**
SCAQMD Thresholds (Table 4.2-4)	*75*	*100*	*550*	*150*	*150*	*55*
Exceeds SCAQMD Thresholds?	**Yes**	**Yes**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.
Source: SCAQMD 2022 (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

MM AQ-1 requires the use of construction equipment that are compliant with Tier 4 offroad engine standards. Use of these cleaner engines would substantially reduce NOx and VOC emissions to levels that are below the SCAQMD's significance thresholds. In addition, **MM AQ-2** would be implemented as part of the Project, which requires that super-compliant paints that have a VOC content of 10 grams per liter or less be used during construction of Phases 1 and 2. **MM AQ-2** would reduce VOC emissions to levels that are less than the SCAQMD's significance threshold. As shown in Table 4.2-6, Project emissions would be reduced below the SCAQMD's significance thresholds for all emission types with implementation of **MM AQ-1** and **MM AQ-2**.

TABLE 4.2-6
ESTIMATED MITIGATED MAXIMUM DAILY CONSTRUCTION EMISSIONS

Year	Emissions (lbs/day)					
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
2024 (Phase 1)	2	72	65	<1	17	6
2025 (Phase 1)	2	9	46	<1	8	2
2026 (Phase 1)	2	9	45	<1	8	2
2027 (Phase 1 and 2)	33	48	107	<1	19	6
2028 (Phase 2)	1	4	19	<1	1	<1
2029 (Phases 2 and 3)	2	31	48	<1	9	3
2030 (Phases 2 and 3)	1	4	17	<1	<1	<1
2031 (Phase 3)	4	3	15	<1	<1	<1
Maximum Emissions	**33**	**72**	**107**	**<1**	**19**	**5**
SCAQMD Thresholds (Table 4.2-4)	*75*	*100*	*550*	*150*	*150*	*55*
Exceeds SCAQMD Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.
Source: SCAQMD 2022 (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Operations-Related Regional Impacts

Operational emissions from the Project would consist of emissions from area, energy, and mobile sources. The principal source of VOC emissions associated with the Project would result from area sources. Area and energy source emissions are based on CalEEMod assumptions for the specific land uses and size. Mobile source emissions are based on estimated Project-related trip generation forecasts. As described in the Project Description, the non-residential amenity access would be limited to 200 memberships; as such, for purposes of AQ, GHG, and Energy analyses, the ITE trip rate for "Recreational Community Center" (270.62/1000 members per day) was utilized, rather than the ITE trip rate for "Health Fitness Club" that was utilized in LLG's Transportation Impact Analysis. These trips, in addition to the trips for all other land uses quantified by LLG, results in approximately 3,239 trips (LLG 2024).

The peak day operational emissions for VOC, NOx, CO, SOx, PM10, and PM2.5 daily emissions that would be created from the Project's long-term operation have been calculated for the Project. Because the Project would be developed in three phases, separate tables are presented for each of these phases. Separate tables showing the emissions for each phase are needed because this approach allows for a more precise analysis of construction emissions occurring from multiple phases at one time. Specifically, the Project would build Phase 3 at the same time that Phase 1 and Phase 2 of the Project are being operated. As such, the SCAQMD recommends combining both emissions occurring during the construction phase with those occurring simultaneously with the operations phase. These total emissions

are evaluated against the SCAQMD's operations phase emissions thresholds. The operations phase thresholds are lower and consequently more stringent than the construction phase thresholds.

Mitigation required to reduce impacts related to GHGs and transportation (see Section 4.7, Greenhouse Gas Emissions, and Section 4.16, Transportation) would also reduce operational air quality emissions for some criteria pollutants. These reductions are calculated in the worksheets that are provided in Appendix E.

TABLE 4.2-7
UNMITIGATED 2027 PEAK DAILY OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)*					
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Mobile sources	7	6	69	<1	18	5
Area sources	17	1	46	<1	<1	<1
Energy sources	<1	1	1	<1	<1	<1
Water	<1	<1	<1	<1	<1	<1
Waste	<1	<1	<1	<1	<1	<1
Refrig.	<1	<1	<1	<1	<1	<1
Stationary	1	2	<1	<1	<1	<1
Unmitigated Peak Daily Construction (Phase 2, 2027)	5	67	59	<1	13	5
Total Operational Emissions*	29	77	175	**<1**	32	10
SCAQMD Significance Thresholds (Table 4.2-4)	55	55	550	150	150	55
Significant Impact?	**No**	**Yes**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

* Some totals do not add due to rounding.

Source: SCAQMD 2019a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod model outputs.
*Phase 2 – 2027 Peak Day

As shown in Table 4.2-7, emissions of NOx in 2027, during concurrent operation of the multiple-family residential use area and construction of Phase 2 of the Project, would exceed the SCAQMD's regional operational emissions threshold prior to the implementation of mitigation. However, as shown below in Table 4.2-8, with implementation of **MM AQ-1** and **MM AQ-2**, emissions would be reduced below the SCAQMD's thresholds.

