4.2 Air Quality

This section describes the existing air quality conditions of the project site and vicinity, identifies associated regulatory requirements, evaluates potential project and cumulative impacts, and identifies mitigation measures for any significant or potentially significant impacts related to implementation of the Santa Cruz Water Rights Project (Proposed Project). The analysis is based on air quality modeling conducted for the Proposed Project, as part of the preparation of this environmental impact report (EIR). The results of the air quality modeling are summarized in this section and are included in Appendix E.

A summary of the comments received during the scoping period for this EIR is provided in Table 2-1 in Chapter 2, Introduction, and a complete list of comments is provided in Appendix A. There were no comments related to air quality.

4.2.1 Existing Conditions

4.2.1.1 Meteorological and Topographical Conditions

The Proposed Project is located in the North Central Coast Air Basin (Air Basin), which consists of Monterey, Santa Cruz, and San Benito counties and encompasses an area of 5,159 square miles. The northwest sector of the Air Basin is dominated by the Santa Cruz Mountains. The Diablo Range marks the northeastern boundary and, together with the southern extent of the Santa Cruz Mountains, forms the Santa Clara Valley, which extends into the northeastern tip of the Air Basin. Farther south, the Santa Clara Valley merges into the San Benito Valley, which extends northwest–southeast and has the Gabilan Range as its western boundary. To the west of the Gabilan Range is the Salinas Valley, which extends from Salinas at the northwest end to King City at the southeast end. The western side of the Salinas Valley is formed by the Sierra de Salinas, which also forms the eastern side of the smaller Carmel Valley. The coastal Santa Lucia Range defines the western side of the valley (MBARD 2008). This series of mountain ranges and valleys influences the dispersion of criteria air pollutants through the Air Basin.

The semi-permanent Pacific High pressure cell in the eastern Pacific is the basic controlling factor in the climate of the Air Basin. In the summer, the Pacific High pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific High pressure cell forming a stable temperature inversion of hot air over a cool coastal layer of air. As the air currents move onshore, they pass over cool ocean waters and bring fog and relatively cool air into the coastal valleys. The warmer air above acts as a lid to inhibit vertical air movement.

During the summer, the generally northwest–southeast orientation of mountainous ridges tends to restrict and channel the onshore air currents. Elevated ground-surface temperatures in the interior portion of the Salinas and San Benito valleys create a weak low pressure area that intensifies the onshore air flow during the afternoon and evening. In the fall, the surface winds become weak, and the marine layer grows shallow, dissipating altogether on some days. The air flow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High pressure cell, which allows pollutants to build up over a period of a few days. It is most often during this season that the north or east winds develop to transport pollutants from either the San Francisco Bay Area or the Central Valley into the Air Basin. During the winter, the Pacific High migrates southward and has less influence on the Air Basin. Air frequently flows in a southeasterly direction out of the Salinas and San Benito valleys, especially during night and morning hours. Northwest winds are nevertheless still dominant in winter, but easterly flow is more frequent. The general absence of deep, persistent inversions and the occasional storm systems usually results in good air quality for the Air Basin in winter and early spring (MBARD 2008).

4.2.1.2 Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The national and California standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following paragraphs.[1]

Ozone

O_3 is a strong-smelling, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly oxides of nitrogen (NO_x) and reactive organic gases (ROGs, also termed volatile organic compounds or VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric O_3) and at the Earth's surface in the troposphere (ground-level O_3). [2] The O_3 that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good," O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Inhalation of O_3 causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms. Exposure to O_3 can reduce the volume of air that the lungs breathe in and cause shortness of breath. O_3 in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. The occurrence and severity of health effects from O_3 exposure vary widely among individuals, even when the dose and the duration of exposure are the same. Research shows adults and children who spend more time outdoors participating in vigorous physical activities are at greater risk from the harmful health effects of O_3 exposure. While there are relatively few studies of O_3's effects on children, the available studies show that children are no more or less likely to suffer harmful effects than adults. However, there are a number of reasons why children may be more susceptible to O_3 and other pollutants. Children and teens spend nearly twice as much

1 The descriptions of the criteria air pollutants and associated health effects are based on the EPA's Criteria Air Pollutants (EPA 2018b), CARB's Glossary of Air Pollutant Terms (CARB 2019b), and CARB's "Fact Sheet: Air Pollution Sources, Effects and Control" (CARB 2009).

2 The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

time outdoors and engaged in vigorous activities as adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults. Also, children are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults. Children, adolescents and adults who exercise or work outdoors, where O_3 concentrations are the highest, are at the greatest risk of harm from this pollutant (CARB 2019e).

Nitrogen Dioxide and Oxides of Nitrogen

NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x, which includes NO_2 and nitric oxide, plays a major role, together with ROG, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources of NO_x are transportation and stationary fuel combustion sources (such as electric utility and industrial boilers).

A large body of health science literature indicates that exposure to NO_2 can induce adverse health effects. The strongest health evidence, and the health basis for the ambient air quality standards (AAQS) for NO_2, results from controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics. In addition, a number of epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO_2 exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher levels of exposure compared to children with lower exposure levels. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease (CARB 2019c).

Carbon Monoxide

CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent. Notably, because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots is steadily decreasing.

CO is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen. This interferes with oxygen delivery to the body's organs. The most common effects of CO exposure are fatigue, headaches, confusion and reduced mental alertness, light-headedness, and dizziness due to inadequate oxygen delivery to the brain. For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress. Inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance. Unborn babies whose mothers experience high levels of CO exposure during pregnancy are at risk of adverse developmental effects. Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO (CARB 2019a).

Sulfur Dioxide

SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

Controlled human exposure and epidemiological studies show that children and adults with asthma are more likely to experience adverse responses with SO_2 exposure, compared with the non-asthmatic population. Effects at levels near the 1-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity. Also, exposure at elevated levels of SO_2 (above 1 part per million [ppm]) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality. The elderly and people with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most likely to experience these adverse effects (CARB 2019f).

SO_2 is of concern both because it is a direct respiratory irritant and because it contributes to the formation of sulfate and sulfuric acid in particulate matter (NRC 2005). People with asthma are of particular concern, both because they have increased baseline airflow resistance and because their SO_2-induced increase in airflow resistance is greater than in healthy people, and it increases with the severity of their asthma (NRC 2005). SO_2 is thought to induce airway constriction via neural reflexes involving irritant receptors in the airways (NRC 2005).

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides, NO_x, and ROG.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. PM_{10} tends to collect in the upper portion of the respiratory system, whereas $PM_{2.5}$ is small enough to penetrate deeper into the lungs and damage lung tissue. Suspended particulates also produce haze and reduce regional visibility and damage and discolor surfaces on which they settle.

A number of adverse health effects have been associated with exposure to both $PM_{2.5}$ and PM_{10}. For $PM_{2.5}$, short-term exposures (up to 24-hour duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all of the common air pollutants, $PM_{2.5}$ is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide based on the World Health Organization's Global Burden of Disease Project. Short-term exposures to PM_{10} have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits (CARB 2017).

Long-term exposure (months to years) to $PM_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. The effects of long-term exposure to PM_{10} are less clear, although several studies suggest a link between long-term PM_{10} exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer (CARB 2017).

Lead

Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and, in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood, because children are highly susceptible to the effects of lead. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth.

Sulfates

Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere and can result in respiratory impairment, as well as reduced visibility.

Vinyl Chloride

Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide

Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

Visibility-Reducing Particles

Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$ described above.

Reactive Organic Gases

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as ROGs (also referred to as VOCs). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of ROGs result from the formation of O_3 and its related health effects. High levels of ROGs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for ROGs as a group.

Non-Criteria Air Pollutants

Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic non-cancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the California State Legislature (Legislature) in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples of TACs include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB 2019d). DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known carcinogenic organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2019d). CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) (17 California Code of Regulations [CCR] Section 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars; and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2019d). Those most vulnerable to non-cancer health effects are children, whose lungs are still developing, and the elderly, who often have chronic health problems.

Odorous Compounds

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

4.2.1.3 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. The term "sensitive receptors" is used to refer to facilities and structures where people who are sensitive to air pollution live or spend considerable amounts of time. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards (i.e., preschools and kindergarten through grade 12 schools), parks and playgrounds, daycare centers, nursing homes, hospitals, live in housing (i.e., prisons, dormitories, hospices, or similar), and residential communities (sensitive sites or sensitive land uses) (CARB 2005; MBARD 2008).

Sensitive receptors are located immediately adjacent to or within close proximity to the project and programmatic infrastructure component sites.

4.2.2 Regulatory Framework

4.2.2.1 Federal

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for Hazardous Air Pollutants (HAPs) to protect public health and welfare. HAPs include certain VOCs, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

4.2.2.2 State

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. As stated previously, an ambient air quality standard defines the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without harm to the public's health. For each pollutant, concentrations must be below the relevant CAAQS before an air basin can attain the corresponding CAAQS. Air quality is considered in attainment if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

California air districts typically base their thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the air basin can accommodate without affecting the attainment date when attainment will be achieved in the Air Basin for the NAAQS or CAAQS. Thresholds established by air districts are protective of human health, as they are based on attainment of the ambient air quality standards, which reflect the maximum pollutant levels in the outdoor air that would not result in harm to the public's health. Table 4.2-1 presents the NAAQS and CAAQS.

