Chapter 20 Air Quality

20.1 Introduction

This chapter describes the environmental setting, methods of analysis, and impact analysis for air quality that would potentially be affected by the construction and operation of the Project. Air quality is defined as the amount of air pollution to which the public is exposed. The study area for air quality consists of the areas that would be directly and indirectly affected by Project construction, operations, and maintenance activities. Two geographic scales define the air quality study area: (1) the *local* study area is the Project footprint (i.e., Project area) plus areas within 1,000 feet of the construction and operational fence line[1]; and (2) the *regional* study area is the affected air basin. The Project area and the primary haul routes are in the Sacramento Valley Air Basin (SVAB); as such, the SVAB constitutes the regional air quality study area. The regional air quality study area is further comprised of four air districts where Project activity would occur, and these include Colusa County Air Pollution Control District (CCAPCD), Glenn County Air Pollution Control District (GCAPCD), Tehama County Air Pollution Control District (TCAPCD), and Yolo-Solano Air Quality Management District (YSAQMD).

Tables 20-1a and 20-1b summarize the CEQA determinations and NEPA conclusions for construction and operation impacts, respectively, between alternatives.

Table 20-1a. Summary of Construction Impacts and Mitigation Measures for Air Quality Resources

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact AQ-1: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during construction, or conflict with or obstruct implementation of the applicable air quality plan			
No Project	NI	-	NI
Alternative 1	S	**Mitigation Measure AQ-1.1**: Zero Emission and/or Near Zero Emission Vehicles and Off-Road Equipment **Mitigation Measure AQ-1.2**: Offset Construction-Generated Criteria Pollutants in CCAPCD, GCAPCD, and YSAQMD	SU

[1] The fence line is the boundary around the area where construction or maintenance activities would occur and that is not accessible to the public.

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Alternative 2	S	**Mitigation Measure AQ-1.1**: Zero Emission and/or Near Zero Emission Vehicles and Off-Road Equipment **Mitigation Measure AQ-1.2**: Offset Construction-Generated Criteria Pollutants in CCAPCD, GCAPCD, and YSAQMD	SU
Alternative 3	S	**Mitigation Measure AQ-1.1**: Zero Emission and/or Near Zero Emission Vehicles and Off-Road Equipment **Mitigation Measure AQ-1.2**: Offset Construction-Generated Criteria Pollutants in CCAPCD, GCAPCD, and YSAQMD	SU
Impact AQ-3: Result in impacts on Federal Air Quality Conformity			
No Project	NE	-	NE
Alternative 1	NE	-	NE
Alternative 2	NE	-	NE
Alternative 3	NE	-	NE
Impact AQ-4a: Expose sensitive receptors to substantial pollutant concentrations - toxic air contaminants			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact AQ-4b: Expose sensitive receptors to substantial pollutant concentrations - localized criteria pollutant emissions			
No Project	NI/NE	-	NI/NE
Alternative 1	S/SA	No feasible mitigation measures identified	SU/SA
Alternative 2	S/SA	No feasible mitigation measures identified	SU/SA
Alternative 3	S/SA	No feasible mitigation measures identified	SU/SA
Impact AQ-4c: Expose sensitive receptors to substantial pollutant concentrations – asbestos, lead-based paint, or fungal spores that cause Valley Fever			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact AQ-5: Result in odors adversely affecting a substantial number of people			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

Notes:
There are no NEPA determinations for Impact AQ-1.
There are no CEQA determinations for Impact AQ-3.
NI = CEQA no impact
LTS = CEQA less-than-significant impact

S = CEQA significant
SU = CEQA significant and unavoidable
NE = NEPA no effect or no adverse effect
AE = NEPA adverse effect
SA = NEPA substantial adverse effect

Table 20-1b. Summary of Operation Impacts and Mitigation Measures for Air Quality Resources

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during operation, or conflict with or obstruct implementation of the applicable air quality plan			
No Project	NI	-	NI
Alternative 1	S	**Mitigation Measure AQ-2.1**: Recreational Boat Emissions Minimization Plan **Mitigation Measure AQ-2.2**: Offset Operation-Generated Criteria Pollutants in CCAPCD and GCAPCD	SU
Alternative 2	S	**Mitigation Measure AQ-2.1**: Recreational Boat Emissions Minimization Plan **Mitigation Measure AQ-2.2**: Offset Operation-Generated Criteria Pollutants in CCAPCD and GCAPCD	SU
Alternative 3	S	**Mitigation Measure AQ-2.1**: Recreational Boat Emissions Minimization Plan **Mitigation Measure AQ-2.2**: Offset Operation-Generated Criteria Pollutants in CCAPCD and GCAPCD	SU
Impact AQ-3: Result in impacts on Federal Air Quality Conformity			
No Project	NE	-	NE
Alternative 1	NE	-	NE
Alternative 2	NE	-	NE
Alternative 3	NE	-	NE
Impact AQ-4a: Expose sensitive receptors to substantial pollutant concentrations – toxic air contaminants			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact AQ-4b: Expose sensitive receptors to substantial pollutant concentrations – localized criteria pollutant emissions			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact AQ-4c: Expose sensitive receptors to substantial pollutant concentrations – asbestos, lead-based paint, or fungal spores that cause Valley Fever			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact AQ-5: Result in odors adversely affecting a substantial number of people			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

Notes:
There are no NEPA determinations for Impact AQ-2.
There are no CEQA determinations for Impact AQ-3.
NI = CEQA no impact
LTS = CEQA less-than-significant impact
S = CEQA significant
SU = CEQA significant and unavoidable
NE = NEPA no effect or no adverse effect

20.2 Environmental Setting

20.2.1. Criteria Pollutants

Criteria pollutants are a group of six common air pollutants for which the federal and state governments have set national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively (Appendix 4A, *Regulatory Requirements*, Table 4A.16-1). Criteria pollutants are defined as ozone, carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM), which consists of particulates 10 microns in diameter or less (PM10) and 2.5 microns in diameter or less (PM2.5). Ozone is considered a regional pollutant because its precursors affect air quality on a regional scale; nitrogen oxides (NO_x) and reactive organic gases (ROGs) react photochemically to form ozone, and this reaction occurs at some distance downwind of the emissions source. Pollutants such as CO, NO_2, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally. PM is both a local and regional pollutant.

Concentrations of criteria pollutants are commonly used indicators of ambient air quality for which acceptable levels of exposure can be determined. The ambient air quality standards for these pollutants are set with an adequate margin of safety for public health and the environment (Clean Air Act Section 109). Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants and form the scientific basis for new and revised ambient air quality standards.

Table 20-2 provides a brief description of sources and health effects of the six criteria pollutants. The primary criteria pollutants generated by the alternatives are ozone precursors (NO_X and ROG), CO, NO_2, SO_2, and PM.[2] Additional narrative on sources and health effects of these pollutants follows the table.

Table 20-2. Sources and Potential Health and Environmental Effects of Criteria Pollutants

Pollutant	Primary Sources	Potential Effects
Ozone (O_3)	Formed by a chemical reaction between ROG and NO_X in the presence of sunlight. Primary sources of ROG and NO_X are vehicle exhaust, industrial combustion, gasoline storage and transport, solvents, paints, and landfills.	Inflammation of the mucous membranes and lung airways; wheezing; coughing and pain when inhaling deeply; decreased lung capacity; aggravation of lung and heart problems. Reduced crop yield and damage to plants, rubber, some textiles, and dyes.
Particulate matter (PM)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, and automobiles.	Irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Carbon monoxide (CO)	A component of motor vehicle exhaust that is formed when carbon in fuel is not burned completely.	Reduced ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impaired vision and dizziness that can lead to unconsciousness or death.
Nitrogen dioxide (NO_2)	Motor vehicles, electric utilities, and other sources that burn fuel.	Aggravation of lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming and nutrient overloading, which deteriorates water quality. Brown discoloration of the atmosphere.
Sulfur dioxide (SO_2)	Petroleum refineries, cement manufacturing, metal processing facilities, locomotives, large ships, and fuel combustion in diesel engines.	Aggravation of lung and heart problems. Converts to sulfuric acid, which can damage marble, iron, and steel. Damage to crops and natural vegetation. Impaired visibility.
Lead (Pb)	Metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia; damage to the kidneys, liver, brain, reproductive, nerves, and other organs; and neurological problems, including learning deficits and lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: California Air Pollution Control Officers Association no date.

[2] Pb is also a criteria pollutant, and there are state standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility particulates. However, these pollutants are typically associated with industrial sources, which are not included as part of the Project Alternatives. Accordingly, they are not evaluated further.

20.2.1.1. Ozone

Ozone, or smog, is a photochemical oxidant that is formed when ROGs and NO_X (both by-products of the internal combustion engine) react with sunlight. ROGs are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROGs are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen. In addition to serving as an integral participant in ozone formation, NO_X also directly acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens by impairing the immune system.

Ozone poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggregate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term ozone exposure and nonaccidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (U.S. Environmental Protection Agency 2021a). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50% decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggests that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (U.S. Environmental Protection Agency 2016). In addition to human health effect, ozone has been tied to crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death (U.S. Environmental Protection Agency 2021a).

20.2.1.2. Carbon Monoxide

CO is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. In the study area, high CO levels are of greatest concern during the winter, when periods of light winds combine with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover, motor vehicles exhibit increased CO emission rates at low air temperatures. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation. Exposure to CO at high concentrations can also cause fatigue, headaches, confusion, dizziness, and chest pain (California Air Resources Board no date a).

There are no ecological or environmental effects from ambient CO (California Air Resources Board no date a).

20.2.1.3. Nitrogen Dioxide

NO_2 can be directly emitted from combustion sources, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Much of the NO_2 in the ambient air, however, is photochemically formed by the combination of NO and other air pollutants. For this reason, NO_2 levels can vary depending on direct emissions levels and changes in atmospheric conditions, particularly the amount of sunlight.

A large body of scientific literature suggests that NO_2 exposure can intensify responses to allergens in asthmatics. Epidemiological studies have also demonstrated an association between NO_2 and premature death, cardiopulmonary effects, decreased lung-function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Like other pollutants, children and individuals with underlying respiratory conditions (e.g., asthma) are at greater risk of experiencing adverse effects following exposure to NO_2 (California Air Resources Board 2020 no date b).

In addition to potential human health impacts, NO_2 can reduce visibility. High NO_2 concentrations (greater than 0.2 parts per million [ppm]) over prolonged periods (100 hours or more) have also been reported to injure crops (California Air Resources Board no date b).

20.2.1.4. Sulfur Dioxide

SO2 is generated by burning of fossil fuels, industrial processes, and natural sources, such as volcanoes. The major adverse health effects associated with SO2 exposure pertain to the upper respiratory tract. Controlled human and epidemiological studies show that exposure to SO2 near the 1-hour NAAQS of 0.075 ppm can result in asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness. These symptoms can be more pronounced during exercise or physical activity. Exposure at elevated levels of SO2 (above 1 ppm) may result in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality, especially among the elderly and people with cardiovascular disease or chronic lung disease (California Air Resources Board No Date c).

In addition to potential human health impacts, SO2 deposition contributes to soil and surface water acidification and acid rain (California Air Resources Board No Date c).

20.2.1.5. Particulate Matter

PM pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. PM that is less than 10 microns in diameter, about 1/7th the thickness of a human hair, is referred to as PM10. Particulate matter that is 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair, is referred to as PM2.5. Major sources of PM10 include motor vehicles; 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. PM2.5 results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. Particulate matter also forms when gases emitted from industries and motor vehicles, such as SO_2, NO_X, and ROG, undergo chemical reactions in the atmosphere.

Particulate pollution can be transported over long distances and may adversely affect the human respiratory system, especially for people who are naturally sensitive or susceptible to breathing problems. Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms.