TABLE 4.2-8
MITIGATED 2027 PEAK DAILY OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)*					
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Mobile sources	7	6	69	<1	18	5
Area sources	17	1	46	<1	<1	<1
Energy sources	<1	1	1	<1	<1	<1
Water	<1	<1	<1	<1	<1	<1
Waste	<1	<1	<1	<1	<1	<1
Refrig.	<1	<1	<1	<1	<1	<1
Stationary	1	2	<1	<1	<1	<1
Mitigated Peak Daily Construction (Phase 2, 2027)	2	40	68	<1	11	4
Total Operational Emissions	27	50	184	**<1**	29	9
SCAQMD Significance Thresholds (Table 4.2-4)	*55*	*55*	*550*	*150*	*150*	*55*
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

* Some totals do not add due to rounding.

Source: SCAQMD 2019a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod model outputs.

Unmitigated emissions for year 2029 during concurrent operation of the multifamily residential and commercial use areas of the Project and construction of Phase 3 of the Project are shown in Table 4.2-9. Combined concurrent construction and operations of previously constructed uses would be below the SCAQMD's operations phase thresholds for this phase prior to the implementation of mitigation.

TABLE 4.2-9
UNMITIGATED 2029 PEAK DAILY OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)*					
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Mobile sources	9	8	93	<1	27	7
Area sources	20	1	56	<1	<1	<1
Energy sources	<1	2	1	<1	<1	<1
Water	<1	<1	<1	<1	<1	<1
Waste	<1	<1	<1	<1	<1	<1
Refrig.	<1	<1	<1	<1	<1	<1
Stationary	1	2	<1	<1	<1	<1
Unmitigated Peak Daily Construction (Phase 3, 2029)	2	38	29	<1	9	3
Total Operational Emissions*	32	51	178	**<1**	36	10
SCAQMD Significance Thresholds (Table 4.2-4)	*55*	*55*	*550*	*150*	*150*	*55*
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

* Some totals do not add due to rounding.

Source: SCAQMD 2019a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod model outputs.

Table 4.2-10 shows the unmitigated operations phase emissions associated with the full build out of the Project. Since the Project is assumed to be fully built out by the year 2031, there would be no further construction emissions occurring at this time. As shown in Table 4.2-10, operations phase emissions would be below the SCAQMD's operations phase thresholds.

TABLE 4.2-10
UNMITIGATED 2031 PEAK DAILY OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)*					
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Mobile sources	9	6	92	<1	27	7
Area sources	20	1	56	<1	<1	<1
Energy sources	<1	2	1	<1	<1	<1
Water	<1	<1	<1	<1	<1	<1
Waste	<1	<1	<1	<1	<1	<1
Refrig.	<1	<1	<1	<1	<1	<1
Stationary	1	2	<1	<1	<1	<1
Total Operational Emissions*	**30**	**10**	**149**	**<1**	**27**	**7**
SCAQMD Significance Thresholds (Table 4.2-4)	*55*	*55*	*550*	*150*	*150*	*55*
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

* Some totals do not add due to rounding.

Source: SCAQMD 2019a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod model outputs.

In conclusion, with implementation of **MM AQ-1 and MM AQ-2** the Project would have a less than significant impact with mitigation related to this threshold.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Significant and Unavoidable Impact. A significant impact would occur related to this threshold if the Project were to generate pollutant concentrations to a degree that would significantly affect sensitive receptors.

This impact addresses whether implementation of the Project would expose air pollution sensitive receptors to TACs such as construction-generated fugitive dust (PM_{10}), construction-generated DPM, operational-related TACs, or operational CO hotspots.

Sensitive receptors include populations that are more susceptible to the effects of air pollution than the population at large. Exposure of sensitive receptors is addressed below in this evaluation for emissions that would occur from construction and operation of the Project. To address construction activities, the analysis below includes an evaluation of localized air quality impacts from construction and TACs, including diesel particulate matter (DPM) from on-site construction. To address the exposure of sensitive receptors to operational emissions, the analysis below discusses local air quality impacts from on-site operations and CO hotspots. Operational, long-term TACs may be generated by some industrial land uses; commercial land uses (e.g., gas stations and dry cleaners); and diesel

trucks on freeways. Residential and commercial uses do not generate substantial quantities of TACs and are therefore not addressed in this analysis.

Construction

Localized Criteria Pollutants from On-Site Construction

In addition to the mass daily emissions thresholds established by the SCAQMD, short-term local impacts to nearby sensitive receptors from on-site emissions of NO_x, CO, PM10, and PM2.5 are examined herein based on SCAQMD LST methodology. To assess local air quality impacts for development projects without complex dispersion modeling, the SCAQMD developed screening (lookup) tables to assist lead agencies in evaluating impacts.

The LST method is recommended to be limited to projects that are five acres or less. As discussed previously, for projects that exceed five acres, the five-acre LST look-up values can be used as a screening tool to provide a conservative analysis of localized impacts. Use of the LST method for projects that are larger than five acres provides a conservative analysis because equipment operating on a site that is larger than five acres allows for equipment emissions to be distributed over a larger area with a corresponding lower rate of emissions per area (Krause 2018a). Although the Project Site is larger than five acres, SCAQMD recognizes the efficacy of using the LST for larger sites.