Table 4.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentrations[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 μg/m³	—	Same as Primary[f]
	8 hours	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)[f]	
NO_2	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (137 μg/m³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)[h]	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$	24 hours	—	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	12.0 μg/m³ [i]	15.0 μg/m³
Lead	30-day Average	1.5 μg/m³	—	
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[k]	
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl Chloride	24 hours	0.01 ppm (26 μg/m³)[j]	—	—
Sulfates	24 hours	25 μg/m³	—	—
Visibility reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%	—	

Table 4.2-1. Ambient Air Quality Standards (continued)

Source: CARB 2016.
Notes: ppm = parts per million by volume; μg/m³ = micrograms per cubic meter; mg/m³= milligrams per cubic meter.

[a] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in 17 CCR Section 70200.

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

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

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

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

[f] On October 1, 2015, the primary and secondary NAAQS for O_3 were lowered from 0.075 ppm to 0.070 ppm.

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

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

[i] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/m³ to 12.0 μg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/m³, as was the annual secondary standard of 15 μg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[j] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80-percent decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment Program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. There are several airborne toxic control measures that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR Section 2449 et seq.), In-Use On-Road Diesel-Fueled Vehicles (13 CCR Section 2025), and Limit Diesel-Fueled Commercial Motor Vehicle Idling (13 CCR Section 2485).

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property (Health and Safety Code Section 41700). This section also applies to sources of objectionable odors.

4.2.2.2 Regional

Monterey Bay Air Resources District

The Monterey Bay Air Resources District (MBARD) is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the Air Basin, where the Proposed Project is located. The MBARD operates monitoring stations in the Air Basin, develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The MBARD's Air Quality Management Plans (AQMPs) include control measures and strategies to be implemented to attain CAAQS and NAAQS in the Air Basin. The MBARD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment.

Air Quality Management Plan

The 1991 AQMP for the Monterey Bay Area was the first plan prepared in response to the California Clean Air Act of 1988, which established specific planning requirements to meet the O_3 standard. The California Clean Air Act requires that the AQMP be updated every 3 years. The most recent update is the *2012–2015 Air Quality Management Plan* (2012–2015 AQMP), which was adopted in March 2017, and is an update to the elements included in the 2012 AQMP. The primary elements updated from the 2012 AQMP are the air quality trends analysis, emission inventory, and mobile source programs.

The Air Basin is a nonattainment area for the CAAQS for both O_3 and PM_{10}. The AQMP addresses only attainment of the O_3 CAAQS. Attainment of the PM_{10} CAAQS is addressed in the MBARD's *2005 Report on Attainment of the California Particulate Matter Standards in the Monterey Bay Region* (Particulate Matter Plan), which was adopted in December 2005 and is summarized further below. Maintenance of the 8-hour NAAQS for O_3 is addressed in MBARD's *2007 Federal Maintenance Plan for Maintaining the National Ozone Standard in the Monterey Bay Region* (Federal Maintenance Plan), which was adopted in March 2007 and is also summarized below.

A review of the air monitoring data for 2013 through 2015, from the most recent AQMP, indicates that there were fewer exceedance days of O_3 compared to previous periods (MBARD 2017). The long-term trend shows that progress has been made toward achieving O_3 standards. The number of exceedance days has continued to decline during the past 10 years despite population increases. The MBARD's 2012–2015 AQMP identifies a continued trend of declining O_3 emissions in the Air Basin primarily related to lowered vehicles miles traveled (VMT). Therefore, the MBARD determined progress was continuing to be made toward attaining the 8-hour O_3 standard during the three-year period reviewed (MBARD 2017).

Federal Maintenance Plan

The Federal Maintenance Plan (May 2007) presents the strategy for maintaining the NAAQS for O_3 in the Air Basin. It is an update to an earlier maintenance plan (1994) that was prepared for maintaining the 1-hour NAAQS for O_3 and has since been revoked and superseded by the current 8-hour O_3 standard. Effective June 15, 2004, the EPA designated the Air Basin as an attainment area for the 8-hour NAAQS for O_3. The plan includes an emission inventory for the years 1990 to 2030 for ROG and NO_X, the two primary O_3 precursor gases. A contingency plan is included to ensure that any future violation of the standard is promptly corrected (MBARD 2007).

Particulate Matter Plan

The purpose of the Particulate Matter Plan (December 2005) is to fulfill the requirements of Senate Bill 655, which was approved by the Legislature in 2003 with the objective of reducing public exposure to particulate matter. The legislation requires CARB, in conjunction with local air pollution control districts, to adopt a list of the most readily available, feasible, and cost-effective control measures that could be implemented by air pollution control districts to reduce ambient levels of particulate matter in their air basins (MBARD 2005). The Particulate Matter Plan's proposed activities include control measures for fugitive dust, public education, administrative functions, and continued enhancements to the MBARD's smoke management and emission-reduction incentive programs.

Rules and Regulations

The MBARD establishes and administers a program of rules and regulations to attain and maintain state and national air quality standards and regulations related to TACs. Rules and regulations that may apply to the Proposed Project during construction and/or operations include the following:

- Regulation IV (Prohibitions), Rule 400 (Visible Emissions). This rule provides limits for visible emissions for sources within the MBARD jurisdiction.
- Regulation IV (Prohibitions), Rule 402 (Nuisances). This rule establishes a prohibition against sources creating public nuisances while operating within the MBARD jurisdiction.
- Regulation IV (Prohibitions), Rule 403 (Particulate Matter). This rule provides particulate matter emissions limits for sources operating within the MBARD jurisdiction.
- Regulation IV (Prohibitions), Rule 424 (National Emission Standards for Hazardous Air Pollutants). This rule is to provide clarity on the MBARD's enforcement authority for the National Emission Standards for Hazardous Air Pollutants including asbestos from demolition.
- Regulation IV (Prohibitions), Rule 425 (Use of Cutback Asphalt). This rule establishes VOC emissions limits associated with the use of cutback and emulsified asphalts.
- Regulation IV (Prohibitions), Rule 426 (Architectural Coatings). This rule establishes VOC emissions limits associated with the use of architectural coatings.

4.2.2.3 Air Quality

North Central Coast Air Basin Attainment Designations

Pursuant to the 1990 federal Clean Air Act amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as attainment for that pollutant. If an area exceeds the standard, the area is classified as nonattainment for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards. Similar to the federal Clean Air Act, the California Clean Air Act, designated areas as attainment or nonattainment, but based on CAAQS rather than the NAAQS. Table 4.2-2 identifies the current attainment status of the Air Basin, including the project area, with respect to the NAAQS and CAAQS, and the attainment classifications for the criteria pollutants. The Air Basin is designated as a non-attainment area for the state O_3 and PM_{10} standards. The Air Basin is designated as unclassified or attainment for all other state and federal standards (EPA 2018a; CARB 2018b). Since the Air Basin has met all NAAQS, it is no longer subject to federal conformity requirements (MBARD 2008).

Table 4.2-2. North Central Coast Air Basin Attainment Classification

Pollutant	Averaging Time	Designation/Classification
National Standards		
O_3	8 hours	Unclassifiable/Attainment
NO_2	1 hour, annual arithmetic mean	Unclassifiable/Attainment
CO	1 hour; 8 hours	Unclassifiable/Attainment
SO_2	24 hours; annual arithmetic mean	Unclassifiable/Attainment
PM_{10}	24 hours	Unclassifiable/Attainment
$PM_{2.5}$	24 hours; annual arithmetic mean	Unclassifiable/Attainment
Lead	Quarter; 3-month average	Unclassifiable/Attainment
California Standards		
O_3	1 hour; 8 hours	Nonattainment-Transitional
NO_2	1 hour; annual arithmetic mean	Attainment
CO	1 hour; 8 hours	Attainment
SO_2	1 hour; 24 hours	Attainment
PM_{10}	24 hours; annual arithmetic mean	Nonattainment
$PM_{2.5}$	Annual arithmetic mean	Attainment
Lead	30-day average	Attainment
SO_4	24 hours	Attainment
H_2S	1 hour	Unclassified
Vinyl chloride	24 hours	No designation
Visibility-reducing particles	8 hours (10:00 a.m.–6:00 p.m.)	Unclassified

Sources: CARB 2020a (California); EPA 2020 (national).
Notes: O_3 = ozone; NO_2 = nitrogen dioxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SO_4 = sulfates; H_2S = hydrogen sulfide.

Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across California. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Table 4.2-3 presents the most recent background ambient air quality data from 2016 to 2018. The Santa Cruz monitoring station, located at 2544 Soquel Avenue, Santa Cruz, California, is the nearest air quality monitoring station to the project area. This station monitors O_3 and $PM_{2.5}$. The nearest station that monitors CO and NO_2 in the Air Basin is located at 855 E Laurel Drive, Salinas, California, approximately 30 miles southeast of the project area. The nearest station that monitors PM_{10} in the Air Basin is located at 1979 Fairview Road, Hollister, California, approximately 38 miles southeast of the project area. The data collected at these stations is considered generally representative of the air quality experienced in the vicinity of the project area. This data is shown in Table 4.2-3 and includes the number of days that the ambient air quality standards were exceeded.

4.2.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to air quality. The section identifies the standards of significance used in evaluating the impacts, describes the methods used in conducting the analysis, and evaluates the Proposed Project's impacts and contribution to significant cumulative impacts, if any are identified.

4.2.3.1 Standards of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to air quality are based on Appendix G of the CEQA Guidelines and the City of Santa Cruz CEQA Guidelines, as listed below. A significant impact would occur if the Proposed Project 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.
D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The MBARD has established thresholds of significance for criteria air pollutants of concern for construction and operations (MBARD 2008). For construction, the threshold is 82 pounds per day of PM_{10}. Construction projects using typical construction equipment such as dump trucks, scrappers, bulldozers, compactors and front-end loaders that temporarily emit other air pollutants, such as precursors of O_3 (i.e., ROG and NO_x), are accommodated in the emission inventories of State- and federally required air plans and would not have a significant impact on the AAQS (MBARD 2008).

For operations, a project would result in a significant impact if it results in the generation of emissions of or in excess of 137 pounds per day for ROG or NO_x, 550 pounds per day of CO, 150 pounds per day of sulfur oxides (SO_x), and 82 pounds per day of PM_{10} from on-site sources (MBARD 2008). Notably, if a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions; and, conversely, if a project's emissions are below the MBARD thresholds, then the project's cumulative impact would be considered to be less than significant. As stated above, the Air Basin met all NAAQS. As a result, it is no longer subject to federal conformity requirements (MBARD 2008).

Table 4.2-3. Local Ambient Air Quality Data

Averaging Time	Ambient Air Quality Standard	Measured Concentration and Exceedances by Year		
		2016	*2017*	*2018*
Ozone (O_3) – Santa Cruz Monitoring Station				
Maximum 1-hour concentration (ppm)	0.09 ppm (state)	0.064	0.082	0.075
Number of days exceeding state standard (days)		*0*	*0*	*0*
Maximum 8-hour concentration (ppm)	0.070 ppm (state)	0.058	0.075	0.061
	0.070 ppm (federal)	0.057	0.075	0.061
Number of days exceeding state standard (days)		*0*	*1*	*0*
Number of days exceeding federal standard (days)		*0*	*1*	*0*
Nitrogen Dioxide (NO_2) – Salinas Monitoring Station				
Maximum 1-hour concentration (ppm)	0.18 ppm (state)	0.033	0.034	0.047
	0.100 ppm (federal)	0.033	0.034	0.047
Number of days exceeding state standard (days)		*0*	*0*	*0*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Annual concentration (ppm)	0.030 ppm (state)	0.004	0.004	0.005
	0.053 ppm (federal)	0.004	0.004	0.005
Carbon Monoxide (CO) – Salinas Monitoring Station				
Maximum 1-hour concentration (ppm)	20 ppm (state)	4.2	2.7	3,5
	35 ppm (federal)	4.2	2.7	3.5
Number of days exceeding state standard (days)		*0*	*0*	*0*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Maximum 8-hour concentration (ppm)	9.0 ppm (state)	0.9	0.9	1.2
	9 ppm (federal)	0.9	0.9	1.2
Number of days exceeding state standard (days)		*0*	*0*	*0*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Fine Particulate Matter ($PM_{2.5}$) – Santa Cruz Monitoring Station				
Maximum 24-hour concentration (μg/m³)	35 μg/m³ (federal)	12.7	47.3	92.0
Number of days exceeding federal standard[a]		*0.0 (0)*	*2.2 (2)*	*9.9 (9)*
Annual concentration (μg/m³)	12 μg/m³ (state)	5.3	ND	8.2
	12.0 μg/m³ (federal)	5.2	7.0	8.3
Coarse Particulate Matter (PM_{10}) – Hollister Monitoring Station				
Maximum 24-hour concentration (μg/m³)	50 μg/m³ (state)	ND	ND	*ND*
	150 μg/m³ (federal)	44.3	80.9	95.9
Number of days exceeding state standard[a]		*ND*	*ND*	*ND*
Number of days exceeding federal standard[a]		*0.0 (0)*	*0.0 (0)*	*0.0 (0)*
Annual concentration (state method) (μg/m³)	20 μg/m³ (state)	ND	ND	ND

Sources: CARB 2020b; EPA 2018c.
Notes: ppm = parts per million; μg/m³ = micrograms per cubic meter; ND = insufficient data available to determine the value.
Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.
Exceedances of national and California standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed national or California standards during the years shown. There is no national standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
Santa Cruz Monitoring Station is located at 2544 Soquel Avenue, Santa Cruz, 95060; Salinas Monitoring Station is located at 855 E Laurel Drive, Salinas, 93901; Hollister Monitoring Station is located at 1979 Fairview Road, Hollister, 95023.
[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

Consistency with the AQMP is used by MBARD to determine a project's cumulative impact on regional air quality (i.e., ozone levels). Projects which are not consistent with the AQMP have not been accommodated in the AQMP and will have a significant cumulative impact on regional air quality unless emissions are totally offset (MBARD 2008). For localized impacts of the Proposed Project (i.e., PM_{10}), the threshold for cumulative impacts is the same as that noted above (82 pounds per day of PM_{10}). The localized impacts related to CO hotspots and MBARD's associated thresholds are not applicable, as the Proposed Project would not generate a net increase in operational traffic.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The MBARD recommends an incremental cancer risk threshold of 10 in 1 million. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology. In addition, some TACs have noncarcinogenic effects. The MBARD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) effects.[3]

4.2.3.2 Analytical Methods

This section evaluates the potential air quality impacts associated with construction and operation of the Proposed Project. The analysis of potential impacts addresses the various project and programmatic components listed in Table 4.2-4, which are described in detail in Chapter 3, Project Description.

Table 4.2-4. Project and Programmatic Components

Proposed Project Components	Project Components	Programmatic Components
WATER RIGHTS MODIFICATIONS		
Place of Use	✓	
Points of Diversion	✓	
Underground Storage and Purpose of Use	✓	
Method of Diversion	✓	
Extension of Time	✓	
Bypass Requirement (Agreed Flows)	✓	
INFRASTRUCTURE COMPONENTS		
Water Supply Augmentation		
Aquifer Storage and Recovery (ASR)		✓
New ASR Facilities at Unidentified Locations		✓
Beltz ASR Facilities at Existing Beltz Well Facilities	✓	
Water Transfers and Exchanges and Intertie Improvements		✓
Surface Water Diversion Improvements		
Felton Diversion Fish Passage Improvements		✓
Tait Diversion and Coast Pump Station Improvements		✓

3 Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various noncarcinogens from the Project to published reference exposure levels that can cause adverse health effects.

Construction

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment and soil disturbance) and off-site sources (i.e., on-road haul trucks, delivery trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity; the specific type of operation; and, for dust, the prevailing weather conditions. Therefore, emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions generated during construction of each project and programmatic component modeled. CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant emissions associated with construction activities from a variety of land use projects, such as residential, commercial, and industrial facilities. For the Proposed Project, all project and programmatic infrastructure components (aquifer storage and recovery [ASR] facilities [new ASR facilities and Beltz ASR facilities], intertie improvements, Felton Diversion improvements, and the Tait Diversion and Coast Pump Station improvements) were modeled. Notably, the water rights modifications project component would not directly result in construction activities and therefore would not result in air pollutant emissions and, as such, was not modeled herein.

A construction assumptions scenario was developed for each of the project and programmatic infrastructure components modeled based on the best available information at this time. The earliest possible construction initiation dates were used to provide for a reasonable worst-case analysis, as vehicle and equipment emissions are expected to improve over time, as regulatory requirements become more stringent. Key construction assumptions include phase types, phase timing and duration, off-road equipment use (e.g., type, quantity, and hours of operation per day), number of vehicle trips (e.g., haul trucks, vendor trucks, and worker vehicles) and trip distance, ground disturbance acreage, amount of demolition debris, and paving area. See Appendix E for complete construction assumption details.

A summary of anticipated project and programmatic infrastructure components construction schedules is listed below:

- **ASR Facilities:**
  - New ASR Facilities: Up to four new ASR facilities are anticipated and were conservatively assumed to be constructed concurrently. Facility components would include:
    - Monitoring Wells (2 to 3 wells per ASR facility) (×4) – July 1, 2024 to September 6, 2024
    - Supply Wells (×4) – September 16, 2024 to November 22, 2024
    - Treatment Facilities (×4) – January 1, 2025 to September 12, 2025
  - Beltz ASR Facilities:
    - Beltz 9 Monitoring Well – May 3, 2021 to May 21, 2021[4]
    - Beltz 12 Facility Upgrades – July 5, 2022 to September 9, 2022
    - Beltz 8 Facility Upgrades – September 12, 2022 to January 6, 2023
    - Beltz 9 Facility Upgrades – January 9, 2023 to February 17, 2023
    - Beltz 10 Facility Upgrades – February 20, 2023 to March 31, 2023

4 As indicated in Chapter 3, Project Description, it is anticipated that this monitoring well would be constructed in May 2022, as opposed to May 2021; however, the construction assumptions used in the modeling are based on the earlier date to provide for a conservative analysis.