Depending on their composition, both PM10 and PM2.5 can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (U.S. Environmental Protection Agency 2021b).

20.2.2. Toxic Air Contaminants

Although NAAQS and CAAQS have been established for criteria pollutants, no ambient standards exist for toxic air contaminants (TACs). Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, the California Air Resources Board (CARB) has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). The primary TAC of concern associated with the Project is diesel particulate matter (DPM). Asbestos is also a potential TAC of concern due to the need for building demolitions in the reservoir inundation area.

DPM is generated by diesel-fueled equipment and vehicles. CARB estimates that DPM emissions are responsible for about 70% of the total ambient air toxics risk (California Air Resources Board 2000:8). Short-term exposure to DPM can cause acute irritation (e.g., eye, throat, and bronchial), neurophysiological symptoms (e.g., lightheadedness, nausea), and respiratory symptoms (e.g., coughing, phlegm). The International Agency for Research on Cancer (2012) has classified diesel engine exhaust as “carcinogenic to humans, based on sufficient evidence that exposure is associated with an increased risk for lung cancer.”

Asbestos is the name given to several naturally occurring fibrous silicate minerals. Before the adverse health effects of asbestos were identified, asbestos was widely used as insulation and fireproofing in buildings, and it can still be found in some older buildings. It is also found in its natural state in ultramafic rock (i.e., igneous and metamorphic rock with low silica content) that has undergone partial or complete alteration to serpentine rock (or serpentinite) and often contains chrysotile asbestos. The inhalation of asbestos fibers into the lungs can result in a variety of adverse health effects, including inflammation of the lungs, respiratory ailments (e.g., asbestosis, which is scarring of lung tissue that results in constricted breathing), and cancer (e.g., lung cancer and mesothelioma, which is cancer of the linings of the lungs and abdomen) (U.S. Environmental Protection Agency 2021c). While asbestos may have been used in buildings that would be demolished during Project construction, according to the California Department of Conservation (2000), naturally occurring asbestos (NOA) is not found in the study area.

20.2.3. Valley Fever

Valley Fever is not an air pollutant, but is a disease caused by inhaling *Coccidioides immitis* (*C. immitis*) fungus spores. The spores are found in certain types of soil and become airborne when the soil is disturbed. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Valley Fever symptoms generally occur within 2 to 3 weeks of exposure. Approximately 60% of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Among those who are exposed and seek medical treatment, the most common symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches (U.S. Geological Survey 2000:4). While the fungus spores can be found all over California, some of the highest incidents have been reported in the mid- to southern Central Valley and the Coastal Valley (e.g., Kern, Kings, San Luis Obispo, Fresno, Tulare, Madera, and Monterey Counties) (California Department of Public Health 2020). In general, cases of Valley Fever between 2011 and 2017 are low (i.e., fewer than 5 cases during that period) in Tehama, Colusa, Glenn, and Yolo Counties, where the Project's primary soil disturbance activities would occur (Centers for Disease Control 2020).

20.2.4. Regional Climate and Meteorology

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted from those sources. Meteorological and topographical conditions are also important—atmospheric conditions, such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. Land use and land management also contribute to microclimates through the absorption and emission of GHG emissions.

California is divided into 15 air basins based on geographic features that create distinctive regional climates. The regional air quality study area includes the SVAB. The following section discusses climate and meteorological information associated with the SVAB. Figure 20-1 illustrates the study area within the SVAB. The figure also shows the boundaries for the air districts where Project activity would occur.

20.2.4.1. Sacramento Valley Air Basin

The SVAB is bounded on the north by the Cascade Range, on the south by the SJVAB, on the east by the Sierra Nevada, and on the west by the Coast Ranges. The SVAB contains all of Tehama, Glenn, Butte, Colusa, Yolo, Sutter, Yuba, Sacramento, and Shasta Counties, as well as portions of Solano and Placer Counties (17 California Code of Regulations [Cal. Code Regs.] §60106).

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During winter, the north Pacific storm track intermittently dominates Sacramento Valley weather, and fair weather alternates with periods of extensive clouds and precipitation. Periods of dense and persistent low-level fog, which is most prevalent between storms, are also characteristic of winter weather in the valley. The frequency and persistence of heavy fog in the valley diminish with the approach of spring. The average yearly temperature range for the Sacramento Valley is 20°F to 115°F, with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

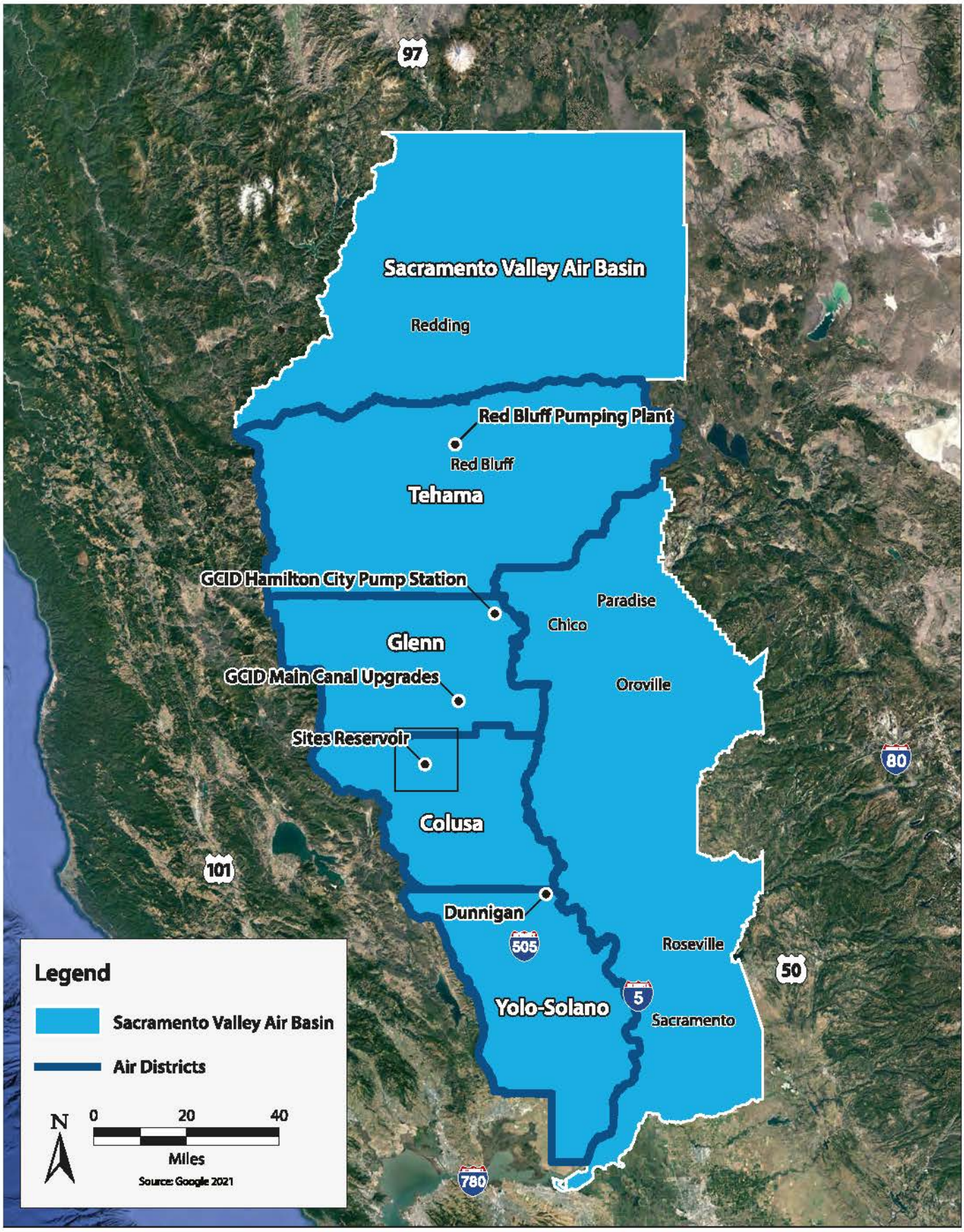


Figure 20-1
Project Area to Study Area

In general, the prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north. The mountains surrounding the SVAB create a barrier to airflow that can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduce the influx of outside air and allow air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions (warm air over cool air), which trap pollutants near the ground.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the Delta sea breeze arriving in the afternoon out of the southwest. Usually, the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the Schultz eddy prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out, the Schultz eddy causes the wind pattern to circle back to the south. Essentially, this phenomenon causes the air pollutants to be blown south toward the Sacramento Valley and Yolo County. This phenomenon has the effect of exacerbating the pollution levels in the area and increases the likelihood of violating federal or state standards. The eddy normally dissipates around noon when the Delta sea breeze arrives. (Yolo-Solano Air Quality Management District 2007.)

20.2.5. Existing Air Quality Conditions

20.2.5.1. Ambient Criteria Pollutant Concentrations

The existing conditions in the air quality study area can be characterized by regional monitoring data. CARB collects ambient air quality data through a network of air monitoring stations throughout the state. For the purposes of this analysis, four stations, all within the SVAB and near the Project area, were selected to represent conditions in the Project area: Colusa – Sunrise Boulevard (Colusa County), Red Bluff – Walnut Street (Tehama County), Willows – Colusa (Glenn County), and Woodland – Gibson Road (Yolo County).

Table 20-3 presents the results of the ambient monitoring at the four stations, where available, for the most recent 3 years (2017–2019). Air quality concentrations are expressed in terms of ppm or micrograms per cubic meter ($\mu g/m^3$). Between 2017 and 2019, the state and federal standards for ozone and PM10 and federal standard for PM2.5 were exceeded on several occasions at the monitoring stations within the study area. There are no monitoring data for CO, NO_2, or SO_2 within or near the Project facility footprints. The ambient air quality standards define clean air and represent the maximum amount of pollution that can be present in outdoor air without any harmful effects on people and the environment. Existing violations of the ozone and PM ambient air quality standards indicate that certain individuals exposed to these pollutants may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments.

20.2.5.2. Attainment Status

Local monitoring data (Table 20-3) are used to designate areas as nonattainment, maintenance, attainment, or unclassified for the NAAQS and CAAQS. The four designations are further defined as:

- Nonattainment—assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- Maintenance—assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- Attainment—assigned to areas where pollutant concentrations meet the standard in question over a designated period.
- Unclassified—assigned to areas where data are insufficient to determine whether a pollutant is violating the standard in question.

Tables 20-4a and 20-4b summarize the attainment status the SVAB, broken down by County with regard to the NAAQS and CAAQS.