For the purposes of an LST analysis, the SCAQMD considers receptors where it is possible that an individual could remain for 1 hour for NO_2 and CO exposure and 24 hours for PM10 and PM2.5 exposure. The emissions limits in the lookup tables are based on the SCAQMD's Ambient Air Quality Standards (SCAQMD 2016). The closest receptors to the Project Site are single-family residential uses adjacent to the Project's boundaries. The emissions thresholds are based on the worst-case condition of having receptors within an average of 25 meters (82 feet) from the center of the Project Site and within 30 feet from the nearest edge of the Project Site. Receptors located further away would be exposed to less Project-induced emissions. Similarly, future onsite receptors located at the proposed multi-family residential development would be greater than 30 feet away from Phase 2 and Phase 3 construction activities.

The LSTs for three-acre sites were utilized for construction Phases 1 and 2. Meanwhile, the LSTs for one-acre sites were used for construction Phase 3. The SCAQMD released guidance titled "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds" which provides clarification that "site acreage" is based on the daily soil disturbance area for each piece of equipment during each construction phase rather than the total acreage of disturbance for that project phase. Based on this methodology, the Project would disturb up to three acres during the demolition, excavation and grading phase for construction of Phases 1 and 2 and one-acre during the excavation and grading phase for construction Phase 3 (SCAQMD 2024a).

Table 4.2-11 shows the maximum daily on-site emissions for construction activities occurring during Phase 1 compared with the SCAQMD LSTs with receptors assumed to be within an average of 25 meters for a Project Site area of three acres.

The Project's maximum daily on-site emissions during Phase 1 construction would occur during the demolition phase for NO_x and CO, and during the grading phase for PM10 and PM2.5. As shown in Table 4.2-11, the localized emissions from the Project's Phase 1 construction activities would result in emissions that would be below the applicable significance thresholds, and no significant impacts would result to sensitive receptors.

TABLE 4.2-11
LOCALIZED SIGNIFICANCE THRESHOLD
UNMITIGATED CONSTRUCTION EMISSIONS (PHASE 1)

	Emissions (lbs/day)			
Emissions and Thresholds	**NOx**	**CO**	**PM10**	**PM2.5**
Project maximum daily on-site emissions	34	30	4	2
SCAQMD Localized Significance Threshold[a]	**138**	**894**	**8**	**5**
Exceed threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Data is for SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, three acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Table 4.2-12 shows the maximum daily mitigated on-site emissions for construction activities occurring during Phase 1 compared with the SCAQMD LSTs with receptors assumed to be within an average of 25 meters for a Project area of three acres. This assumes implementation of **MM AQ-1.**

TABLE 4.2-12
LOCALIZED SIGNIFICANCE THRESHOLD
MITIGATED CONSTRUCTION EMISSIONS (PHASE I)

	Emissions (lbs/day)			
Emissions and Thresholds	**NOx**	**CO**	**PM10**	**PM2.5**
Project maximum daily on-site emissions	6	35	3	1
SCAQMD Localized Significance Threshold[a]	**138**	**894**	**8**	**5**
Exceed threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Data is for SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, three acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Table 4.2-13 shows the maximum daily on-site emissions for construction activities occurring during Phase 2 compared with the SCAQMD LSTs with receptors assumed to be

within an average of 25 meters for a Project Site area of three acres. As shown in Table 4.2-13, the localized emissions from the Project's Phase 2 construction would result in emissions that would be below the applicable significance thresholds, and no significant impacts would result to sensitive receptors.

TABLE 4.2-13
LOCALIZED SIGNIFICANCE THRESHOLD
UNMITIGATED CONSTRUCTION EMISSIONS (PHASE 2)

	Emissions (lbs/day)			
Emissions and Thresholds	**NOx**	**CO**	**PM10**	**PM2.5**
Project maximum daily on-site emissions	26	27	3	2
SCAQMD Localized Significance Threshold[a]	**138**	**894**	**8**	**5**
Exceed threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Data is for SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, three acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Table 4.2-14 shows the maximum daily mitigated on-site emissions for construction activities occurring during Phase 2 compared with the SCAQMD LSTs with receptors assumed to be within an average of 25 meters for a Project Site area of three acres. This assumes implementation of **MM AQ-1.** As shown in Table 4.2-14, the localized emissions from the Project's second phase of construction would result in emissions that would be below the applicable significance thresholds, and no significant impacts would result to sensitive receptors.