- **Intertie Improvements:** Three intertie connection projects are anticipated, one project between the City of Santa Cruz (City) and Scotts Valley Water District (SVWD) and two projects between the City and Soquel Creek Water District (SqCWD)/Central Water District (CWD). Three new pump stations are also anticipated, one for the City/SVWD intertie and two for the City/SqCWD/CWD intertie. Additionally, one pump station upgrade is anticipated for the City/SqCWD/CWD intertie. Components with multiple programmatic components were conservatively assumed to be constructed concurrently.
  - Intertie pipeline connections (×2) – City/SqCWD/CWD – May 1, 2022 to November 16, 2022
  - New pump stations (×2) – City/SqCWD/CWD intertie – May 1, 2022 to June 25, 2022
  - Pump station upgrade –City/SqCWD/CWD intertie – April 1, 2022 to May 7, 2022
  - Intertie pipeline connection – City/SVWD intertie – May 2, 2027 to November 17, 2027
  - New pump station – City/SVWD intertie – May 2, 2027 to June 26, 2027
- **Felton Diversion Improvements:**
  - Felton Diversion improvements – June 27, 2027 to August 4, 2027
- **Tait Diversion and Coast Pump Station Improvements:**
  - Coast Pump Station improvements – April 1, 2028 to May 12, 2028
  - Tait Diversion improvements – May 15, 2028 to December 15, 2028

For each of these infrastructure components, the selected phase type and duration were based on the best available information provided by the City. Phase timing and sequencing was considered where two or more phases overlap; the maximum daily emissions was estimated and presented in this analysis.

Off-road equipment emissions were estimated in CalEEMod based on the type of equipment, the number of pieces of each equipment, and the hours of operation. CalEEMod default values for equipment horsepower and load factor were applied. The majority of equipment was assumed to be in operation for 8 hours per day. However, for well drilling and construction, some pieces of equipment would need to operate up to 24 hours per day. Internal combustion engines used by construction equipment would result in emissions of ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$.

Emissions from vehicle trips are estimated in CalEEMod based on the number of trips, the trip distance, and emission factors for the vehicle category. Regarding the vehicle categories, and consistent with CalEEMod default values, worker trips are assumed to be passenger vehicles and light-duty trucks, vendor truck trips are assumed to be a mix of medium- and heavy-heavy duty trucks, and haul truck trips are assumed to be heavy-heavy duty trucks. Each worker, vendor, and haul truck was estimated to result in two one-way trips. As with equipment, internal combustion engines used by vehicles would result in emissions of ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$.

Fugitive dust (PM_{10} and $PM_{2.5}$ emissions) is generated by entrained dust, which results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, which occurs during earth movement phases (site preparation and grading) and during the loading of material into haul trucks. As discussed in Chapter 3, Project Description, of this EIR, the City has identified standard construction practices that would be implemented by the City or its contractors during construction activities, including wind erosion (dust) controls, as further described in the section below.

VOC off-gassing emissions would occur during application of asphalt pavement during paving and the application of paint and other coatings during architectural coating. During paving, ROG off-gassing emissions are estimated in CalEEMod based on the area of asphalt pavement assumed and the default emission factor of 2.62 pounds per acre of VOC. During architectural coating, VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers. VOC evaporative emissions from application of surface coatings was estimated based on the VOC emission factor, the estimated building square footage, and the assumed fraction of surface area. The total square footage of new structures was conservatively assumed; however, the majority of the new surfaces are not anticipated to require coating.

Operation

Once Proposed Project construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new facilities by City staff. As indicated in Chapter 3, Project Description, it is anticipated that up to three new staff would be needed to operate under Proposed Project conditions: one for the Agreed Flows implementation and two for the new ASR facilities maintenance. An additional daily vehicle trip was also included for Beltz ASR maintenance. For long-term operations, it was conservatively estimated that an increase of up to eight daily one-way trips would be generated in support of the project and programmatic components. As a conservative estimate, these new daily vehicle trips were assumed to occur seven days a week, 365 days per year. On-road vehicle emissions were estimated using CalEEMod, with outputs included in Appendix E. No additional sources of criteria air pollutants are anticipated.

Application of Relevant Standard Practices

The Proposed Project includes standard construction practices (see Section 3.4.5.2, Standard Construction Practices), that the City or its contractors would implement to avoid or minimize effects to air quality. These practices and their effectiveness in avoiding and minimizing effects are described below.

Standard Construction Practice #1 requires implementation of erosion control best management practices, such as silt fences, fiber or straw rolls, and/or bales; covering of stockpiled spoils; revegetation and physical stabilization of disturbed areas; and sediment-control fencing, dams, barriers, berms, traps, and basins, for activities occurring in or adjacent to jurisdictional aquatic resources. Standard Construction Practice #2 requires stockpile containment and use of exposed soil stabilization structures. Standard Construction Practice #3 requires use of runoff control devices to be used during construction during the rainy season, and inspection of such devices following rain events. Standard Construction Practice #4 requires implementation of wind erosion (dust) controls, such as watering active construction areas, hydroseeding and/or applying non-toxic soil binders to exposed areas after cut and fill activities, covering all trucks hauling loose materials (such as dirt and sand) off-site, and installing appropriate track-out capture methods for exiting trucks. Given that these practices would be implemented during all construction activities and would control fugitive dust from numerous sources, they would be effective at limiting the potential for fugitive dust generation.

If the Proposed Project would have potentially significant impacts even with the implementation of the above standard construction practices, the impact analysis identifies mitigation measures.

4.2.3.3 Project Impact Analysis

This section provides a detailed evaluation of air quality impacts associated with the Proposed Project.

Impact AIR-1: Conflict with an Applicable Air Quality Plan (Significance Standard A). Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance and therefore would not conflict with the MBARD's AQMP. ***(Less than Significant)***

As described in the MBARD CEQA Guidelines (2008), project emissions that are not accounted for in the AQMP's emission inventory are considered a significant cumulative impact to regional air quality. However, for construction of a project, exhaust emissions are accounted for in the AQMP emissions inventory (MBARD 2018), and therefore Proposed Project construction emissions would not result in a significant impact. Furthermore, as determined in Impact AIR-2 (discussed below), the Proposed Project would result in emissions during short-term construction that would not exceed the MBARD thresholds of significance. Regarding long-term operations, project and programmatic components would result in a minimal increase in on-road vehicle activity and negligible emissions associated with routine inspection and maintenance activities. As such, construction and operation of the Proposed Project would not conflict with or obstruct implementation of the AQMP and this impact would be less than significant.

Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to conflicts with an applicable air quality plan, and therefore, no mitigation measures are required.

Impact AIR-2: Criteria Pollutant Emissions (Significance Standard B). Construction and operation of the Proposed Project would result in emissions of criteria pollutants, but would not exceed adopted thresholds of significance, violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, the Proposed Project would not 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)***

Short-term construction and long-term operational activities associated with all project and programmatic components of the Proposed Project would result in a minimal increase in daily criteria air pollutant emissions and would not exceed the applicable MBARD thresholds. MBARD considers emissions of ROG, NO_X, and PM_{10} from an individual project that exceed the applicable emissions thresholds to be a substantial contribution to a cumulative impact on regional air quality, and projects that do not exceed the project-level thresholds may conclude that they are not cumulatively considerable. As such, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard. This impact would be less than significant, as further described below.

Construction Emissions

Water Rights Modifications

Water rights modifications would not directly result in construction air pollutant emissions and therefore would not exceed the applicable MBARD significance threshold. As such, this project component would result in no direct impacts.

The following analysis evaluates the potential indirect impacts related to construction air pollutant emissions as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

Infrastructure Components

Aquifer Storage and Recovery Facilities

New ASR Facilities. Construction emissions associated with the new ASR components were estimated and are depicted in Table 4.2-5. Notably, since up to four ASR facilities are anticipated, it was conservatively assumed that construction of the individual subparts would be constructed concurrently (i.e., four monitoring wells, four supply wells, or four treatment facilities would be constructed at the same time), but would not overlap with each other (i.e., monitoring well and supply well construction would not overlap, for example).

As shown in Table 4.2-5, maximum daily emissions of PM_{10} associated with construction of new ASR facilities would not exceed the applicable MBARD significance threshold. As such, construction emissions for this programmatic component would result in a less-than-significant impact.