Table 20-3. Ambient Air Quality Monitoring Data (2017–2019)

Pollutant Standards	Colusa (Sunrise Blvd)			Willows (Colusa Street)			Red Bluff (Walnut Street)			Woodland (Gibson Road)		
	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019
Ozone (O_3)												
Maximum 1-hour concentration (ppm)	0.075	0.073	0.062	0.076	0.079	0.072	0.090	0.092	0.075	0.089	0.095	0.078
Maximum 8-hour concentration (ppm)	0.068	0.063	0.055	0.067	0.063	0.060	0.082	0.087	0.067	0.074	0.084	0.067
Number of days standard exceeded												
CAAQS 1-hour (>0.09 ppm)	0	0	0	0	0	0	0	0	0	0	1	0
CAAQS 8-hour (>0.070 ppm)	0	0	0	0	0	0	4	8	0	2	2	0
NAAQS 8-hour (>0.070 ppm)	0	0	0	0	0	0	5	11	0	2	2	0
Carbon Monoxide (CO)												
No data available												
Nitrogen Dioxide (NO_2)												
No data available												
Particulate Matter (PM10)												
National maximum 24-hour concentration (µg/m^3)	144.7	257.5	118.1	180.1	215.7	125.8	100.9	102.5	43.6	128.5	201.1	80.6
National second-highest 24-hour concentration (µg/m^3)	111.8	167.1	111.2	142.8	121.7	115.8	71.0	100.4	33.5	76.1	139.7	72.0
State maximum 24-hour concentration (µg/m^3)	148.1	274.6	119.9	181.7	230.2	126.2	98.7	105.7	45.1	130.8	212.4	83.0
State second-highest 24-hour concentration (µg/m^3)	109.0	177.8	113.6	145.6	129.0	115.4	72.8	101.7	34.7	78.0	147.3	74.4
Annual average concentration (µg/m^3)	-	-	29.2	-	30.7	20.5	20.0	23.8	14.6	22.0	26.1	-
Number of days standard exceeded												
NAAQS 24-hour (>150 µg/m^3) (estimated)	0.0	2.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	0.0	6.1	0.0
CAAQS 24-hour (>50 µg/m^3)	33	66	45	-	58	23	2	6	0	3	4	3
CAAQS annual (> 20 µg/m^3)	-	-	Yes	-	Yes	Yes	Yes	Yes	No	Yes	Yes	-

Pollutant Standards	Colusa (Sunrise Blvd)			Willows (Colusa Street)			Red Bluff (Walnut Street)			Woodland (Gibson Road)		
	2017	**2018**	**2019**	**2017**	**2018**	**2019**	**2017**	**2018**	**2019**	**2017**	**2018**	**2019**
Particulate Matter (PM2.5)												
National maximum 24-hour concentration (µg/m^3)	44.8	113.2	26.5	-	-	-	85.9	130.7	22.6	60.1	165.4	27.8
National second-highest 24-hour concentration (µg/m^3)	34.8	60.1	24.2	-	-	-	69.0	87.5	19.3	40.6	95.0	27.0
State maximum 24-hour concentration (µg/m^3)	44.8	113.2	26.5	55.2	179.8	21.8	85.9	130.7	22.6	60.1	165.4	27.8
State second-highest 24-hour concentration (µg/m^3)	34.8	60.1	24.2	44.1	86.0	21.4	69.0	87.5	19.3	40.6	95.0	27.0
Annual average concentration (µg/m$^{3)}$	8.0	-	7.0	-	-	6.5	7.2	10.5	5.4	8.6	12.7	-
Number of days standard exceeded												
NAAQS 24-hour (>35 µg/m^3)	1	3	0	-	-	-	5	24	0	2	2	0
NAAQS/CAAQS annual (>12 µg/m^3)	No	-	No	-	-	No	No	No	No	No	Yes	-
Sulfur Dioxide (SO_2)												
No data available												

Sources: California Air Resources Board 2021a

CAAQS = California ambient air quality standards; CO = carbon monoxide; NAAQS = national ambient air quality standards; µg/m^3 = micrograms per cubic meter; O_3 = ozone; PM2.5 = particulate matter 2.5 microns or less in diameter; PM10 = particulate matter 10 microns or less in diameter; ppm = parts per million; SO_2 = sulfur dioxide; > = greater than; – = not applicable or there was insufficient or no data available to determine the value.

Table 20-4a. Federal Attainment Status of Four Counties in the Study Area

Pollutant	Tehama	Glenn	Colusa	Yolo
Ozone (O_3)	Attainment	Attainment	Attainment	Nonattainment (severe 15 [a])
Particulate matter (PM10)	Attainment	Attainment	Attainment	Attainment
Particulate matter (PM2.5) (24-hour)	Attainment	Attainment	Attainment	Nonattainment (moderate) (P)
Particulate matter (PM2.5) (annual)	Attainment	Attainment	Attainment	Attainment
Carbon monoxide (CO)	Attainment	Attainment	Attainment	Attainment
Nitrogen dioxide (NO_2)	Attainment/ Unclassified	Attainment/ Unclassified	Attainment/ Unclassified	Attainment/ Unclassified
Sulfur dioxide (SO_2)	Attainment/ Unclassified	Attainment/ Unclassified	Attainment/ Unclassified	Attainment/ Unclassified

Sources: California Air Resources Board 2019; U.S. Environmental Protection Agency 2021d.
CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; PM2.5 = particulate matter 2.5 microns or less in diameter; PM10 = particulate matter 10 microns or less in diameter; SVAB = Sacramento Valley Air Basin; SO_2 = sulfur dioxide; – = no standard; (P) = Indicates only applies to a portion of the County.
[a] Areas classified as severe-15 must attain the NAAQS within 15 years of the effective date of the nonattainment designation. Yolo is severe-15 for the 2008 standard but nonattainment (moderate) for the 2015 standard.

Table 20-4b. State Attainment Status of Four Counties in the Study Area

Pollutant	Tehama	Glenn	Colusa	Yolo
Ozone (O_3)	Nonattainment	Attainment	Attainment	Nonattainment
Particulate matter (PM10)	Nonattainment	Nonattainment	Nonattainment	Nonattainment
Particulate matter (PM2.5) (24-hour)	N/A	N/A	N/A	N/A
Particulate matter (PM2.5) (annual)	Unclassified	Attainment	Attainment	Unclassified
Carbon monoxide (CO)	Attainment	Attainment	Attainment	Attainment
Nitrogen dioxide (NO_2)	Attainment	Attainment	Attainment	Attainment
Sulfur dioxide (SO_2)	Attainment	Attainment	Attainment	Attainment

Sources: California Air Resources Board 2019; U.S. Environmental Protection Agency 2021d.
CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; PM2.5 = particulate matter 2.5 microns or less in diameter; PM10 = particulate matter 10 microns or less in diameter; SVAB = Sacramento Valley Air Basin; SO_2 = sulfur dioxide; – = no standard; (P) = Indicates only applies to a portion of the County.
[a] Areas classified as severe-15 must attain the NAAQS within 15 years of the effective date of the nonattainment designation. Yolo is severe-15 for the 2008 standard but nonattainment (moderate) for the 2015 standard.

20.2.6. Sensitive Receptors

The NAAQS and CAAQS apply at publicly accessible areas, regardless of whether those areas are populated. For the purposes of the air quality analysis, *sensitive land uses* are defined as locations where human populations, especially children, seniors, and sick persons, are located and where there is reasonable expectation of continuous human exposure according to the averaging period for the air quality standards (e.g., 24-hour, 8-hour, and 1-hour). *Sensitive receptors* include residences, medical facilities, nursing homes, schools and schoolyards, daycare centers, and parks and playgrounds.

Potential sensitive receptors within 1 mile of the Project components were identified in the study area by reviewing Project facility locations, offsite quarry locations, and surrounding land uses on aerial imagery. The areas within Colusa and Glenn Counties primarily consist of agricultural and undeveloped lands, which are generally not considered to be sensitive types of land use. The unincorporated community of Sites includes residential land uses. Other residential land uses are in the city of Willows to the north of the existing GCID Main Canal.

Land uses in the general region of Colusa and Glenn Counties, as well as in Tehama and Yolo Counties, also consist predominantly of agricultural and undeveloped lands. There are single-family homes, schools, and industrial areas. These are primarily located within cities and communities, including the city of Willows.

The distances of sensitive receptors from Project activities and components are summarized in Table 20-5 and were determined by a desktop review of aerial imagery (Google Earth 2020). This location and distance information is used to evaluate air quality impacts.

Analyses performed by the CARB indicate that providing a separation of at least 1,000 feet from diesel sources and high-traffic areas would reduce exposure to air contaminants and decrease asthma symptoms in children (California Air Resources Board 2005:8–10). This CARB study demonstrates that diesel concentrations and resultant health effects decline as a function of distance from the emission source.

Table 20-5. Summary of Sensitive Receptors

Project Component	Surrounding Land Uses	Nearest Sensitive Receptor	Distance from Construction Equipment Use to Nearest Sensitive Receptor [a]	Distance from Operations Use to Nearest Sensitive Receptor [a]
RBPP	School, recreational use, industrial, agricultural, and undeveloped	School	1,200 feet	1,200 feet
GCID System Upgrades: GCID Main Canal Head Gate; Willow Creek	Residences, agricultural, and undeveloped	Single-family residence	1,200 feet	1,200 feet

Project Component	Surrounding Land Uses	Nearest Sensitive Receptor	Distance from Construction Equipment Use to Nearest Sensitive Receptor [a]	Distance from Operations Use to Nearest Sensitive Receptor [a]
Siphon; Walker Creek Siphon; and approximately 16 miles of Main Canal Road and canal improvements				
GCID System Upgrades: Railroad Siphon on GCID Main Canal; approximately 1 mile of Main Canal Road and canal improvements	Residences, lodging, agricultural, and undeveloped	Single-family residence	100 feet	100 feet
Inundation Area, Main Dams, Saddle Dams, Saddle Dikes, Funks Reservoir	Agricultural or undeveloped	Single-family residence	More than 1 mile	More than 1 mile
TRR East	Agricultural or agricultural buildings and structures	Single-family residence	1,600 feet	3,000 feet
TRR West	Agricultural or agricultural buildings and structures	Single-family residence	More than 1 mile	More than 1 mile
Road 69, McDermott Road, and Sites Lodoga Road	Agricultural or single-family residences	Single-family residence	100 feet from Road 69	100 feet from Road 69
South Road Alignment and Huffmaster Road Realignment	Agricultural or single-family residences	Single-family residence	400 feet	600 feet
Haul Truck and Employee Trips	Agricultural or single-family residences	Single-family residences	100 feet	N/A
TC Canal Intake	Agricultural or single-family residence	Single-family residence	2,600 feet	N/A
Dunnigan Pipeline to CBD	Single-family residence, agricultural, auction yard [b], or undeveloped	Single-family residence	700 feet	N/A
CBD Outlet	Agricultural and undeveloped	Single-family residence	More than 1 mile	More than 1 mile
Sacramento River Discharge	Single-family residence, agricultural, and undeveloped	Single-family residence	1,000 feet	1,000 feet

Note:
[a] Distances are approximate.
[b] Existing Auction Yard in Yolo County is not considered a sensitive receptor.
CBD = Colusa Basin Drain; GCID = Glenn-Colusa Irrigation District; N/A = not applicable; RBPP = Red Bluff Pumping Plant; TC = Tehama-Colusa; TRR = Terminal Regulating Reservoir.

20.3 Methods of Analysis

20.3.1. Construction

Project construction activities would result in the generation of air pollutant emissions throughout the full duration of construction. Air pollutant emissions are evaluated using a number of different quantitative methods and models. These methods and models quantify the emissions based on reasonable assumptions associated with construction equipment used, duration of equipment use, vehicle trips, and quantities of materials (e.g., soil, rock, and concrete). Overall, construction is expected to occur from 2024 to 2029, which is reflected in the modeling. The models quantify different aspects of air quality, including regional mass emissions, localized concentrations, and health risks. In addition to the use of quantitative methods and models, qualitative methods to evaluate emissions associated with NOA, lead-based paint (LBP), Valley Fever, and odors during construction are described.

Mass Emissions of Criteria Pollutants

Construction of the Project would generate emissions of criteria pollutants in exhaust from off-road equipment, helicopters (used only to transport drill rigs to and from remote Project locations), employee vehicles and haul trucks, and concrete and asphalt batch plants. Fugitive dust emissions would occur from paved and unpaved road travel, earthmoving activities (i.e., grading, soil and rock loading/unloading), wind-blown dust from soil stockpiles, onsite crushing and processing of rock, and the use of explosives at the dam features. These emissions would be limited to the construction period and would cease when construction activities are completed.