TABLE 4.2-14
LOCALIZED SIGNIFICANCE THRESHOLD
MITIGATED CONSTRUCTION EMISSIONS (PHASE 2)

	Emissions (lbs/day)			
Emissions and Thresholds	**NOx**	**CO**	**PM10**	**PM2.5**
Project maximum daily on-site emissions	6	35	3	1
SCAQMD Localized Significance Threshold[a]	**138**	**894**	**8**	**5**
Exceed threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Data is for SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, three acre.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Table 4.2-15 shows the maximum daily on-site emissions for construction activities occurring during Phase 3 compared with the SCAQMD LSTs with receptors assumed to be within an average of 25 meters for a Project Site area of one acre. As shown in Table 4.2-15, the localized emissions from the Project's third phase of construction would result in emissions that would be below the applicable significance thresholds, and no significant impacts would result to sensitive receptors.

TABLE 4.2-15
LOCALIZED SIGNIFICANCE THRESHOLD
UNMITIGATED CONSTRUCTION EMISSIONS (PHASE 3)

	Emissions (lbs/day)			
Emissions and Thresholds	**NOx**	**CO**	**PM10**	**PM2.5**
Project maximum daily on-site emissions	17	26	2	1
SCAQMD Localized Significance Threshold[a]	**81.0**	**485.0**	**4.0**	**3.0**
Exceed threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Data is for SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, one acre.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Table 4.2-16 shows the maximum daily mitigated on-site emissions for construction activities occurring during Phase 3 compared with the SCAQMD LSTs with receptors assumed to be within an average of 25 meters for a Project Site area of one acre. As shown in Table 4.2-16, the localized emissions from the Project's third phase of construction would result in emissions that would be below the applicable significance thresholds, and no significant impacts would result to sensitive receptors.

TABLE 4.2-16
LOCALIZED SIGNIFICANCE THRESHOLD
MITIGATED CONSTRUCTION EMISSIONS (PHASE 3)

	Emissions (lbs/day)			
Emissions and Thresholds	**NOx**	**CO**	**PM10**	**PM2.5**
Project maximum daily on-site emissions	2	18	2	1
SCAQMD Localized Significance Threshold[a]	**81.0**	**485.0**	**4.0**	**3.0**
Exceed threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Data is for SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, one acre.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Toxic Air Contaminant Emissions from On-Site Construction

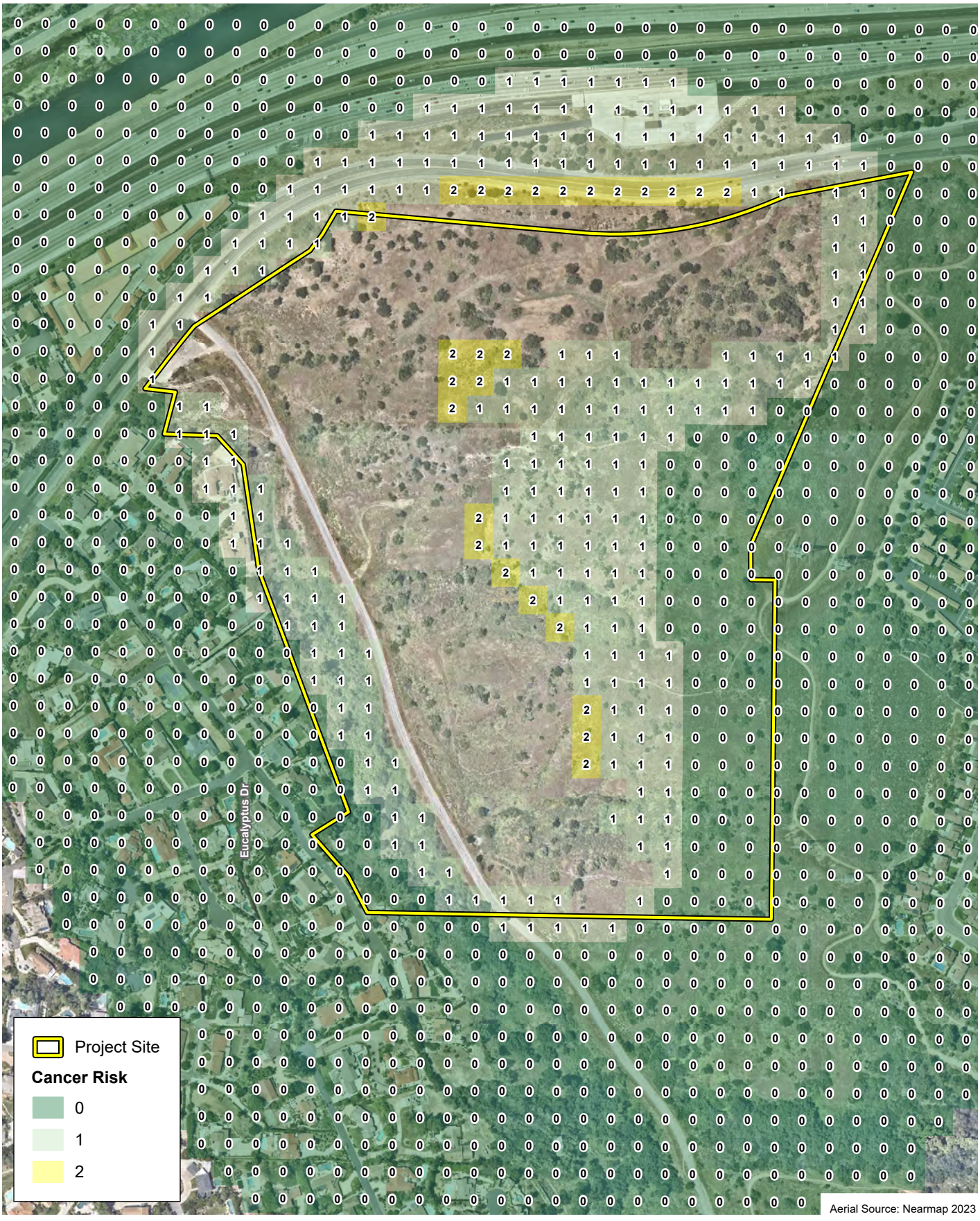
Construction activities would result in short-term, Project-generated emissions of DPM from the exhaust of off-road, heavy-duty diesel equipment used for site preparation (e.g., demolition, excavation, and grading); paving; building construction; and other miscellaneous activities. As noted above, CARB identified DPM as a TAC in 1998. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer time period. According to the Office of Environmental Health Hazard Assessment, HRAs—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.