Table 4.2-5. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – New Aquifer Storage and Recovery Facilities

Programmatic Component	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2024						
ASR Monitoring Wells[1]	9.20	82.64	110.68	0.25	3.89	3.49
ASR Supply Wells[1]	10.38	90.77	119.29	0.28	4.58	3.96
Maximum daily emissions	**10.38**	**90.77**	**119.29**	**0.28**	**4.58**	**3.96**
2025						
ASR Facilities[1]	19.67	62.01	94.09	0.16	4.87	2.43
Maximum daily emissions	**19.67**	**62.01**	**94.09**	**0.16**	**4.87**	**2.43**
Summary – New ASR Facilities						
Maximum daily emissions	**19.67**	**90.77**	**119.29**	**0.28**	**4.87**	**3.96**
MBARD threshold	*N/A*	*N/A*	*N/A*	*N/A*	*82*	*N/A*
Threshold exceeded?	**N/A**	**N/A**	**N/A**	**N/A**	**No**	**N/A**

Notes: ASR = aquifer storage and recovery; CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; SO_x = sulfur oxides.
See Appendix E for details.
1 The CalEEMod modeling included in Appendix E accounted for one representative monitoring well, one supply well, and one treatment facility. However, since up to four ASR facilities are anticipated, the emissions outputs for the ASR components were multiplied by four for inclusion in this table, which conservatively assumes that four ASR facilities would be constructed concurrently.

Beltz ASR Facilities. Construction emissions associated with the Beltz ASR facilities were estimated and are depicted in Table 4.2-6. Based on the anticipated schedule for the Beltz ASR facilities, no activities are anticipated to occur concurrently; therefore, emissions from each activity are evaluated individually per the MBARD threshold. As shown in Table 4.2-6, maximum daily emissions of PM_{10} associated with construction of the Beltz ASR facilities would not exceed the applicable MBARD significance threshold. As such, construction emissions for this project component would result in a less-than-significant impact.

Table 4.2-6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Beltz Aquifer Storage and Recovery Facilities

Project Component	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2021						
Beltz 9 ASR Monitoring Well	2.91	28.33	28.11	0.06	1.48	1.35
Maximum daily emissions	**2.91**	**28.33**	**28.11**	**0.06**	**1.48**	**1.35**
2022						
Beltz 8 ASR Facility Upgrades	1.24	10.81	14.44	0.02	0.65	0.56
Beltz 12 ASR Facility Upgrades	1.91	17.17	20.55	0.04	1.03	0.87
Maximum daily emissions	**1.91**	**17.17**	**20.55**	**0.04**	**1.03**	**0.87**
2023						
Beltz 8 ASR Facility Upgrades	0.87	8.70	10.40	0.02	0.48	0.40
Beltz 9 ASR Facility Upgrades	1.44	15.11	14.62	0.03	0.79	0.63
Beltz 10 ASR Facility Upgrades	1.44	15.08	14.57	0.03	0.79	0.63
Maximum daily emissions	**1.44**	**15.11**	**14.62**	**0.03**	**0.79**	**0.63**
Summary - Beltz ASR Facilities						
Maximum daily emissions	**2.91**	**28.33**	**28.11**	**0.06**	**1.48**	**1.35**
MBARD threshold	*N/A*	*N/A*	*N/A*	*N/A*	*82*	*N/A*
Threshold exceeded?	**N/A**	**N/A**	**N/A**	**N/A**	**No**	**N/A**

Notes: ASR = aquifer storage and recovery; CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; SO_x = sulfur oxides.
See Appendix E for details.

Water Transfers and Exchanges and Intertie Improvements

Construction emissions associated with the intertie improvements were estimated and are depicted in Table 4.2-7. Based on the anticipated construction schedules, the intertie improvement programmatic components were assumed to overlap during year 2022 and year 2027. As such, the maximum daily emissions presented are based on the summation of emissions from the construction of all components during that year.

As shown in Table 4.2-7, maximum daily emissions of PM_{10} associated with construction of the intertie improvements would not exceed the applicable MBARD significance threshold. As such, construction emissions for this programmatic component would result in a less-than-significant impact. Notably, based on anticipated construction schedules, the City/SqCWD/CWD intertie connections construction could overlap with Beltz 8 or Beltz 12 facility upgrades (shown in Table 4.2-6 above), and the City/SVWD intertie connection construction could overlap with the Felton Diversion improvements (shown in Table 4.2-8 below), but the overlap of these component would not result in greater emissions than presented Table 4.2-7.

Table 4.2-7. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Intertie Improvements

Programmatic Component	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2022						
City/SqCWD/CWD[1] Intertie - Pipeline	4.35	33.69	33.24	0.07	1.92	1.44
City/SqCWD/CWD[1] Intertie - New Pump Stations	11.72	37.54	47.50	0.08	13.24	7.60
City/SqCWD/CWD[1] Intertie - Pump Station Upgrade	2.01	17.59	22.67	0.04	0.95	0.87
Maximum daily emissions[2]	**18.08**	**88.82**	**103.41**	**0.19**	**16.11**	**9.91**
2027						
City/SVWD Intertie - Pipeline	1.84	12.33	16.15	0.03	0.73	0.50
City/SVWD Intertie - New Pump Station	5.81	15.49	23.49	0.04	6.45	3.65
Maximum daily emissions[2]	**7.65**	**27.82**	**39.64**	**0.07**	**7.18**	**4.15**
Summary – Intertie Improvements						
Maximum daily emissions	**18.08**	**88.82**	**103.41**	**0.19**	**16.11**	**9.91**
MBARD threshold	*N/A*	*N/A*	*N/A*	*N/A*	*82*	*N/A*
Threshold exceeded?	**N/A**	**N/A**	**N/A**	**N/A**	**No**	**N/A**

Notes: CO = carbon monoxide; CWD = Central Water District; MBARD = Monterey Bay Air Resources District; N/A = not applicable; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; SO_x = sulfur oxides; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District.
See Appendix E for details.

1 The CalEEMod modeling included in Appendix E for the City/SqCWD/CWD intertie connections and new pump stations accounted for one representative intertie connection and one new pump station. However, since two intertie connections and two new pump stations are anticipated for the City/SqCWD/CWD intertie, the emissions outputs for these components were multiplied by two for inclusion in this table, which conservatively assumes concurrent construction.

2 The component construction schedules and worst-case day of emissions are assumed to overlap to provide a conservative assessment.

Felton Diversion Improvements

Construction emissions associated with the Felton Diversion improvements were estimated and are depicted in Table 4.2-8.

Table 4.2-8. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Felton Diversion Improvements

Project Component	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2027						
Felton Diversion Improvements	1.15	10.10	12.07	0.02	0.54	0.45
Maximum daily emissions	**1.15**	**10.10**	**12.07**	**0.02**	**0.54**	**0.45**
MBARD threshold	*N/A*	*N/A*	*N/A*	*N/A*	*82*	*N/A*
Threshold exceeded?	**N/A**	**N/A**	**N/A**	**N/A**	**No**	**N/A**

Notes: CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; SO_x = sulfur oxides.
See Appendix E for details.

As shown in Table 4.2-8, maximum daily emissions of PM_{10} associated with construction of the Felton Diversion improvements would not exceed the applicable MBARD significance threshold. As such, construction emissions of this programmatic component would result in a less-than-significant impact.

Tait Diversion and Coast Pump Station Improvements

Construction emissions associated with the Tait Diversion and Coast Pump Station improvements were estimated and are depicted in Table 4.2-9. Based on the anticipated schedule for the Tait Diversion and Coast Pump Station improvements, no activities are anticipated to occur concurrently; therefore, emissions from each activity are evaluated individually per the MBARD threshold.

As shown in Table 4.2-9, maximum daily emissions of PM_{10} associated with construction of the Tait Diversion and Coast Pump Station improvements would not exceed the applicable MBARD significance threshold. As such, construction emissions of this programmatic component would result in a less-than-significant impact.

Table 4.2-9. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Tait Diversion and Coast Pump Station Improvements

Project Component	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2028						
Coast Pump Station Improvements	1.63	14.34	22.47	0.04	0.65	0.57
Tait Diversion Improvements	3.05	25.93	40.33	0.07	1.26	1.10
Maximum daily emissions	**3.05**	**25.93**	**40.33**	**0.07**	**1.26**	**1.10**
MBARD threshold	*N/A*	*N/A*	*N/A*	*N/A*	*82*	*N/A*
Threshold exceeded?	N/A	N/A	N/A	N/A	No	N/A

Notes: CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; SO_x = sulfur oxides.
See Appendix E for details.

Operational Emissions

As indicated in Section 4.2.3.2, Analytical Methods, once Proposed Project construction is complete, operations would entail a minimal increase in on-road vehicle trips associated with routine inspection and maintenance of the new facilities by City staff (i.e., up to three new staff for both Agreed Flows implementation and new ASR facilities maintenance). For long-term operations, it was conservatively estimated that an increase of up to eight daily one-way trips would be generated in support of the project and programmatic components, primarily associated with routine inspection and maintenance activities by City staff. Operational emissions associated with these on-road vehicles were estimated and are depicted in Table 4.2-10.