The combustion exhaust emissions are based on Project-specific construction data (e.g., schedule, construction equipment inventory, truck trips) provided by the Project engineering team and a combination of emission factors and methodologies from the California Emissions Estimator Model (CalEEMod), version 2016.3.2; CARB's Emissions Factors (EMFAC) model (EMFAC2017)[3]; the U.S. Environmental Protection Agency's (USEPA) *AP-42 Compilation of Air Pollutant Emission Factors* (AP-42); and other relevant agency guidance and published literature (U.S. Environmental Protection Agency 2021e). Daily and annual criteria pollutant emissions were quantified based on concurrent construction activity. Emissions estimates for activities that span more than one air district were apportioned based on the location of construction activity. In general, emissions for linear features (i.e., roadways) were apportioned to air districts based on the proportion of length of the feature in each air district, whereas other features were apportioned based on the areas in each air district.

[3] CARB released EMFAC2021 on January 15, 2021, but this version has not yet been approved by USEPA. Accordingly, this analysis uses EMFAC2017, which was available at the time of notice of preparation and is the current USEPA-approved version of EMFAC.

Appendix 20A, *Methodology for Air Quality and GHG Emissions Calculations*, provides a detailed description of the analysis method.

The BMPs described in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*, are incorporated into the analysis of potential construction impact on air quality. For this analysis, emissions have been quantified and are presented without implementation of BMPs and with implementation of BMPs (ICF 2021). The emissions estimates with BMPs include implementation of the following air quality measures from Appendix 2D. Although there are additional measures shown in Appendix 2D that will be implemented to reduce emissions, not all measures can be quantitatively factored into the emissions modeling. The BMPs that follow represent those that have been included in the modeling analysis.

- BMP-27, Development and Implementation of a Construction Equipment Exhaust Reduction Plan, will minimize exhaust emissions from off-road equipment by the Authority ensuring the equipment used to construct Project facilities is equivalent to Tier 4 standards as follow:
    - For conveyance facilities, all equipment less than 120 horsepower will be equivalent to Tier 4 final standards.
    - For reservoir facilities, all equipment will be equivalent to Tier 4 final standards except mast rotary percussion drills, the auger drill rigs, and grouting drill rigs.
    - Prior to construction starting for each major Project feature, the Authority will ensure that all on-road heavy-duty diesel trucks will be operated in compliance with the emission standards per CCR Title 13, Section 2025. The Authority will also ensure that its construction contractor will operate on-road trucks with engines certified to the 2010 model year or newer heavy-duty diesel engine emissions standards in compliance with CARB regulations.
- BMP-28, Preparation and Implementation of Fugitive Dust Control Plans, will minimize fugitive dust emissions. The plans will outline measures to be implemented, such as the following measures that have been incorporated in the modeling analysis: using soil stabilizers or surfactants and watering exposed soil. Other measures that cannot be reliably quantified but would minimize dust emissions will also be included in the plans and include washing vehicles before exiting the construction site and protecting disturbed areas following construction.

Localized Criteria Pollutant Concentrations

A quantitative Ambient Air Quality Analysis (AAQA) has been conducted to assess the potential for construction-generated criteria pollutants to cause new or contribute to existing violations of the NAAQS and CAAQS. The AAQA considers both long-term (annual) emissions and short-term (less than 24 hours) impacts of all criteria pollutants, as applicable based on the established NAAQS and CAAQS (Appendix 4A, *Regulatory Requirements*, Table 4A.16-1). The pollutant concentrations were modeled using the mass emissions modeling results and the AERMOD dispersion model. Refer to Appendix 20C, *Ambient Air Quality and Health Risk Analysis Technical Report*, for a more detailed description of the modeling methods.

Health Risk Assessment

A quantitative health risk assessment (HRA) was also conducted to assess the potential impacts associated with public exposure to DPM and other TACs. As noted above, the USEPA's AERMOD dispersion model was used to quantify annual average pollutant concentrations at nearby receptor locations for each feature. Cancer and noncancer health impacts to the nearest sensitive receptors were calculated based on the results of the dispersion modeling, California Office of Environmental Health Hazard Assessment guidance on risk calculations (California Office of Environmental Health Hazard Assessment 2015), and the Hot Spots Analysis and Reporting Program Version 2. Refer to Appendix 20C, *Ambient Air Quality and Health Risk Analysis Technical Report*, for a more detailed description of the HRA methods.

Asbestos, Valley Fever, and Odors

To evaluate the impact associated with asbestos, resources from the California Department of Conservation were used to determine if NOA occurs in or near the study area (California Department of Conservation 2000). Additionally, for asbestos in existing structures, the analysis evaluates demolition activities and whether such activities would comply with applicable standards for appropriate disposal per air district rules and regulations. For valley fever and odor impacts, the analysis considers the potential for existing sensitive receptors to be exposed to *C. immitis* fungus spores and nuisance odors. Guidance from the U.S. Geological Survey is also used to evaluate potential Valley Fever impacts (U.S. Geological Survey 2000:3). BMP-28 and BMP-19, which includes measures to reduce exposure to and identify symptoms of Valley Fever, and BMP-29, Minimization of Asphalt and Concrete Batching Odors and GHG Emission, are incorporated into the analysis.

20.3.2. Operation

Project operations would result in the generation of air pollutant emissions. Operation activities include those associated with maintenance of facilities and use of recreation areas. Similar to construction emissions, air pollutant emissions generated during operations are evaluated using a number of different quantitative methods and models. Overall, the duration analyzed for operation is 2030 to 2040 (i.e., the first 10 years of operation). Operation of the Project is expected to occur post-2040, but the emissions in the first 10 years would represent a worst-case scenario because emission factors decline annually. Certain activities, such as instrumentation and equipment repair, would be required approximately 25 years after operations begin and beyond. These activities were conservatively assumed to occur in 2040, when equipment would be less clean that it otherwise would be 25 years from the start of operations. Over time, vehicles and equipment tend to become lower-emitting due to technological advancements and turnover of older, higher-emitting vehicles and equipment. In addition to the use of quantitative methods and models, qualitative methods to evaluate potential asbestos, Valley Fever, and odors during operation are described.

Operation of the Project would require the use of electricity for conveying water into Sites Reservoir. While fossil fuel-powered electrical-generating facilities emit criteria pollutants, these facilities are regulated and permitted at a maximum emissions level. Therefore, operational emissions associated with electricity consumption are not included in the analysis as these emissions have already been evaluated and accounted for in existing permit and environmental documents.

20.3.2.1. Maintenance Activities

Project maintenance activities would generate emissions of criteria pollutants that could result in long-term (i.e., continuous) impacts. Similar to construction activities, emissions would originate from the exhaust of on-road vehicles, off-road equipment, and helicopters. Emissions were quantified using Project-specific activity data for maintenance activities, emission factors and methodologies from the CalEEMod and EMFAC models, the USEPA's AP-42, and other relevant agency guidance and published literature. Appendix 20A contains a detailed description of the analysis method.

20.3.2.2. Recreational Areas

Recreational Vehicles Trips

The Project would result in a change in the number of vehicle trips and thus vehicle miles traveled (VMT) associated with recreational areas. The change in recreational vehicle emissions resulting from the Project was quantified using the VMT data provided by Jacobs and the EMFAC model (Jacobs 2021). As noted in Chapter 18, *Navigation, Transportation, and Traffic*, the Project would result in a net decrease in VMT when considering the larger northern California region, because new trips to Sites Reservoir from large population centers (e.g., Bay Area, Sacramento) are expected to replace currently popular destinations north and east of Sites Reservoir that are farther away, such as Shasta Lake and Lake Oroville. Consequently, the Project would likely result in an air quality benefit in certain areas with existing reservoirs and recreational areas. This benefit cannot be quantified by geography, but Chapter 21, *Greenhouse Gas Emissions*, presents the net benefit to GHG emissions at the state-wide level. GHG emissions are global pollutants and do not ascribe to air district or county boundaries; therefore, for criteria pollutants, the benefit cannot be quantified and thus this section only shows the local increase in emissions that would occur in the Project vicinity (i.e., Colusa and Glenn Counties).

Recreational Boating

The use of motorized boats for recreational purposes would result in an increase in emissions at Sites Reservoir. Recreationists are currently using existing reservoirs for recreational purposes, and, with the construction of the Project, some recreationists would use Sites Reservoir instead. Thus, the boating activity at other existing reservoirs would likely decrease, which would result in a reduction in boating activity and emissions near those reservoirs. Consequently, the Project would likely result in criteria pollutant decreases in some areas and an increase at Sites Reservoir. The decrease in boating activity at other reservoirs cannot be quantified because the change in boating activity at the affected reservoirs cannot be accurately predicted. It is assumed some visitors who use existing reservoirs would go to Sites instead, but it is unknown, and cannot be identified, which of those displaced visitors previously used existing reservoirs for boating purposes. An attempt to quantify the number of displaced visitors using boats, in particular, would be speculative. As such, this analysis is conservative in that it assumes there would be no reduction in boating activity at other reservoirs.

Emissions from recreational boating activity were estimated based on the anticipated number of visitor days that would involve the use of boats from Table 1 in the Project's application for the Water Storage Investment Program (Sites Project Authority 2017). The number of annual visitor days for boating purposes was translated into an estimate of annual boating hours using the U.S.

Coast Guard's recreational survey data (U.S. Coast Guard 2012), using assumptions for the number of visitors per boat (2.4) and the number of hours per visit (4.9 or 5.1, depending on boat type). Emission factors for criteria pollutants are from CARB's PC2014 Model, which is an emissions inventory database for recreational watercraft (California Air Resources Board 2014).

The PC2014 model contains pollutant data in units of tons and boating activity data in units of hours for the air basins in the state. Thus, emission factors can be developed for boats by dividing these data points and converting units, to yield grams of each criteria pollutant per hour of boat activity. The emission factors were applied to the estimated amount of boating activity at Sites Reservoir to quantify criteria pollutant emissions. The PC2014 Model accounts for current CARB rulemaking for spark-ignition exhaust and evaporative emissions because these standards apply through model year 2009 for the exhaust emissions standards and through model year 2015 for the evaporative emissions standards. However, CARB is currently working on a new regulation that would include more stringent ROG and NOx standards along with electrification of outboard engines, with adoption expected by 2027 (California Air Resources Board 2021b, California Air Resources Board 2021c). This proposed regulation is not included in the PC2014 Model and thus the Project's emissions estimate, so ROG and NOx emissions from recreational boating are likely to be lower than what is shown in this analysis. The emissions of criteria pollutants included in this analysis are correlated to the increase in boating activity only, and no new regulations are reflected in the results.

20.3.3. CEQA Thresholds of Significance

An impact on air quality would be considered significant if the Project would:

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

For this analysis, the Project's potential to conflict with or obstruct implementation of applicable air quality plans is discussed in conjunction with the Project's potential to generate cumulatively considerable net increase of criteria pollutants. Quantitative air district thresholds are established to prevent future violations of the NAAQS and CAAQS; as such, an exceedance of the CEQA thresholds would indicate that the Project has the potential to conflict with ambient air quality plans. These plans are also developed (at the programmatic level) to achieve regional attainment of the AAQS.

The evaluation of these thresholds is mainly based on compliance with state and federal air quality standards, as well as standards and plans developed by local air districts. Local air districts are required to develop plans and control programs for attaining the federal and state standards. Therefore, the NAAQS and CAAQS, as well as the standards and plans developed by the air districts, provide appropriate thresholds for determining whether Project-related emissions

would result in a significant impact. The quantitative emissions thresholds developed by the regional air districts to evaluate the significance level of impacts are discussed in the following sections.

20.3.3.1. CEQA Impacts on Air Quality within CCAPCD, GCAPCD, YSAQMD, and TCAPCD

The two air districts where the majority of construction and operation activities would occur, CCAPCD and GCAPCD, have not developed quantitative emissions thresholds for CEQA evaluations (Ledbetter pers. comm.; Ryan pers. comm.). In the absence of CEQA thresholds for these air districts, thresholds from TCAPCD are used for this analysis. The TCAPCD thresholds are also used to evaluate emissions from Project facilities that are located in Tehama County.