An HRA was prepared to assess the impact of construction emissions from the development of the Project on nearby residential uses proximate to the Project Site (Psomas 2024h). This HRA is provided as Appendix E of this Draft EIR. As stated in the HRA, the majority of cancer risk associated with construction activities is due to the operation of large offroad construction vehicles. The amount of diesel vehicle usage assumed in the quantification for the HRA is considered conservative considering that the State of California is phasing out the sale of new gasoline and diesel vehicles by 2035 as part of the California Air Resources Board's Advanced Clean Car II Rule.

The assessment of cancer risk shows that the Point of Maximum Impact (PMI) is 12 in a million risk for unmitigated emissions and 2 in a million for mitigated emissions. The PMI is located immediately to the east of the Project Site. However, this area is located in open space, and no one is anticipated to be exposed at the creek for a prolonged period of years. The Maximally Exposed Impacted Resident (MEIR) describes the highest impacted residential use nearest to the Project Site. The MEIR is located to the west of the Project Site along East Autry Drive and would be exposed to a total risk level of 6 in a million risk for unmitigated emissions and 1 in a million for mitigated emissions. The distribution of cancer risk is shown in Exhibit 4.2-1. As shown in Exhibit 4.2-1, cancer risk values decrease with distance due to air pollutant dispersion from the construction areas at the Project Site. This total cancer risk exposure period is comprised of a combined total for risk levels for both children and adults. Because the Project would result in cancer risk that is below the significance threshold adopted by the SCAQMD, the Project would not result in excessive cancer risk.

Non Cancer Risk

Exposures to TACs can also cause chronic (long-term) related non-cancer illnesses, such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system effects, birth defects, or other adverse health effects. As discussed in the Project's HRA, "exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks." Risk characterization for non-cancer health risks from DPM



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Distribution of Cancer Risk

Exhibit 4.2-1

Hills Preserve Project

N
W E
S

400 200 0 400

Feet

PSOMAS

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is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of DPM to a concentration of DPM considered acceptable to public health professionals, termed the Reference Exposure Level (REL). The estimated chronic non-cancer risk hazard index at the maximally impacted residence receptor is <0.1, which, for comparison purposes, is substantially less than the OEHHA hazard index of 1.0 for which no adverse noncancer health risk is anticipated. The Project would result in exposure at nearby uses to risk levels that are substantially below the chronic hazard index of 1.0 and, consequently, would not result in significant health risk impacts related to chronic exposure of diesel exhaust from Project related vehicular emissions. The OEHHA has not defined a non-cancer acute reference exposure level for DPM. As such, acute exposures are not analyzed in this HRA.

Operational

Localized Criteria Pollutants from On-Site Operations

Project-related air emissions may have the potential to exceed the State and/or federal air quality standards in the vicinity of the Project Site even though these pollutant emissions may not be significant enough to create a regional impact to the SoCAB. Project-related air emissions from on-site sources such as architectural coatings and landscaping equipment appliances may have the potential to generate emissions that exceed the State and/or federal air quality standards in the vicinity of the Project even though these pollutant emissions may not be significant enough to create a regional impact to the SoCAB.

The local air quality emissions from on-site operations were analyzed using the SCAQMD's Mass Rate LST Look-up Tables and the LST Methodology. Because the Project would be developed in three phases, separate tables are presented for each of these phases. As explained above, separate tables showing the emissions for each phase are needed because this approach allows for a more precise analysis of construction emissions occurring from multiple phases at one time. Specifically, the Project would build Phase 3 at the same time that Phase 1 and Phase 2 of the Project are being operated/occupied. As such, the SCAQMD recommends combining both emissions occurring during the construction phase (i.e., Phase 3) with those occurring simultaneously with the operations phase (i.e., of Phases 1 and 2). These total emissions are evaluated against the SCAQMD's operations phase LSTs.