As depicted in Table 4.2-10, the minimal increase in on-road vehicle activity would result in a negligible increase in criteria air pollutant emissions and would not exceed the applicable MBARD significance thresholds. Therefore, this impact would be less than significant.

Table 4.2-10. Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

Project Component	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Mobile Sources	0.02	0.04	0.31	<0.01	0.09	0.02
Maximum daily emissions	**0.02**	**0.04**	**0.31**	**<0.01**	**0.09**	**0.02**
MBARD threshold	*137*	*137*	*550*	*150*	*82*	*N/A*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**N/A**

Notes: CO = carbon monoxide; MBARD = Monterey Bay Air Resources District; N/A = not applicable; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; SO_x = sulfur oxides.
See Appendix E for details.

Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to criteria air pollutant emissions, and therefore, no mitigation measures are required.

Impact AIR-3: Exposure of Sensitive Receptors (Significance Standard C). Construction and operation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. (***Less than Significant***)

Health Effects of Criteria Air Pollutants

ROG and NO_x are precursors to O_3, for which the Air Basin is designated as nonattainment with respect to the CAAQS. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of ROG and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the Air Basin due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the precursor emissions would occur because exceedances of the O_3 AAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of reliable and meaningful quantitative methods to assess this impact. This is particularly true of a project with less-than-significant emissions of precursors to O_3. However, the Proposed Project would generate ROG and NO_x exhaust emissions from typical construction activities, which are already accounted for in the emissions inventories of the state- and federally required air plans, and they would not have a significant impact on the attainment and maintenance of the O_3 AAQS or result in potential health effects associated with O_3.

Construction and operation of the Proposed Project would not contribute to exceedances of the NAAQS and CAAQS for NO_2, which is a constituent of NO_x. Health effects that result from NO_2 and NO_x include respiratory irritation, which could be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. In addition, existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Construction and operation of the Proposed Project would not create substantial, localized NO_x impacts. Therefore, the Proposed Project is not anticipated to result in potential health effects associated with NO_2 and NO_x.

Mobile source impacts occur on two scales of motion. Regionally, project-related travel would add to regional trip generation and increase the VMT within the local airshed and the Air Basin. Locally, project-generated traffic would be added to the roadway system near the component sites during construction. If such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and is operating on roadways already crowded with non-project traffic, there is a potential for the formation of microscale CO hotspots in the area immediately around points of substantially elevated and localized CO emissions, such as around congested intersections. During construction, the Proposed Project would result in CO emissions from construction worker vehicles, haul trucks, and off-road equipment. Title 40, Section 93.123(c)(5) of the California Code of Regulations, Procedures for Determining Localized CO, PM_{10}, and $PM_{2.5}$ Concentrations (hot-spot analysis), states that "CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities, which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site" (40 CCR Section 93.123). Since construction activities would be temporary for each project component, a construction hotspot analysis would not be required. The Proposed Project would result in minimal additional traffic trips during operation for routine inspection and maintenance and therefore would not exceed the MBARD CO screening criteria resulting in the formation of potential CO hotspots. Thus, the Proposed Project's CO emissions would not contribute to significant health effects associated with this pollutant.

As depicted in Table through Table 4.2-9 above, construction and operation of the Proposed Project would result in minimal emissions of PM_{10} and $PM_{2.5}$ and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter or obstruct the Air Basin from coming into attainment for these pollutants. Since PM_{10} is representative of the levels of DPM, the Proposed Project would also not result in substantial DPM emissions during construction and operation, and therefore, would not result in significant health effects related to DPM exposure. Due to the minimal contribution of PM_{10} and $PM_{2.5}$ during construction and operations, it is not anticipated that the Proposed Project would result in potential health effects related to particulate matter.

The California Supreme Court's *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 decision (referred to herein as the Friant Ranch decision) (issued on December 24, 2018), addresses the need to "substantively connect" mass emission values for criteria air pollutants to specific health consequences, and contains the following direction from the California Supreme Court: "The Environmental Impact Report (EIR) must provide an adequate analysis to inform the public how its bare numbers translate to create potential adverse impacts or it must explain what the agency *does* know and why, given existing scientific constraints, [if] it cannot translate potential health impacts further." (Italics original.) (Sierra Club v. County of Fresno 2018.) As this statement suggests, an EIR may deal adequately with the question of attempting to connect air pollutant emissions with human health effects if the EIR "adequately explains why it is not scientifically feasible at the time of drafting to provide such an analysis." (*Id.*) Currently, the MBARD, CARB, and EPA have not approved a quantitative method to reliably, meaningfully, and consistently translate the mass emission estimates for the criteria air pollutants resulting from the Proposed Project to specific health effects. In addition, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days.

In connection with the judicial proceedings culminating in issuance of the Friant Ranch decision, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) filed amicus briefs attesting to the extreme difficulty of correlating an individual project's criteria air pollutant emissions to specific health impacts. Both SJVAPCD and SCAQMD have among the most sophisticated air quality modeling and health impact evaluation capabilities of the air districts in California. The key, relevant points from SCAQMD and SJVAPCD briefs are summarized herein.

In requiring a health impact type of analysis for criteria air pollutants, it is important to understand how O_3 and particulate matter are formed, dispersed, and regulated. The formation of O_3 and particulate matter in the atmosphere, as secondary pollutants,[5] involves complex chemical and physical interactions of multiple pollutants from natural and anthropogenic sources. The O_3 reaction is self-perpetuating (or catalytic) in the presence of sunlight because NO_2 is photochemically reformed from nitric oxide. In this way, O_3 is controlled by both NO_x and ROG emissions (NRC 2005). The complexity of these interacting cycles of pollutants means that incremental decreases in one emission may not result in proportional decreases in O_3 (NRC 2005). Although these reactions and interactions are well understood, variability in emission source operations and meteorology creates uncertainty in the modeled O_3 concentrations to which downwind populations may be exposed (NRC 2005). Once formed, O_3 can be transported long distances by wind, and due to atmospheric transport, contributions of precursors from the surrounding region can also be important (EPA 2008). Because of the complexity of O_3 formation, a specific tonnage amount of ROG or NO_X emitted in a particular area does not equate to a particular concentration of O_3 in that area (SJVAPCD 2015). Particulate matter can be divided into two categories: directly emitted particulate matter and secondary particulate matter. Secondary particulate matter, like O_3, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as SO_x and NO_x (SJVAPCD 2015). Because of the complexity of secondary particulate matter formation, including the potential to be transported long distances by wind, the tonnage of particulate matter-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary particulate matter in that area (SJVAPCD 2015). This is especially true for individual projects, like the Proposed Project, where project-generated criteria air pollutant emissions are not derived from a single "point source," but from construction equipment and mobile sources (passenger cars and trucks) driving to, from and around the infrastructure component sites.

Another important technical nuance is that health effects from air pollutants are related to the concentration of the air pollutant that an individual is exposed to, not necessarily the individual mass quantity of emissions associated with an individual project. For example, health effects from O_3 are correlated with increases in the ambient level of O_3 in the air a person breathes (SCAQMD 2015). However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient O_3 levels over an entire region (SCAQMD 2015). The lack of link between the tonnage of precursor pollutants and the concentration of O_3 and $PM_{2.5}$ formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects; rather, it is the concentration of resulting O_3 that causes these effects (SJVAPCD 2015). Indeed, the AAQS, which are statutorily required to be set by EPA at levels that are requisite to protect the public health, are established as concentrations of O_3 and $PM_{2.5}$ and not as tonnages of their precursor pollutants (EPA 2018b). Because the ambient air quality standards are focused on achieving a particular concentration region-wide, the tools and plans for attaining the ambient air quality standards are regional in nature. For CEQA analyses, project-generated emissions are typically estimated in pounds per day or tons per year and compared to mass daily or annual emission thresholds. While CEQA thresholds are established at levels that the air basin can accommodate without affecting the attainment date for the AAQS, even if a project exceeds established CEQA significance thresholds, this does not mean that one can easily determine the concentration of O_3 or particulate matter that will be created at or near the project site on a particular day or month of the year, or what specific health impacts will occur (SJVAPCD 2015).

In regard to regional concentrations and air basin attainment, the SJVAPCD emphasized that attempting to identify a change in background pollutant concentrations that can be attributed to a single project, even one as large as the entire Friant Ranch Specific Plan, is a theoretical exercise. The SJVAPCD brief noted that it "would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have" (SJVAPCD 2015). The situation is further complicated by the fact that background concentrations of regional pollutants are not

5 Air pollutants formed through chemical reactions in the atmosphere are referred to as secondary pollutants.

uniform either temporally or geographically throughout an air basin, but are constantly fluctuating based upon meteorology and other environmental factors. SJVAPCD noted that the currently available modeling tools are equipped to model the impact of all emission sources in the San Joaquin Valley Air Basin on attainment (SJVAPCD 2015). The SJVAPCD brief then indicated that, “Running the photochemical grid model used for predicting O_3 attainment with the emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NO_x and VOC in the Valley) is not likely to yield valid information given the relative scale involved” (SJVAPCD 2015).