For emissions from the Project facilities in Yolo County, thresholds from YSAQMD are used. The Project would not have any permanent footprint in any other counties.

TCAPCD's and YSAQMD's CEQA guidelines contain emissions thresholds to assist lead agencies in evaluating the significance of Project-generated criteria pollutant and precursor emissions. Table 20-6 presents the thresholds for each district that are applicable to construction and operation emissions. The air district thresholds have been developed to prevent further deterioration of ambient air quality, which is influenced by emissions generated by projects within a specific air basin. The Project-level thresholds therefore consider relevant past, present, and reasonably foreseeable future projects within the study area.

TCAPCD has three levels of significance thresholds that are associated with different categories of environmental documents (e.g., mitigated negative declaration, EIR). For this analysis, the highest thresholds (Level C) are used to evaluate emissions, given the extent of the Project and its components and the fact that the Project's environmental document is an environmental impact report. TCAPCD's CEQA Guidelines and Appendix C of the CEQA Guidelines include a list of standard mitigation measures and best available mitigation measures that are applicable to projects that exceed the significance thresholds (Tehama County Air Pollution Control District 2015). These mitigation measures are largely intended for the operational phases of land use development projects (e.g., add bus shelters for existing transit, install low-emitting furnaces) and are thus not directly applicable to the Project.

Table 20-6: CEQA Emissions Thresholds for Air Districts in the Study Area

Air District	Thresholds	Counties Where Thresholds are Applied [a]
TCAPCD [a]	Construction and Operation • NO_X: > 137 lbs./day • PM10: > 137 lbs./day • PM2.5: > 137 lbs./day	Colusa, Glenn, Tehama
YSAQMD	Construction and Operation: • ROG: 10 tons/year • NO_X: 10 tons/year • PM10: 80 lbs/day • CO: Violation of CAAQS	Yolo

Sources:

Tehama County Air Pollution Control District. 2015.
Yolo-Solano Air Quality Management District 2007.
[a] TCAPCD has three sets of thresholds. For this analysis, Level C is used, because these thresholds are applicable to projects that have the potential exceed the Level C thresholds. These projects may be subject to the best available mitigation measures, standard mitigation measures, and additional mitigation measures. The environmental document most applicable is an environmental impact report.

20.3.3.2. NEPA Impacts/Air Quality Conformity

To evaluate impacts for NEPA, the General Conformity Rule *de minimis* thresholds (40 C.F.R. Section 93.153) are used to inform the significance of the Project construction and operation emissions. The General Conformity *de minimis* thresholds for criteria pollutants are based on the federal attainment status of the study area in Yolo County, which is summarized in Table 20-4a above. The applicable *de minimis* thresholds are shown in Table 20-7.

Table 20-7: NEPA Thresholds for Nonattainment Areas in the Study Area (tons per year)

Air Basin and Area [a, b]	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
SVAB – Yolo County [c]	25	25	None	None	100	100

Notes:
[a] Although these counties are in attainment for SO_2, because SO_2 is a precursor for PM2.5, the PM2.5 General Conformity *de minimis* thresholds are used.
[b] All other counties in the study area are considered attainment for all criteria pollutants. As such, a general conformity analysis is not required and there are no applicable *de minimis* thresholds
[c] This county is within the Sacramento designated area.
SVAB = Sacramento Valley Air Basin
VOC = volatile organic compound

20.3.3.3. Localized Pollutant Concentrations and Health Risk Impacts

The Project would result in a significant impact with respect to localized pollutant concentrations if pollutant concentrations exceed the NAAQS or CAAQS or substantially contribute to an existing or projected violation. Where background concentrations do not currently exceed the NAAQS or CAAQS, the ambient air quality standard (Appendix 4A, *Regulatory Requirements*, Table 4A.16-1) for each pollutant is considered to be the threshold. The evaluation of impacts uses the background pollutant concentration plus the Project-specific increase in pollutant concentration to compare to the NAAQS/CAAQS.

In areas where background concentrations already exceed the NAAQS or CAAQS without the Project, a different approach is used. In these areas, the Project-only contribution is evaluated with respect to the applicable significant impact level (SIL) established by the USEPA to determine if the Project's contribution is substantial or not, as shown in Table 20-8.

Table 20-8. Localized Ambient Air Quality Significant Impact Levels ($\mu g/m^3$)

Pollutant	Averaging Period	
	Annual	24 hour
PM10	1	5
PM2.5	0.2	1.2

Sources: U.S. Environmental Protection Agency 2018, San Joaquin Valley Air Pollution Control District 2019.
PM2.5 = particulate matter 2.5 microns or less in diameter; PM10 = particulate matter 10 microns or less in diameter.

With respect to health risks, CCAPCD, GCAPCD, and TCAPCD have not adopted thresholds of significance to evaluate cancer or noncancer risks resulting from exposure to DPM emissions. YSAQMD has adopted health risk thresholds for cancer, which is the probability of contracting cancer for the maximum exposed individual receptor exceeding 10 in 1 million, and for noncancer risks, which is the ground-level concentrations of noncarcinogenic TACs resulting in a hazard index of greater than 1 for the maximum exposed individual receptor (Yolo-Solano Air Quality Management District 2007). For those air districts without adopted thresholds, the stationary source public reporting requirements per the Air Toxics "Hot Spots" Information and Assessment Act (California Assembly Bill 2588) are used to determine significance (California Air Resources Board 2007). These reporting requirements are the same as the thresholds of significance adopted by YSAQMD and used by other air districts throughout the state for evaluating CEQA significance. Thus, for the HRA (cancer and noncancer chronic and acute risk), the modeling results are compared to the following health risk thresholds.

- Cancer Risk: 10 per 1 million
- Hazard Index (unitless): 1.0

20.3.3.4. Asbestos, Lead-Based Paint, or Fungal Spores

For the purposes of this analysis, impacts on sensitive receptors exposed to significant asbestos and LBP emissions are evaluated with respect to the Project's compliance with applicable local rules and regulations. All air districts require the demolition or renovation of asbestos or building materials containing LBP to comply with the limitations of the National Emissions Standards for Hazardous Air Pollutants regulations (40 C.F.R. Part 61).

Receptors would be exposed to significant health impacts from *C. immitis* spores if dust emissions during construction would not be controlled. The potential for the Project to expose receptors to increased risk of developing Valley Fever is highest in areas known to contain *C. immitis* and during earthmoving activities that generate fugitive dust.

20.3.3.5. Odors

Receptors would be exposed to significant odors if the Project would result in objectionable odors that affect a substantial number of people. There are no quantitative thresholds that define receptor exposure to objectionable odors. The TCAPCD CEQA guidelines include recommended odor screening distances for common land use types that typically generate odors (e.g., wastewater treatment plants, landfills, etc.), while YSAQMD's CEQA guidelines note that

> *"a project may reasonably be expected to have a significant adverse odor impact where it 'generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property"* (Yolo-Solano Air Quality Management District 2007:8).

These guidelines from the air districts are used to provide context and to make a determination of significance for impacts of odors from Project construction and operation.

20.4 Impact Analysis and Mitigation Measures

Impact AQ-1: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during construction, or conflict with or obstruct implementation of the applicable air quality plan

No Project

The No Project Alternative would not change construction emissions from existing conditions because no new facilities would be constructed. Construction and operation of other unrelated projects and other existing sources in the region would still occur and would generate emissions from sources such as wind-blown dust, vehicle traffic, and construction and agricultural equipment, but these sources of emissions are part of the existing conditions.

Significance Determination

The No Project Alternative would not cause a change in construction-related emissions relative to existing conditions that results in a cumulatively considerable net increase of any criteria pollutant for which the region is nonattainment under an applicable federal or state ambient air quality standard because no new facilities would be constructed. There would be no impact/no effect.

Alternatives 1 and 3

This impact is applicable to CEQA only, and thus there are no NEPA determinations for Impact AQ-1. Impacts of criteria pollutant emissions are evaluated with respect to NEPA requirements below in Impact AQ-3. The predominant pollutants associated with construction of Alternatives 1 and 3 are fugitive dust (PM10) from earthmoving activities. Combustion pollutants, particularly ozone precursors, would also be generated by heavy equipment and vehicles. Emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

Tables 20-9 and 20-10 summarize construction emissions for all alternatives that would be generated in each air district in the study area, in pounds per day or tons per year depending on the specific air district threshold. Exceedances of air district thresholds are shown in **bolded underline**. Some emissions values in CCAPCD and GCAPCD are marked with an "*" to indicate that, in isolation, the emissions value would not exceed the applicable threshold. However, if summed for both CCAPCD and GCAPCD, the total emissions would result in an exceedance. Typically, emissions in different air districts are kept as separate line items. However, because many of the construction work areas for Alternatives 1 and 3 are located on or near the border between CCAPCD and GCAPCD and due to the uncertainties involved in assigning emissions to each air district, there may not be a meaningfully clear distinction between these two air districts.

Table 20-9. Criteria Pollutant and Precursor Emissions from Construction of Alternatives 1–3 – without Best Management Practices [a]

Year	CCAPCD [b] Average lbs./day			GCAPCD [b] Average lbs./day			YSAQMD Tons/year – ROG, NOx Maximum lbs./day – PM10			TCAPCD Average lbs./day		
	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10
Alternatives 1 and 3 – Variant 1 [c]												
2024	47	**386**	**7,594**	8	72*	**1,449**	< 1	< 1	**528**	-	-	-
2025	73	**701**	**10,544**	21	**202**	**2,825**	1	8	**587**	-	-	-
2026	**156**	**1,711**	**16,071**	46*	**506**	**5,944**	-	-	9	< 1	< 1	16
2027	131*	**1,431**	**13,313**	58*	**684**	**5,141**	-	-	-	< 1	< 1	< 1
2028	121*	**1,442**	**10,035**	24*	**307**	**2,313**	-	-	-	-	-	-
2029	68	**868**	**7,019**	5	74*	**730**	-	-	-	-	-	-
Alternatives 1 and 3 – Variant 2 [d]												
2024	47	**386**	**7,594**	8	72*	**1,449**	< 1	< 1	**528**	-	-	-
2025	73	**701**	**10,544**	21	**202**	**2,825**	1	8	**587**	-	-	-
2026	**156***	**1,713**	**16,078**	46*	**506**	**5,944**	-	-	9	< 1	< 1	16
2027	131*	**1,434**	**13,321**	58*	**684**	**5,141**	-	-	-	< 1	< 1	< 1
2028	121*	**1,442**	**10,031**	24*	**307**	**2,313**	-	-	-	-	-	-
2029	68	**868**	**7,019**	5	74*	**730**	-	-	-	-	-	-
Alternative 2 – Variant 1												
2024	65	**524**	**7,216**	10	87*	**1,242**	-	-	-	-	-	-
2025	113	**998**	**13,518**	24	**210**	**3,153**	1	9	**788**	-	-	-
2026	**195**	**2,005**	**20,382**	53*	**563**	**6,085**	1	**13**	**822**	< 1	< 1	22
2027	**158**	**1,720**	**16,572**	43*	**503**	**4,138**	-	-	-	< 1	< 1	22
2028	109	**1,253**	**11,727**	7	93*	**867**	-	-	-	-	-	-
2029	19	**195**	**4,314**	< 1	2*	**352**	-	-	-	-	-	-
Alternative 2 – Variant 2												
2024	65	**524**	**7,216**	10	87*	**1,242**	-	-	-	-	-	-
2025	113	**998**	**13,518**	24	**210**	**3,153**	1	9	**788**	-	-	-
2026	**195**	**2,005**	**20,387**	53*	**563**	**6,085**	1	**13**	**822**	< 1	< 1	22

Year	CCAPCD [b] Average lbs./day			GCAPCD [b] Average lbs./day			YSAQMD Tons/year – ROG, NOx Maximum lbs./day – PM10			TCAPCD Average lbs./day		
	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10
2027	**158**	**1,721**	**16,582**	43*	**503**	**4,138**	-	-	-	< 1	< 1	22
2028	109	**1,253**	**11,727**	7	93*	**867**	-	-	-	-	-	-
2029	19	**195**	**4,314**	< 1	2*	**352**	-	-	-	-	-	-
CEQA Threshold	137	137	137	137	137	137	10	10	80	137	137	137

CCAPCD = Colusa County Air Pollution Control District; GCAPCD = Glenn County Air Pollution Control District; NOx = nitrogen oxide; ROG = reactive organic gas; TCAPCD = Tehama County Air Pollution Control District; YSAQMD = Yolo-Solano Air Quality Management District.