Table 4.2-17 shows the unmitigated on-site operational emissions from area sources, energy usage, vehicles operating on-site, the peak daily on-site construction emissions from Phase 2, and the calculated emissions thresholds. As shown in Table 4.2-17, the SCAQMD's operational LST for PM10 and PM2.5 would be exceeded during the 2027 interim scenario (construction and operations) prior to mitigation.

TABLE 4.2-17
LOCALIZED SIGNIFICANCE THRESHOLD UNMITIGATED OPERATIONAL EMISSIONS (YEAR 2027)

On-Site Emission Source	Pollutant Emissions (lbs/day)			
	NOx	CO	PM10	PM2.5
Mobile Sources[a]	<1	3	1	<1
Area Sources	1	46	<1	<1
Energy Sources	1	1	<1	<1
Water	<1	<1	<1	<1
Waste	<1	<1	<1	<1
Refrigerants	<1	<1	<1	<1
Stationary	2	<1	<1	5
Unmitigated Peak Daily Construction (Phase 2, 2027)	26	27	3	2
Project's total maximum daily on-site emissions	30	77	4	7
SCAQMD Localized Significance Threshold[b]	**183**	**1,253**	**3**	**2**
Exceeds Threshold?	**No**	**No**	**Yes**	**Yes**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Onsite vehicle emissions based on 5% of the gross vehicular emissions, which is the estimated portion of vehicle emissions occurring within a quarter mile of the Project Site.

[b] SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, five acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

As shown in Table 4.2-18, with the implementation of feasible construction and operation mitigation (**MM AQ-1, M AQ-2, MM GHG-1** through **MM GHG-3,** and **MM TRANS-1** through **TRANS-5**), the SCAQMD's operational LST for PM10 would continue to be exceeded in the 2027 interim scenario. As such, impacts related to operations LST for the year 2027 would be significant and unavoidable.

TABLE 4.2-18
LOCALIZED SIGNIFICANCE THRESHOLD MITIGATED OPERATIONAL EMISSIONS
(YEAR 2027)

On-Site Emission Source	Pollutant Emissions (lbs/day)			
	NOx	**CO**	**PM10**	**PM2.5**
Mobile Sources[a]	<1	3	1	<1
Area Sources	1	46	<1	<1
Energy Sources	1	1	<1	<1
Water	<1	<1	<1	<1
Waste	<1	<1	<1	<1
Refrigerants	<1	<1	<1	<1
Stationary	2	<1	<1	5
Mitigated Peak Daily Construction (Phase 2, 2027)	4	35	3	1
Project's total maximum daily on-site emissions	9	86	4	1
SCAQMD Localized Significance Threshold[b]	**183**	**1,253**	**3**	**2**
Exceeds Threshold?	**No**	**No**	**Yes**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Onsite vehicle emissions based on 5% of the gross vehicular emissions, which is the estimated portion of vehicle emissions occurring within a quarter mile of the Project Site.

[b] SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, five acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Table 4.2-19 shows the on-site operational emissions from area sources, energy usage, and vehicles operating on-site, the peak daily on-site construction emissions from Phase 3, and the calculated emissions thresholds. As shown in Table 4.2-19, the SCAQMD's operational LST for PM10 would be exceeded during the 2029 interim scenario (construction and operations) prior to mitigation.

TABLE 4.2-19
LOCALIZED SIGNIFICANCE THRESHOLD UNMITIGATED OPERATIONAL EMISSIONS (YEAR 2029)

On-Site Emission Source	Pollutant Emissions (lbs/day)			
	NOx	CO	PM10	PM2.5
Mobile Sources[a]	<1	5	1	<1
Area Sources	1	56	<1	<1
Energy Sources	2	1	<1	<1
Water	<1	<1	<1	<1
Waste	<1	<1	<1	<1
Refrigerants	<1	<1	<1	<1
Stationary	2	<1	<1	<1
Unitigated Peak Daily Construction (Phase 3, 2029)	13	17	2	1
Project's total maximum daily on-site emissions	18	79	3	1
SCAQMD Localized Significance Threshold[b]	**183**	**1,253**	**3**	**2**
Exceeds Threshold?	**No**	**No**	**Yes**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Onsite vehicle emissions based on 5% of the gross vehicular emissions, which is the estimated portion of vehicle emissions occurring within a quarter mile of the Project Site.

[b] SCAQMD Source Receptor Area 17, Central Orange County, 250 feet (76 meters) distance, five acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

As shown in table 4.2-20, with the implementation of feasible construction and operation mitigation(**MM AQ-1, M AQ-2, MM GHG-1** through **MM GHG-3,** and **MM TRANS-1** through **TRANS-5**), impacts related to operations LST for the interim scenario in year 2029 would be significant and unavoidable.