SCAQMD and SJVAPCD have indicated that it is not feasible to quantify project-level health impacts based on existing modeling (SCAQMD 2015; SJVAPCD 2015). Even if a metric could be calculated, it would not be reliable because the models are equipped to model the impact of all emission sources in an air basin on attainment and would likely not yield valid information or a measurable increase in O_3 concentrations sufficient to accurately quantify O_3-related health impacts for an individual project.

Nonetheless, following the Supreme Court’s Friant Ranch decision, some EIRs where estimated criteria air pollutant emissions exceeded applicable air district thresholds have included a quantitative analysis of potential project-generated health effects using a combination of a regional photochemical grid model (PGM)[6] and the EPA Benefits Mapping and Analysis Program (BenMAP or BenMAP–Community Edition [CE])[7]. The publicly available health impact assessments (HIAs) typically present results in terms of an increase in health incidences and/or the increase in background health incidence for various health outcomes resulting from the project’s estimated increase in concentrations of O_3 and $PM_{2.5}$.[8] To date, the five publicly available HIAs have concluded that the evaluated project’s health effects associated with the estimated project-generated increase in concentrations of O_3 and $PM_{2.5}$ represent a small increase in incidences and a very small percent of the number of background incidences, indicating that these health impacts are negligible and potentially within the models’ margin of error. It is also important to note that while the results of the five available HIAs conclude that the project emissions do not result in a substantial increase in health incidences, the estimated emissions and assumed toxicity is also conservatively inputted into the HIA and thus, overestimate health incidences, particularly for $PM_{2.5}$.

As explained in the SJVAPCD brief and noted previously, running the PGM used for predicting O_3 attainment with the emissions solely from an individual project like the Friant Ranch project or the Proposed Project is not likely to yield valid information given the relative scale involved. The five available HIAs support the SJVAPCD’s brief contention that consistent, reliable, and meaningful results may not be provided by methods applied at this time. Accordingly, additional work in the industry and more importantly, air district participation, is needed to develop a more meaningful analysis to correlate project-level mass criteria air pollutant emissions and health effects for decision makers and the

---

6 The first step in the publicly available HIAs includes running a regional PGM, such as the Community Multiscale Air Quality (CMAQ) model or the Comprehensive Air Quality Model with extensions (CAMx) to estimate the increase in concentrations of O_3 and $PM_{2.5}$ as a result of project-generated emissions of criteria and precursor pollutants. Air districts, such as the SCAQMD, use photochemical air quality models for regional air quality planning. These photochemical models are large-scale air quality models that simulate the changes of pollutant concentrations in the atmosphere using a set of mathematical equations characterizing the chemical and physical processes in the atmosphere (EPA 2017).

7 After estimating the increase in concentrations of O_3 and $PM_{2.5}$, the second step in the five examples includes use of BenMAP or BenMAP-CE to estimate the resulting associated health effects. BenMAP estimates the number of health incidences resulting from changes in air pollution concentrations (EPA 2018c). The health impact function in BenMAP-CE incorporates four key sources of data: (i) modeled or monitored air quality changes, (ii) population, (iii) baseline incidence rates, and (iv) an effect estimate. All of the five example HIAs focused on O_3 and $PM_{2.5}$.

8 The following CEQA documents included a quantitative HIA to address the requirements of the Friant Ranch decision: (1) California State University Dominguez Hills 2018 Campus Master Plan EIR (CSU Dominguez Hills 2019), (2) March Joint Powers Association K4 Warehouse and Cactus Channel Improvements EIR (March JPA 2019), (3) Mineta San Jose Airport Amendment to the Airport Master Plan EIR (City of San Jose 2019), (4) City of Inglewood Basketball and Entertainment Center Project EIR (City of Inglewood 2019), and (5) San Diego State University Mission Valley Campus Master Plan EIR (SDSU 2019).

public. Furthermore, at the time of writing, every HIA has concluded that health effects estimated using the PGM and BenMAP approach are not substantial and are even potentially within the models' margin of error.

In summary, because construction and/or operation of the Proposed Project would not result in the emissions of criteria air pollutants that would exceed the applicable MBARD significance thresholds, and because the MBARD thresholds are based on levels that the Air Basin can accommodate without affecting the attainment date for the AAQS and the AAQS are established to protect public health and welfare, it is anticipated that the Proposed Project would not result in health effects associated with criteria air pollutants and the impact would be less than significant.

Toxic Air Contaminants

TACs are defined as substances 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. State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and aimed at TACs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal HAPs, and is adopting appropriate control measures for sources of these TACs. During Proposed Project construction, DPM would be the primary TAC emitted from diesel-fueled equipment and trucks. The following measures are required by state law to reduce DPM emissions:

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-Use Off-Road Diesel Vehicles (13 CCR Chapter 9, Section 2449), the purpose of which is to reduce DPM and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13, Section 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to 5 minutes; electric auxiliary power units should be used whenever possible.

Sensitive receptors are located immediately adjacent to or within close proximity to the project and programmatic infrastructure component sites. Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The MBARD recommends an incremental cancer risk threshold of 10 in 1 million. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology (OEHHA 2015). In addition, some TACs have noncarcinogenic effects. The MBARD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) effects.[9]

DPM emissions would be emitted from heavy equipment operations and diesel-fueled trucks. Heavy-duty construction equipment and commercial trucks are subject to CARB Air Toxic Control Measures to reduce diesel particulate emissions. As described in Table 4.2-5 through Table 4.2-9 above, maximum daily total PM_{10} emissions generated by construction equipment operation and trucks (exhaust particulate matter, or DPM, combined with fugitive dust generated by equipment operation and vehicle travel), would be well below the MBARD significance threshold. Moreover, construction of each of the infrastructure components would be short term, after which project-related TAC emissions (e.g., diesel emissions) would cease. For the linear construction components, such as the intertie pipelines, construction would proceed along the alignments and would not require the extensive use of heavy-duty construction equipment or diesel trucks in any one location over the duration of development, which would limit the exposure of

[9] Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various noncarcinogens from the Proposed Project to published reference exposure levels that can cause adverse health effects.

any proximate individual sensitive receptor to TACs. No long-term sources of TAC emissions are anticipated during operation of the Proposed Project. Due to the relatively short period of exposure at any individual sensitive receptor and minimal particulate emissions generated, TACs emitted during construction would not be expected to result in concentrations causing significant health risks, which would be a less-than-significant impact.

Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to exposure of sensitive receptors to substantial pollutant concentrations, and therefore, no mitigation measures are required.

Impact AIR-4:	**Result in Other Emissions Adversely Affecting a Substantial Number of People (Significance Standard D).** Construction and operation of the Proposed Project would not result in other emissions that would adversely affect a substantial number of people. ***(Less than Significant)***

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

Odors would be potentially generated from vehicles and equipment exhaust emissions during Proposed Project construction. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would disperse rapidly from the infrastructure component sites and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Typical sources of odors include landfills, rendering plants, chemical plants, agricultural uses, wastewater treatment plants, and refineries. Regarding operations, the Proposed Project involves improvements to water infrastructure and any odors produced would be minimal and would be similar to existing conditions. Overall, the Proposed Project would not result in odors that would affect a substantial number of people. Therefore, impacts associated with odors during operation would be less than significant.

Mitigation Measures

As described above, the Proposed Project would not result in significant impacts related to other emissions such as odors, and therefore, no mitigation measures are required.

4.2.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative air quality impacts associated with the Proposed Project and past, present, and reasonably foreseeable future projects, as identified in Table 4.0-2 in Section 4.0, Introduction to Analyses, and as relevant to this topic. The geographic area considered in the cumulative analysis for this topic is described below.

Impact AIR-5: Cumulative Air Quality Impacts (Significance Standards A, B, C, and D). Construction and operation of the Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to air quality, with the exception of substantial pollutant concentrations (Significance Standard C), but the Proposed Project's contribution to this impact would not cumulatively considerable. ***(Less than Significant)***

Air Quality Management Plan

As described under Impact AIR-1, project emissions that are not accounted for in the AQMP's emission inventory are considered to have a significant cumulative impact to regional air quality (MBARD 2008). Notably, construction exhaust emissions are accounted for in the AQMP emissions inventory (MBARD 2018). Since the Proposed Project would result in typical construction activities that would generate exhaust emissions that are accounted for in the AQMP, and since long-term operational emissions would be negligible, the Proposed Project would be consistent with the AQMP, as discussed in Impact AIR-1. Therefore, the Proposed Project would result in a less-than-significant cumulative impact as it would not conflict with MBARD's AQMP.

Criteria Air Pollutants

By its nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants (i.e., CAAQS for both O_3 and PM_{10}) is a result of past and present development, and the MBARD develops and implements plans for future attainment of these ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. Specifically, MBARD considers emissions of ROG, NO_X, and PM_{10} from an individual project that exceed the applicable emissions thresholds to be a substantial contribution to a cumulative impact on regional air quality, and projects that do not exceed the project-level thresholds may conclude that they are not cumulatively considerable. The potential for the Proposed Project to result in a cumulatively considerable impact, specifically a cumulatively considerable new increase of any criteria air pollutant for which the project region is nonattainment under an applicable NAAQS and/or CAAQS, is addressed in Impact AIR-2. As previously discussed, the Proposed Project would not exceed the MBARD significance thresholds for any criteria air pollutant. Therefore, the Proposed Project's construction and operational air quality impacts would result in a less-than-significant cumulative impact on regional air quality.