[a] Exceedances of CEQA thresholds are shown in **bolded underline**. Emissions indicated with a "*", although below the threshold in isolation, could result in a significant impact if summed across both CCAPCD and GCAPCD.

[b] Thresholds used for CCAPCD and GCAPCD are those adopted by TCAPCD.

[c] Variant 1 assumes the Project would connect to existing Western Area Power Administration utility infrastructure.

[d] Variant 2 assumes the Project would connect to existing Pacific Gas and Electric Company utility infrastructure.

Table 20-10. Criteria Pollutant and Precursor Emissions from Construction of Alternatives 1–3 – with Best Management Practices [a]

Year	CCAPCD [b] Average lbs./day			GCAPCD [a] Average lbs./day			YSAQMD Tons/year – ROG, NOx Maximum lbs./day – PM10			TCAPCD Average lbs./day		
	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10
Alternatives 1 and 3 – Variant 1 [c]												
2024	19	121*	**1,241**	3	21*	**236**	< 1	< 1	**93**	-	-	-
2025	32	**328**	**1,856**	8	83*	**459**	1	5	**112**	-	-	-
2026	70	**927**	**2,918**	18	**251**	**969**	-	-	9	< 1	< 1	3
2027	60	**797**	**2,452**	22	**361**	**845**	-	-	-	< 1	< 1	< 1
2028	49	**800**	**1,887**	9	**179**	**380**	-	-	-	-	-	-
2029	26	**507**	**1,438**	2	48*	114*	-	-	-	-	-	-

Year	CCAPCD [b] Average lbs./day			GCAPCD [a] Average lbs./day			YSAQMD Tons/year – ROG, NOx Maximum lbs./day – PM10			TCAPCD Average lbs./day		
	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10
Alternatives 1 and 3 – Variant 2 [d]												
2024	19	121*	**1,241**	3	21*	**236**	< 1	< 1	**93**	-	-	-
2025	32	**328**	**1,856**	8	83*	**459**	1	5	**112**	-	-	-
2026	70	**928**	**2,919**	18	**251**	**969**	-	-	9	< 1	< 1	3
2027	60	**799**	**2,453**	22	**361**	**845**	-	-	-	< 1	< 1	< 1
2028	49	**800**	**1,886**	9	**179**	**380**	-	-	-	-	-	-
2029	26	**507**	**1,438**	2	48*	114*	-	-	-	-	-	-
Alternative 2 – Variant 1												
2024	25	130*	**1,173**	3	20*	**202**	-	-	-	-	-	-
2025	46	**382**	**2,223**	9	72*	**510**	1	6	**157**	-	-	-
2026	86	**1,010**	**3,459**	21	**271**	**992**	1	9	**163**	< 1	< 1	4
2027	72	**943**	**2,839**	16	**265**	**677**	-	-	-	< 1	< 1	4
2028	45	**681**	**1,963**	3	54*	**139**	-	-	-	-	-	-
2029	7	99	**707**	< 1	1	52*	-	-	-	-	-	-
Alternative 2 – Variant 2												
2024	25	130*	**1,173**	3	20*	**202**	-	-	-	-	-	-
2025	46	**382**	**2,223**	9	72*	**510**	1	6	**157**	-	-	-
2026	86	**1,010**	**3,460**	21	**271**	**992**	1	9	**163**	< 1	< 1	4
2027	72	**944**	**2,841**	16	**265**	**677**	-	-	-	< 1	< 1	4
2028	45	**681**	**1,963**	3	54*	**139**	-	-	-	-	-	-
2029	7	99	**707**	< 1	1	52*	-	-	-	-	-	-
CEQA Threshold	137	137	137	137	137	137	10	10	80	137	137	137

[a] Exceedances of CEQA thresholds are shown in **bolded underline**. Emissions indicated with a "*", although below the threshold in isolation, could result in a significant impact if summed across both CCAPCD and GCAPCD.

[b] Thresholds used for CCAPCD and GCAPCD are those adopted by TCAPCD.

[c] Variant 1 assumes the Project would connect to existing Western Area Power Administration utility infrastructure.

[d] Variant 2 assumes the Project would connect to existing Pacific Gas and Electric utility infrastructure.

Construction emissions for Alternatives 1 and 3 would be the same because the construction footprint and facilities would be the same for these two alternatives. Even with incorporation of BMP-27 and BMP-28, construction of Alternatives 1 and 3 would result in a cumulatively considerable net increase of criteria pollutants because NOx (ozone precursor) and PM10 emissions would exceed TCAPCD's CEQA thresholds in CCAPCD and GCAPCD. Additionally, PM10 emissions in YSAQMD would exceed the applicable threshold. Emissions would not exceed any thresholds in TCAPCD.

TCAPCD's thresholds were established to prevent emissions from new projects in the Tehama County portion of the SVAB from contributing to violations of the CAAQS or NAAQS, and the TCAPCD thresholds are used to evaluate significance for emissions in CCAPCD and GCAPCD. Because construction emissions of NO_X and PM10 would exceed these thresholds, Alternatives 1 and 3 would contribute a cumulatively considerable net increase in criteria pollutants within the Colusa County and Glenn County portions of the SVAB. Similarly, there would be a cumulatively considerable net increase in PM10 within YSAQMD.

The greatest daily and annual emissions generally occur between 2025 and 2028, mainly because these years are when the majority of construction activities would occur. Construction activities and emissions are less intense in 2024 and 2029, which is when construction is ramping up and ramping down. There would be high levels of PM10 emissions in every year of construction, which would primarily result from travel on unpaved (i.e., dirt or gravel) roads in the construction footprint for Alternatives 1 and 3. Given the predominantly rural nature of Antelope Valley, most onsite construction vehicles would travel on unpaved roads. These have a high potential to generate dust. Vehicles traveling include those driven by the Project manager, engineer, and environmental monitor pickup trucks and haul, concrete, and water trucks. Water trucks would continually apply water to dry soil surfaces, but dust would still be generated because of the large area encompassed by Alternatives 1 and 3 and number of construction-related vehicles required.

TCAPCD (and thus CCAPCD and GCAPCD by proxy) and YSAQMD do not have mass emission CEQA thresholds for PM2.5, CO, or SO_2; localized air quality impacts from these pollutants are evaluated based on the air dispersion modeling of ambient air concentrations. Impact AQ-4b discusses the conclusions of the modeled ambient air concentrations.

Constructing Alternatives 1 and 3 could potentially result in incompatibilities with plans and policies related to air quality and GHG. Appendix 4A, *Regulatory Requirements*, provides an overview of federal, state, regional and agency-specific plans and policies applicable to air quality. Potential incompatibilities with local plans or policies do not necessarily translate into adverse environmental effects under NEPA or CEQA. Even where an incompatibility exists, it does not by itself constitute an adverse physical effect on the environment, but rather may indicate the potential for a proposed activity to have a physical effect on the environment.

A project is deemed inconsistent with air quality plans if it results in regional population, employment, or VMT growth that exceeds estimates used to develop the applicable air quality plans, which are based on growth projections from the Metropolitan Planning Organizations (MPO) with jurisdiction over the study area and local General Plans. Projects that propose

development that are consistent with the growth anticipated by the MPOs and applicable General Plans would be consistent with the applicable air quality attainment plans.

Sites Reservoir is a water infrastructure project with the primary purpose to improve water supply reliability and resiliency and thus has a limited potential to generate new population growth. As noted in Chapter 25, *Population and Housing*, and Chapter 32, *Other Required Analyses*, neither construction nor operation of the Project would result in substantial unplanned population growth or growth inducement. In Chapter 18, it is noted that the Project would result in a net reduction in VMT across all regions. Although there may be an increase in VMT in some counties, the overall effect of the Project would be a net decrease in VMT. Alternatives 1 and 3 would thus not result in growth that exceeds the estimates developed by the MPOs or local General Plans. However, construction of Alternatives 1 and 3 would result in substantial air pollutant emissions, and these emissions would result in a conflict with applicable air quality plan.

Health Consequences of Project Construction Emissions

As discussed above, Alternatives 1 and 3 NOx and PM10 emissions would exceed the applicable air district thresholds, which were developed by the air districts in consideration of achieving attainment status under the CAAQS for ozone and particulate matter. Construction emissions would thus contribute to localized air pollution within the study area, and these impacts are discussed below in Impact AQ-3.

As shown in Table 20-2, all criteria pollutants are associated with some form of health risk (e.g., wheezing, airway irritation, asphyxiation). Negative health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). Moreover, ozone precursors (ROG and NO_X) affect air quality on a regional scale. Health effects related to ozone, therefore, are the product of emissions generated by numerous sources throughout a region.

Increased emissions of ozone precursors (ROG and NO_X) could increase photochemical reactions and the formation of tropospheric ozone, which at certain concentrations could lead to respiratory symptoms (e.g., coughing), decreased lung function, and inflammation of airways. The NAAQS and CAAQS are set to protect public health and the environment within an adequate margin of safety. Some individuals exposed to pollutant concentrations that exceed the CAAQS or NAAQS may experience certain acute and/or chronic health conditions. Studies have linked particulate pollution to problems such as premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., coughing) (U.S. Environmental Protection Agency 2021b). Studies have linked NO_2 pollution to the aggravation and/or development of certain respiratory diseases (e.g., asthma), leading to respiratory symptoms (e.g., coughing), hospital admissions, and visits to emergency rooms (U.S. Environmental Protection Agency 2021f).

Project-specific correlations of Project-generated NO_2 or PM emissions to specific health endpoints (e.g., increased cases of asthmas) are not commonly performed, because models that quantify changes in ambient pollution and resultant health effects were developed to support

regional planning and policy analysis and generally have limited sensitivity to changes in criteria pollutant concentrations induced by individual projects. The inundation area for Sites Reservoir would span a large area across two counties, and construction activity would occur in four counties total. Consequently, given the geographic scale of Alternatives 1 and 3 and the magnitude of emissions relative to the applicable air district threshold as shown in the tables above, a modeling analysis to correlate Project emissions to specific health endpoints has been conducted to provide disclosure of the potential effects of Project construction.

Increases in various health endpoints have been evaluated and include the incremental incidences of emergency room visits, hospital admissions, mortality, and acute myocardial infarction. Overall, the worst-case incidences of these health endpoints are less than one occurrence per year from Alternatives 1 and 3 construction emissions, with the highest value being 0.61 incidence per year of emergency room visits for asthma. For context, this worst-case incremental incidence is 0.004% of the background health incidences of emergency room visits for asthma (15,763).

There are no air district–adopted thresholds for health endpoints resulting from projects' contributions to air pollution within an air basin. As such, this analysis is for informational purposes only and has no bearing on the determination of significance. The full results of incidences in health outcomes from the Project's emissions are summarized in Appendix 20D, *Photochemical Modeling Study to Support a Health Impact Analysis*. The methodology used and other details relevant to the analysis are also included in Appendix 20D.