TABLE 4.2-20
LOCALIZED SIGNIFICANCE THRESHOLD MITIGATED OPERATIONAL EMISSIONS (YEAR 2029)

On-Site Emission Source	Pollutant Emissions (lbs/day)			
	NOx	**CO**	**PM10**	**PM2.5**
Mobile Sources[a]	<1	4	1	<1
Area Sources	1	56	<1	<1
Energy Sources	2	1	<1	<1
Water	<1	<1	<1	<1
Waste	<1	<1	<1	<1
Refrigerants	<1	<1	<1	<1
Stationary	2	<1	<1	<1
Mitigated Peak Daily Construction (Phase 3, 2029)	2	18	2	1
Project's total maximum daily on-site emissions	7	79	4	1
SCAQMD Localized Significance Threshold[b]	**183**	**1,253**	**3**	**2**
Exceeds Threshold?	**No**	**No**	**Yes**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Onsite vehicle emissions based on 5% of the gross vehicular emissions, which is the estimated portion of vehicle emissions occurring within a quarter mile of the Project Site.

[b] SCAQMD Source Receptor Area 17, Central Orange County, 250 feet (76 meters) distance, five acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

Table 4.2-21 shows 2031 on-site operational emissions from area sources, energy usage, vehicles operating on-site, and the calculated emissions thresholds.

TABLE 4.2-21
LOCALIZED SIGNIFICANCE THRESHOLD UNMITIGATED OPERATIONAL EMISSIONS (YEAR 2031)

On-Site Emission Source	Pollutant Emissions (lbs/day)			
	NOx	CO	PM10	PM2.5
Mobile Sources[a]	<1	5	1	<1
Area Sources	1	56	<1	<1
Energy Sources	2	1	<1	<1
Water	<1	<1	<1	<1
Waste	<1	<1	<1	<1
Refrigerants	<1	<1	<1	<1
Stationary	2	<1	<1	<1
Project's total maximum daily on-site emissions	6	62	2	1
SCAQMD Localized Significance Threshold[b]	**183.0**	**1,253.0**	**3.0**	**2.0**
Exceeds Threshold?	**No**	**No**	**No**	**No**

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

[a] Onsite vehicle emissions based on 5% of the gross vehicular emissions, which is the estimated portion of vehicle emissions occurring within a quarter mile of the Project Site.

[b] SCAQMD Source Receptor Area 17, Central Orange County, 25-meter distance, five acres.

Source: SCAQMD 2009a (thresholds); see Appendix E, Air Quality and Greenhouse Gas Emissions Calculations, for CalEEMod outputs.

The data provided in Table 4.2-21 show that the ongoing operations of the Project would not exceed the local NOx, CO, PM10, and PM2.5 thresholds of significance.

However, as shown in tables 4.2-17 and 4.2-20, operational LSTs would be exceeded during concurrent construction and operational activities (interim scenarios) and impacts would be significant and unavoidable with feasible mitigation incorporated.

Carbon Monoxide Hotspot

In an urban setting, vehicle exhaust is the primary source of CO. Consequently, the highest CO concentrations generally are found close to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as the distance from the emissions source (e.g., congested intersection) increases. Therefore, for purposes of providing a conservative reasonable worst-case impact analysis, CO concentrations typically are analyzed at congested intersection locations. If impacts are less than significant close to congested intersections, impacts would also be less than significant at more distant sensitive-receptor and other locations.]

A CO hotspot is an area of elevated CO concentrations that is caused by severe vehicle congestion on major roadways, typically near intersections. If a project substantially increases average delay at signalized intersections that are operating at Level of Service (LOS) E or F or causes an intersection that would operate at LOS D or better without the project to operate at LOS E or F with the Project, there is a potential for a CO hotspot. The Project site is located in the SoCAB which is in a CO attainment area; additionally, the SoCAB has been in attainment for CO for over two decades and its "continued attainment" has been verified (CARB 2005).

The proposed Project would not result in the degradation of any of the study intersection's LOS to an E or an F during the year 2029 with Project conditions with the exception of the intersection of Quintana Road and Santa Ana Canyon Road. The Project would increase the delay during the evening peak hour; nevertheless, the intersection does not meet a traffic signal warrant and therefore does not result in an operational deficiency per the LOS standards defined in this report. As such, the Project would not have the potential to substantially change the average LOS at nearby intersections and consequently would not contribute to the potential for the formation of a CO hotspot. Moreover, monitored ambient CO concentrations of 2.4 ppm for 1-hour concentrations and 1.7 for 8-hour concentrations are a small fraction of the California ambient air quality standards of 20 ppm and 9 ppm. Due to the small magnitude of Project's trip generation, exceedance of the ambient air quality standards would not occur.

Therefore, the Project would result in less than significant impacts related to CO hotspots, and no mitigation measures are required.

Conclusion

Even with implementation of **MM AQ-1, M AQ-2, MM GHG-1** through **MM GHG-3,** and **MM TRANS-1** through **TRANS-5**, the Project would result in a significant unavoidable impact related to this threshold.

d) Would the Project result in other emissions (such as those leading to odors adversely affecting a substantial number of people?