Substantial Pollutant Concentrations

As indicated above, the entire Air Basin is the geographic context for the evaluation of cumulative air quality impacts related to substantial pollutant concentrations and related health effects. There are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days, and there are currently no modeling tools that could provide reliable and meaningful additional information regarding health effects from criteria air pollutants generated by individual projects. As addressed in Impact AIR-3, construction and operation of the Proposed Project would not result in the exceedances of the MBARD significance thresholds, and the MBARD thresholds are based on levels that the Air Basin can accommodate without affecting the attainment date for the AAQS, which are established to protect public health and welfare.

TACs have a localized impact, with the geographic context consisting of sensitive receptors proximate[10] to project and programmatic infrastructure components. The emissions of multiple TACs, including DPM emissions, from cumulative projects could result in a significant cumulative impact to air quality in locations where receptors are exposed to high concentrations of TACs over the long term. However, as described under Impact AIR-3, construction of each of the project and programmatic infrastructure components would be short term, after which project-related TAC emissions would cease. Furthermore, no long-term sources of TAC emissions are anticipated during operation of the Proposed Project. Therefore, due to the relatively short period of exposure at any individual sensitive receptor and minimal DPM emissions generated by the Proposed Project, TACs emitted during Proposed Project construction and operations would not be cumulatively considerable. Therefore, the Proposed Project would result in a less-than-significant cumulative impact related to substantial pollutant concentrations.

Odors

Odors are a localized impact. As indicated in Impact AIR-4, the Proposed Project's impact related to odor would be less than significant. Since the MBARD does not have a specific regulation or rule that addresses objectionable odors, any actions related to odors would be based on public complaints made to the MBARD. Additionally, all future projects, including those listed Table 4.0-2 in Section 4.0, Introduction to Analyses, would be subject to MBARD Rule 402 (Nuisances), which prohibits the discharge of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause, injury or damage to business or property. Therefore, cumulative impacts related to odor would be less than significant.

4.2.4 References

BAAQMD (Bay Area Air Quality Management District). 2017. *California Environmental Quality Act Air Quality Guidelines.* Updated May 2017. Accessed May 2019 at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

CARB (California Air Resources Board). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October 2000. Accessed May 2019 at http://www.arb.ca.gov/diesel/documents/rrpfinal.pdf.

CARB. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005. Accessed June 2020 at https://www.arb.ca.gov/ch/handbook.pdf.

CARB. 2009. "ARB Fact Sheet: Air Pollution Sources, Effects and Control." Last reviewed December 2, 2009.

CARB. 2016. "Ambient Air Quality Standards." May 4, 2016. Accessed November 16, 2020 at https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf.

CARB. 2017. Inhalable Particulate Matter and Health ($PM_{2.5}$ and PM_{10}). Last reviewed August 10, 2017. Accessed May 2019 at https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm.

10 The Bay Area Air Quality Management District identifies a 1,000-foot radius as the geographic context to evaluate health risk impacts, including on a cumulative basis (BAAQMD 2017). MBARD does not have a similar defined radial zone of impact.

CARB. 2019a. "Carbon Monoxide & Health." Accessed May 2019 at https://ww2.arb.ca.gov/resources/carbon-monoxide-and-health.

CARB. 2019b. "Glossary." Accessed January 2019 at https://ww2.arb.ca.gov/about/glossary.

CARB. 2019c. "Nitrogen Dioxide & Health." Accessed May 2019 at https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health.

CARB. 2019d. "Overview: Diesel Exhaust and Health." Accessed May 2019 at https://www.arb.ca.gov/research/diesel/diesel-health.htm.

CARB. 2019e. "Ozone & Health." Accessed May 2019 at https://ww2.arb.ca.gov/resources/ozone-and-health.

CARB. 2019f. "Sulfur Dioxide & Health." Accessed May 2019 at https://ww2.arb.ca.gov/resources/sulfur-dioxide-and-health.

CARB. 2020a. "Area Designation Maps/State and National." Last reviewed December 28, 2018. Accessed November 16, 2020 at http://www.arb.ca.gov/desig/adm/adm.htm.

CARB. 2020b. Top 4 Summary Ambient Air Quality Data. [digital CARB data]. iADAM: Air Quality Data Statistics. Accessed June 2020 at http://www.arb.ca.gov/adam/topfour/topfour1.php.

City of Inglewood. 2019. Inglewood Basketball and Entertainment Center Project EIR. Accessed February 11, 2021 at http://ibecproject.com/D_AirQuality.pdf.

City of San Jose. 2019. Mineta San Jose Airport Amendment to the Airport Master Plan EIR. Accessed February 11, 2021 at https://www.sanjoseca.gov/Home/ShowDocument?id=44596.

CSUDH (California State University Dominguez Hills). 2019. *California State University Dominguez Hills Campus Master Plan EIR*. Accessed February 11, 2021 at https://www.csudh.edu/Assets/csudh-sites/fpcm/docs/campus-master-plan/2019-09-11-FEIR-appendices.pdf.

EPA (U.S. Environmental Protection Agency). 2013. *Integrated Science Assessment (ISA) of Ozone and Related Photochemical Oxidants (Final Report, Feb 2013)*. EPA/600/R-10/076F. February 2013. Accessed May 2019 at https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=247492.

EPA. 2017. Support Center for Regulatory Atmospheric Modeling (SCRAM) - Photochemical Air Quality Modeling. Accessed February 11, 2021 at https://www.epa.gov/scram/photochemical-air-quality-modeling.

EPA. 2018a. "Air Data: Access to Air Pollution Data." July 31, 2018. Accessed June 2020 at https://www.epa.gov/outdoor-air-quality-data.

EPA. 2018b. "Criteria Air Pollutants." March 8, 2018. Accessed May 2019 at https://www.epa.gov/criteria-air-pollutants.

EPA. 2018c. Community Multiscale Air Quality (CMAQ) Models. Accessed February 11, 2021 at https://www.epa.gov/cmaq/cmaq-models-0.

EPA. 2020. "Region 9: Air Quality Analysis, Air Quality Maps." Last updated June 12, 2020. Accessed June 2020 at http://www.epa.gov/region9/air/maps/.

March JPA (March Joint Powers Association). 2019. K4 Warehouse and Cactus Channel Improvements EIR. Accessed February 11, 2021 at https://www.marchjpa.com/documents/docs_forms/K-4_Final_Draft_EIR.pdf.

MBARD (Monterey Bay Air Resources District). 2005. *2005 Report on Attainment of the California Particulate Matter Standards in the Monterey Bay Region*. December 1, 2005.

MBARD. 2007. *2007 Federal Maintenance Plan for Maintaining the National Ozone Standard in the Monterey Bay Region.* Approved March 21, 2007.

MBARD. 2008. *CEQA Air Quality Guidelines*. Adopted October 1995 and latest revision in February 2008.

MBARD. 2017. *2012-2015 Air Quality Management Plan*. Adopted March 15, 2017.

MBARD. 2018. Personal communication via email between Matthew Morales (Dudek) and David Frisbey (MBARD Planning and Air Monitoring Manager). August 20, 2018.

NRC (National Research Council of the National Academies). 2005. *Interim Report of the Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollutants*. Washington, DC: The National Academies Press. Accessed May 2019 at https://doi.org/10.17226/11208.

OEHHA (Office of Environmental Health Hazard Assessment). 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments 2015*. February 2015. Accessed April 2019 at http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.

SCAQMD (South Coast Air Quality Management District). 2015. Brief of Amicus Curiae in Support of Neither Party, *Sierra Club v. County of Fresno*, Case No. S219783 (filed Apr. 13, 2015). Accessed February 11, 2021 at https://www.courts.ca.gov/documents/9-s219783-ac-south-coast-air-quality-mgt-dist-041315.pdf.

SDSU (San Diego State University). 2019. *San Diego State University Mission Valley Campus Master Plan EIR Additional Information Regarding Potential Health Effects of Air Quality Impacts.* December 2019. Accessed February 11, 2021 at https://missionvalley.sdsu.edu/assets/pdfs/FEIR/appendices/4_2_3_SDSU_MV_Health_Effects_Memo.pdf.

SJVAPCD (San Joaquin Valley Air Pollution Control District). 2015. Brief of Amicus Curiae in Support of Defendant and Respondent, County of Fresno, and Real Party in Interest and Respondent, Friant Ranch, L.P., Sierra Club v. County of Fresno, Case No. S219783 (filed Apr. 13, 2015). Accessed February 11, 2021 at https://www.courts.ca.gov/documents/7-s219783-ac-san-joaquin-valley-unified-air-pollution-control-dist-041315.pdf.