CEQA Significance Determination and Mitigation Measures

Construction of Alternatives 1 and 3 would result in an exceedance of the applicable thresholds for CCAPCD and GCAPCD for NOx and PM10 for multiple years. Additionally, construction would result in an exceedance of the applicable YSAQMD threshold for PM10 for multiple years. BMP-27 will minimize air quality impacts through application of onsite controls such as Tier 4 engines and 2010 or newer model year trucks to reduce construction emissions. Equipment with Tier 4 engines and 2010 or newer model year trucks are lower emitting than equipment and trucks without these characteristics, because they are manufactured in accordance with stricter emissions standards. Thus, the use of equipment and trucks with these characteristics would result in lower emissions for the same amount of use relative to older equipment and trucks. Impacts associated with fugitive dust emissions would be minimized through implementation of BMP-28, which would involve using soil stabilizers on unpaved road surfaces and watering visibly dry surfaces to control dust. The use of soil stabilizers and watering on road surfaces would result in substantial reductions in fugitive particulate matter emissions by causing dust particles to stick together and thus reducing the amount of loose dust that can be propelled from the ground into the air when trucks and equipment pass by. Reducing the amount of unpaved road surface is a strategy that can reduce fugitive dust-related emissions for some projects; however, because most of the road surfaces for Alternatives 1 and 3 are located in the inundation area, it is not feasible to use road paving to reduce emissions. Exhaust-related pollutants would be reduced through use of Tier 4 diesel engines in most equipment and the use of on-road engines from 2010 or newer. Other measures included in BMP-27 would reduce emissions, but these were not explicitly quantified and may include minimizing equipment idling time, maintaining all construction equipment in proper working condition, and any other components of the plan that are developed by the Authority in the future. Even with BMPs,

exceedances of the applicable thresholds used by CCAPCD and GCAPCD for NOx and PM10 would occur, and exceedances of the PM10 threshold would occur in YSAQMD as well. As such, Alternatives 1 and 3 would contribute a significant level of regional NOx and particulate matter pollution in the SVAB.

To further reduce emissions from construction, implementation of Mitigation Measure AQ-1.1 would require that construction contractors use zero emission or near-zero emission technology for construction vehicles and equipment to the maximum extent feasible. The use of such technology would reduce exhaust-related emissions from construction; however, the commercial availability of future electric equipment and vehicles is unknown, and thus emissions reductions achieved by Mitigation Measure AQ-1.1 cannot currently be quantified or included in the analysis. The best available equipment that is currently widely available (i.e., equipment with Tier 4 engines), as noted above, has been included in the modeling as noted in *Mass Emissions of Criteria Pollutants* in Section 20.3.1, *Construction*.

After implementation of Mitigation Measure AQ-1.1, implementation of Mitigation Measure AQ-1.2 would partially mitigate remaining NOx and PM10 emissions through offsets. The significance thresholds were established to prevent emissions from new projects from contributing to CAAQS or NAAQS violations. Offsetting emissions in sufficient quantities (i.e., below the thresholds) would prevent a project from contributing to a significant level of air pollution such that regional air quality within the air districts would be degraded. There are several current uncertainties with respect to the use of offsets and the ability to fully reduce emissions below thresholds. First, the air districts where most emissions will occur (CCAPCD and GCAPCD) do not currently have established offsets programs for indirect sources or for CEQA purposes (Ryan pers. comm.; Ledbetter pers. comm). Second, because there is no established program for indirect sources of emissions, it is unknown if the quantity of offsets potentially available in these two air districts would be sufficient to fully mitigate impacts. Currently established offsets programs in other air districts in the SVAB could be used to mitigate impacts because the Project's mass emissions affect and disperse within the entire SVAB and not just CCAPCD and GCAPCD. However, it is uncertain if other air districts in the SVAB with limited to no Project-related emissions would be amenable to offsetting emissions for a project not located within their jurisdiction. Further, it is anticipated that such an arrangement would require approval from that air district's board of directors, which would be at the discretion of individual board members and is thus uncertain. Because this would be an unconventional arrangement in addition to the other uncertainties discussed above, there is no assurance that emissions could be sufficiently reduced and thus mitigated through offsets.

Mitigation Measure AQ-1.2 would nevertheless be implemented to the maximum extent feasible, which would help reduce emissions. Mitigation Measure AQ-1.2 would first facilitate emissions reductions within the communities in close proximity to the study area because the Authority's first priority for implementing this mitigation would be to reduce emissions and improve public health in those nearby communities. This could include the Authority sponsoring the replacement of internal combustion engine vehicles owned by municipal governments, school districts, nonprofits, or other community members with nonemitting or cleaner alternatives, such as electric vehicles. The Authority could also sponsor the replacement of older agricultural equipment with cleaner equipment because of the extent of agricultural land in the study area.

The potential magnitude from emissions reductions projects is unknown, however, given the uncertainties discussed above.

Construction of Alternatives 1 and 3 would result in a cumulatively considerable net increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Construction of Alternatives 1 and 3 would also conflict with an applicable air quality plan. Construction impacts of Alternatives 1 and 3 would be significant and unavoidable, even with the implementation of Mitigation Measures AQ-1.1 and AQ-1.2.

Mitigation Measure AQ-1.1: Zero Emission and/or Near Zero Emission Vehicles and Off-Road Equipment

This mitigation measure will reduce the impact of Project construction emissions from on-road vehicles and off-road equipment through the following commitments.

- The Authority will require that all construction contractors use zero emission (ZE) or near-zero emission (NZE) technology for all light-duty on-road vehicles (e.g., passenger cars, light-duty trucks) associated with the Project to the maximum extent feasible.
- The Authority will require that all construction contractors use ZE or NZE technology for heavy-duty on-road vehicles (e.g., for hauling, material delivery and soil import/export) associated with the Project to the maximum extent feasible.
- The Authority will require that all Project construction contractors use ZE or NZE vehicles for off-road construction equipment use associated with the Project to the maximum extent feasible.

For all the above requirements, the Authority will require that construction contractors provide documentation to the Authority, on an annual basis at minimum, showing the percentage of vehicles and equipment that are ZE or NZE. Based on this reporting, the Authority will require that all construction contractors are meeting minimum percentages of ZE or NZE vehicles and equipment, and those minimum percentages will be determined at the time of construction. If local or state regulations mandate a faster transition to using ZE and/or NZE vehicles at the time of construction, the more stringent regulations will be applied. It is possible that such new regulations will be adopted; Executive Order (EO) N-79-20, issued by California Governor Newsom on September 23, 2020, states the following objectives:

- Light duty and passenger car sales be 100% ZEV by 2035
- Full transition to ZEV short haul/drayage trucks by 2035
- Full transition to ZEV heavy-duty long-haul trucks, where feasible, by 2045
- Full transition to ZE off-road equipment by 2035, where feasible.

Mitigation Measure AQ-1.2: Offset Construction-Generated Criteria Pollutants in CCAPCD, GCAPCD, and YSAQMD.

Prior to issuance of construction contracts, the Authority will enter into a memorandum or multiple memoranda of understanding (MOU) with CCAPCD, GCAPCD, YSAQMD, TCAPCD, or other air district located in the SVAB (collectively referred to as the Air Districts), to reduce NO_X and PM10. Emissions above the CEQA thresholds will be reduced to the extent practicable and feasible, per the following criteria:

- The Authority will identify emissions offsets in geographies closest to the Project first (Maxwell, Willows, Colusa County, Glenn County) and only go to larger geographies (i.e., other counties in the SVAB) if adequate offsets cannot be found in closer geographies or the procurement of such offsets would create an undue financial burden. All offsets must occur within the SVAB. The Authority will provide the following justification for not using offsets in closer geographies in terms of either availability or cost prohibition.
    - No mechanism or program will be available in the reasonably foreseeable future to track the quantity of offsets available in closer geographies, or it is otherwise not possible to accurately verify and account for the exchange of offsets.
    - Lack of enough offsets available in closer geographies
    - Prohibitively costly offsets in closer geographies as defined by the Authority.
    - Offsets in any geography within the SVAB would be infeasible based on these criteria as well (lack of enough offsets and/or prohibitively costly as defined above).

The mitigation offset fee amount will be determined at the time of mitigation to fund emissions reduction projects within the SVAB. The Air Districts may require an additional administrative fee to cover staff time, and that fee will be determined in the MOU(s). The mitigation offset fee will be determined by the Authority and the Air Districts based on the type of projects available at the time of mitigation. The fee is intended to fund emissions reduction projects to achieve reductions. Documentation of payment will be provided to the Authority or its designated representative.

The MOU will include details for the annual calculation of required offsets the Authority must achieve, funds to be paid, administrative fee, and the timing of the emissions reduction projects. Acceptance of this fee by the Air Districts will serve as an acknowledgment and commitment by Air Districts to: (1) implement an emissions reduction project(s) within a timeframe to be determined based on the type of project(s) selected after receipt of the mitigation fee designed to achieve the emission reduction objectives; and (2) provide documentation to the Authority or its designated representative describing the project(s) funded by the mitigation fee, including the amount of emissions reduced (tons per year) in the SVAB from the emissions reduction project(s). To qualify under this mitigation measure, the specific emissions reduction project(s) must result in emission reductions in the SVAB that are real, surplus, quantifiable, enforceable, and will not otherwise be achieved through compliance with

existing regulatory requirements or any other legal requirement. Funding will need to be received prior to contracting with participants and should allow enough time to receive and process applications to fund and implement offsite reduction projects prior to commencement of Project activities being reduced. This will roughly equate to 1 year prior to the required mitigation; additional lead time may be necessary depending on the level of offsite emission reductions required for a specific year. Because all of the Air Districts where Project activities would occur are located in the SVAB, the offsets do not need to occur within the same Air District as the emissions exceedances.

Alternative 2

Alternative 2 would require construction activities that are largely similar to those of Alternatives 1 and 3 but would have some distinctions that result in a different quantity of emissions. As shown in Tables 20-9 and 20-10, construction emissions for Alternative 2 would be less than Alternatives 1 and 3, because Alternative 2 would generally require less construction activity. Alternative 2, for example, does not include construction activities associated with the emergency release structure facilities, has fewer dams, and does not include the reservoir bridge roadway.

The incorporation of BMP-27 and BMP-28 would also apply to Alternative 2, but emissions would still result in a significant impact on regional air quality because NOx and particulate matter emissions would exceed TCAPCD's CEQA thresholds in both CCAPCD and GCAPCD. Emissions of PM10 would exceed the threshold in YSAQMD as well. Because construction emissions of NO_X and PM10 would exceed these thresholds, Alternative 2 would contribute a significant level of regional air pollution within the SVAB.

Similar to Alternatives 1 and 3, the greatest daily and annual emissions generally occur between 2025 and 2028, mainly because these years are when the majority of construction activities would occur, across the entire study area. There would be high levels of PM10 and PM2.5 emissions in every year of construction, which is primarily the result of substantial unpaved road travel.

As noted above for Alternatives 1 and 3, localized air quality impacts from ROG, PM2.5, CO, or SO_2 are evaluated based on the air dispersion modeling of ambient air concentrations. Impact AQ-4b discusses the conclusions of the modeled ambient air concentrations.

Health Consequences of Project Construction Emissions

As discussed for Alternatives 1 and 3, a modeling analysis to correlate the emissions to specific health endpoints has been conducted because of the size of Sites Reservoir and the magnitude of construction emissions. Alternative 2 would result in a similarly large reservoir and would have a relatively similar magnitude of emissions; as such, emissions from Alternative 2 have also been evaluated to provide full disclosure of the Project's potential health effects. The worst-case incidences of all health endpoints would be less than 1 occurrence per year for Alternative 2, with the highest value being 0.64 incidence of emergency room visits for asthma. This incremental incidence is 0.004% of the background health incidences of emergency room visits for asthma (15,763). The detailed results and methodology are included in Appendix 20D, *Photochemical Modeling Study to Support a Health Impact Analysis*.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would result in an exceedance of the applicable thresholds for CCAPCD and GCAPCD for NOx and PM10, and by YSAQMD for PM10. Additionally, construction of Alternative 2 would result in substantial air pollutant emissions that could result in a conflict with applicable air quality plans.