Less Than Significant Impact. The occurrence and severity of potential odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receiving location. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Project construction would use equipment and activities that could result in other emissions (such as those leading to odors). However, these odors would be typical when compared to other construction sites and would not be extraordinarily objectionable. Potential construction odors would include diesel exhaust emissions from onsite construction equipment as well as odors that would result from roofing, painting, and paving operations. There may be situations where construction activity odors could be noticed. However, these odors would be temporary and would dissipate rapidly from the source with an increase in

distance and over time. These odors would not be of such magnitude to cause a public nuisance. Also, the SCAQMD has also not identified construction areas to be a significant source of odors in the list of sources that generate significant sources of odors. Therefore, the impacts would be short-term; would not affect a substantial number of people; and would be less than significant.

According to the SCAQMD CEQA Handbook, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). Given its mixed use residential nature, the Project does not include any uses identified by the SCAQMD as being associated with odors, and therefore, would not likely produce objectionable odors. Typical odors generated from operation of the Project would include vehicle exhaust generated by residents, employees, and visitors traveling to and from the Project Site, through the periodic use of landscaping or maintenance equipment, and odors from the temporary storage of typical solid waste (refuse). In addition, the Project uses would be regulated from nuisance odors or other objectionable emissions by SCAQMD Rule 402, Nuisance. Rule 402 prohibits discharge from any source of air contaminants or other material which would cause injury, detriment, nuisance, or annoyance to people or the public. Accordingly, it is reasonable to conclude that any odors produced would be minimal and would be confined to the immediate vicinity.

Therefore, the Project would result in a less than significant impact related to this threshold, and no mitigation is required.

4.2.5 CUMULATIVE IMPACTS

Cumulative Construction Impacts

Construction activities associated with the Project would result in less than significant construction-related regional and localized air quality impacts, as quantified above under Threshold 4.2[c]. Short-term cumulative impacts related to air quality could occur if construction of the Project and other cumulative projects in the surrounding area were to occur simultaneously. In particular, with respect to local impacts, the consideration of cumulative construction particulate (PM10 and PM2.5) impacts is limited to cases when projects constructed simultaneously are within a few hundred yards of each other because of (1) the combination of the short range (distance) of particulate dispersion (especially when compared to gaseous pollutants), and (2) the SCAQMD's required dust-control measures, which further limit particulate dispersion from the Project Site.

SCAQMD's policy with respect to cumulative impacts associated with the above-referenced pollutants and their precursors is that impacts that would be directly less than significant on a project level would also be cumulatively less than significant (SCAQMD 2003). Because the Project's construction emissions are below the SCAQMD's regional and local construction significance thresholds, the Project's regional and local construction emissions would not be cumulatively considerable, and the cumulative impact would be less than significant, and no mitigation measures are either required.

Cumulative Operational Impacts

As shown in Table 4.2-6, Peak Daily Operational Emissions, operational emissions of VOC, NOx, CO, SOx, PM10, and PM2.5 would be below the SCAQMD CEQA significance thresholds. Consistent with the approach described above (under Cumulative Construction Impacts), and based on the SCAQMD's "White Paper on Regulatory Options for Addressing Cumulative Impacts from Air Pollution Emissions" (SCAQMD 2003), the SCAQMD's policy on assessing cumulative impacts associated with the above-referenced pollutants and their precursors is that impacts that would be directly less than significant on a project level would also be cumulatively less than significant. Therefore, because the Project's operational emissions are less than the respective SCAQMD daily operational thresholds, the Project's operations phase activities would not contribute to a cumulatively considerable net increase of a pollutant for which the SoCAB is in nonattainment. Emissions of nonattainment pollutants or their precursors would not be cumulatively considerable and would be less than significant, and no mitigation measures are either required. Nevertheless, as presented in Tables 4.2-17 and 4.2-20, the SCAQMD's operational LST for PM10 would be exceeded during the 2027 and 2029 interim scenarios (construction and operations) even with the implementation of construction and operational mitigation measures **MM AQ-1, M AQ-2, MM GHG-1** through **MM GHG-3,** and **MM TRANS-1** through **TRANS-5**. In this regard, the Project's contribution would be cumulatively considerable, and thus would result in a significant cumulative impact. As such, impacts related to operational LST for the years 2027 and 2029 would be significant and unavoidable.

4.2.6 MITIGATION PROGRAM

MM AQ-1 During construction activities, for all offroad engines that are diesel and above 50 brake horsepower, the contractor shall use engines that comply with USEPA Tier 4 offroad engine standards.

MM AQ-2 Super compliant paints for architectural coatings which have less than 10 grams of volatile organic compounds per liter shall be used during Project construction of Phases 1 and 2. A list of super compliant paints can be found at: http://www.aqmd.gov/home/rules-compliance/compliance/vocs/architectural-coatings/super-compliant-coatings.

4.2.7 SIGNIFICANCE AFTER MITIGATION

Even with implementation of **MM AQ-1**, **MM AQ-2**, and **MM TRANS-1** through **MM TRANS-5**, the Project would result in a significant unavoidable impact related to air quality.