Impacts associated with fugitive dust emissions would be minimized through implementation of BMP-28, which would include the use of soil stabilizers to reduce fugitive PM10 emissions from unpaved roads. Exhaust-related pollutants would be reduced through use of Tier 4 diesel engines in most equipment and on-road engines from 2010 or newer, and other measures. Even with implementation of this BMP, exceedances of the applicable thresholds for CCAPCD, GCAPCD, and YSAQMD would occur, and Alternative 2 would contribute a significant level of regional NOx and particulate matter pollution within the SVAB. As with Alternatives 1 and 3, Mitigation Measure AQ-1.1 would require that construction contractors use ZE or NZE technology for construction vehicles and equipment to the maximum extent feasible, but the commercial availability of future electric equipment and vehicles is unknown, and thus emissions reductions achieved by Mitigation Measure AQ-1.1 cannot currently be quantified or included in the analysis. Mitigation Measure AQ-1.2 would partially mitigate remaining NOx and PM10 emissions through offsets. However, the same uncertainties with respect to the implementation of offsets discussed for Alternatives 1 and 3 would also apply to Alternative 2. Construction of Alternative 2 would result in a cumulatively considerable net increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Construction of Alternative 2 would also conflict with applicable air quality plans. Construction impacts of Alternative 2 would be significant and unavoidable, even with implementation of Mitigation Measures AQ-1.1 and AQ-1.2.

Impact AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during operations, or conflict with or obstruct implementation of the applicable air quality plan

No Project

The No Project Alternative would not change operational emissions from existing conditions, because no new facilities would be constructed and operated. Construction and operation of other unrelated projects and other existing sources in the region would still occur and would generate emissions from sources such as wind-blown dust, vehicle traffic, and construction and agricultural equipment, but these sources of emissions are part of the existing conditions.

Significance Determination

The No Project Alternative would not result in a change in operational-related emissions that result in a cumulatively considerable net increase of any criteria pollutant for which the region is nonattainment under an applicable federal or state ambient air quality standard. There would be no impact/no effect.

Alternatives 1 and 3

This impact is applicable to CEQA only, and thus there are no NEPA determinations for Impact AQ-2. Maintenance activities include both routine activities and yearly maintenance. Most activities are comprised of pickup truck trips that would travel to the facilities for Alternatives 1 and 3 to conduct inspections and other required maintenance activities. The use of pickup trucks would generate combustion pollutants, particularly ozone precursors, and fugitive dust emissions. Fugitive dust emissions would primarily be generated from the travel of trucks on the unpaved roads within the construction footprint of Alternatives 1 and 3, and to a much lesser extent, from the travel of trucks on paved public roads. Maintenance activities would also require off-road equipment, such as tractors, excavators, etc., and large on-road hauling trucks, all of which would generate combustion emissions and fugitive dust. The use of the off-road equipment and haul trucks would be much less frequent than the pickup truck trips, however. Occasional earthmoving activities would also be required that have the potential to generate fugitive dust emissions, though these are not the primary contributor to fugitive dust (pickup truck travel on unpaved roads is the primary source).

Alternatives 1 and 3 would also result in emissions associated with recreational activities at the reservoir as a result of recreationist vehicle trips and boating activity. People traveling to the reservoir would generate combustion and dust emissions when using their on-road vehicles, and a subset of visitors would use recreational boats on the reservoir (e.g., for fishing or water sports). The use of boats on the reservoir would generate exhaust-related emissions.

Table 20-11 summarizes operations and maintenance emissions from all alternatives by air districts, in pounds per day and tons per year. The emissions in the table reflect the maximum annual emissions for each pollutant. Exceedances of air district thresholds are shown in **bolded underline**.

Operational emissions for Alternatives 1 and 3 would be the same because maintenance activities would not differ significantly between the two alternatives and because they have the same recreation areas. As shown in Table 20-11, Alternatives 1 and 3 would result in ROG emissions that exceed TCAPCD's CEQA thresholds as applied to activities in CCAPCD. These emissions are primarily the result of recreational boating activity, which would involve the use of gasoline-powered boats. Operational emissions of ROG would exceed these thresholds, and Alternatives 1 and 3 would contribute a significant level of regional air pollution within the Colusa County portion of the SVAB. Emissions in YSAQMD and TCAPCD during operation of Alternatives 1 and 3 would be below the applicable thresholds.

CEQA Significance Determination and Mitigation Measures

Operation would result in an exceedance of the applicable thresholds for CCAPCD for ROG. The net increase in emissions would result in a cumulatively considerable net increase of a criteria pollutant. Although emissions in GCAPCD would be below the applicable threshold, this analysis conservatively concludes that the impact would be significant in GCAPCD because of the reservoir's location on the border of CCAPCD and GCAPCD. Implementation of Mitigation Measure AQ-2.1 would reduce emissions by implementing strategies to minimize the effects of boating activity.

Per Mitigation Measure AQ-2.1, the establishment of a recreational boat emissions minimization plan would outline strategies for the Authority to reduce ROG emissions from boats. The Authority would implement strategies to encourage users to minimize emissions from their boats. The effectiveness of the strategies cannot be quantified, however, and given the magnitude of the exceedance, this mitigation would not likely reduce emissions sufficiently to be below the applicable threshold. Mitigation Measure AQ-2.2 would be required to offset boating-related emissions to a level that is below the threshold. However, for the reasons discussed in Impact AQ-1 for Mitigation Measure AQ-1.1, there are considerable uncertainties with respect to the implementation of offsets in the study area. Given these uncertainties, there is no assurance that sufficient offsets could be obtained to fully mitigate the emissions generated during operations. Operation of Alternatives 1 and 3 would result in a cumulatively considerable net increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Operation of Alternatives 1 and 3 would also conflict with applicable air quality plans. Operations impacts of Alternatives 1 and 3 would be significant and unavoidable, even with the implementation of Mitigation Measures AQ-2.1 and AQ-2.2.

Mitigation Measure AQ-2.1: Recreational Boat Emissions Minimization Plan

To reduce ROG emissions from recreational boats at the reservoir, the Authority will develop and implement an emissions reduction plan. The plan will include strategies that the Authority will implement during the operational lifetime of the recreational area at the reservoir that are likely to reduce emissions. The plan will be part of the Recreation Management Plan (Section 2D.8) and thus approved at the same time as the Recreation Management Plan. The strategies that the Authority could implement to reduce boat emissions include but are not limited to the following.

- Provide free or reduced launch fees for low-emitting or electric boats, to incentivize boats that are alternatively fueled.
- Post signage near launch areas encouraging users to turn off the boat engines when not in use.
- Track boat usage and type (i.e., motorized, electric, nonmotorized) at the reservoir on an annual basis by maintaining records of the number and types of boats operated at the reservoir. To maintain these records, the Authority will operate staffed kiosks at the reservoir, and boat users will be required to check in at these kiosks prior to launching their boats. Emissions from boat usage will be quantified based on the Authority's records, and the effectiveness of the minimization plan will be assessed based on the quantification results and relative to the applicable air district threshold at the time of operations.

Mitigation Measure AQ-2.2: Offset Operation-Generated Criteria Pollutants in CCAPCD and GCAPCD.

- Prior to issuance of the commencement of recreational boating activities, the Authority will enter into a memorandum or multiple memoranda of understanding (MOU) with CCAPCD, GCAPCD, YSAQMD, TCAPCD, or other air district located

in the SVAB (collectively referred to as the Air Districts), to reduce ROG. Per Mitigation Measure AQ-2.1, the emissions from recreational boat use will be quantified. The emissions in excess of the applicable air district thresholds at the time of operations, including the total of all operations-related activity (e.g., boat use, maintenance activities, recreational visitor vehicle trips) will be offset to the maximum extent possible. Emissions above the CEQA thresholds will be reduced as much as possible, per the following criteria.

  - The Authority will identify emissions offsets in geographies closest to the Project first (Maxwell, Willows, Colusa County, Glenn County) and only go to larger geographies (i.e., other counties in the SVAB) if adequate offsets cannot be found in closer geographies or the procurement of such offsets would create an undue financial burden. All offsets must occur within the SVAB. The Authority will provide the following justification for not using offsets in closer geographies in terms of either availability or cost prohibition.
    - No mechanism or program will be available in the reasonably foreseeable future to track the quantity of offsets available in closer geographies, or it is otherwise not possible to accurately verify and account for the exchange of offsets.
    - Lack of enough offsets available in closer geographies.
    - Prohibitively costly offsets in closer geographies as defined by the Authority.
    - Offsets in any geography within the SVAB would be infeasible based on these criteria as well (lack of enough offsets and/or prohibitively costly as defined above).

- The mitigation offset fee amount will be determined at the time of mitigation to fund emissions reduction projects within the SVAB. The Air Districts may require an additional administrative fee to cover staff time, and that fee will be determined in the MOU(s). The mitigation offset fee will be determined by the Authority and the Air Districts based on the type of projects available at the time of mitigation. The fee is intended to fund emissions reduction projects to achieve reductions. Documentation of payment will be provided to the Authority or its designated representative.
- The MOU will include details for the annual calculation of required offsets the Authority must achieve, funds to be paid, administrative fee, and the timing of the emissions reduction projects. Acceptance of this fee by the Air Districts will serve as an acknowledgment and commitment by Air Districts to: (1) implement an emissions reduction project(s) within a timeframe to be determined based on the type of project(s) selected after receipt of the mitigation fee designed to achieve the emission reduction objectives; and (2) provide documentation to the Authority or its designated representative describing the project(s) funded by the mitigation fee, including the amount of emissions reduced (tons per year) in the SVAB from the emissions reduction project(s). To qualify under this mitigation measure, the specific emissions reduction project(s) must result in emission reductions in the SVAB that are real, surplus, quantifiable, enforceable, and will not otherwise be achieved through compliance with existing regulatory requirements or any other legal requirement.

Funding will need to be received prior to contracting with participants and should allow enough time to receive and process applications to fund and implement offsite reduction projects prior to commencement of Project activities being reduced. This will roughly equate to 1 year prior to the required mitigation; additional lead time may be necessary depending on the level of offsite emission reductions required for a specific year. Because all of the Air Districts where Project activities would occur are located in the SVAB, the offsets do not need to occur within the same Air District as the emissions exceedances.

Alternative 2

Operation

Alternative 2 would require maintenance activities that are largely similar to those of Alternatives 1 and 3 but would have some distinctions that result in a different quantity of emissions. As shown in Table 20-11, maintenance emissions for Alternative 2 would be less than Alternatives 1 and 3, because Alternative 2 would generally require fewer inspections and less maintenance. Alternative 2, for example, does not include activities associated with the emergency release structure facilities, has fewer dams, and does not include the bridge.

For on-road vehicle emissions associated with recreational visitor trips, Alternative 2 would result in greater emissions than Alternatives 1 and 3, because Alternative 2 would not include a bridge across the reservoir. As such, visitors would need to travel a greater distance in the absence of a bridge over the reservoir, and thus visitor vehicle emissions are higher for Alternative 2.

The quantities of emissions from recreational boating would be the same for Alternatives 1 and 3 and Alternative 2, because all three alternatives have the same recreation areas. The emissions distribution that would occur in Colusa County and Glenn County is slightly different for Alternative 2 than the distribution for Alternatives 1 and 3, because the reservoir area in the two counties is not exactly the same. Recreational boating emissions have been apportioned to each county based on their percentage of the reservoir area. Emissions in YSAQMD and TCAPCD during operation of Alternative 2 would be below the applicable thresholds.

CEQA Significance Determination and Mitigation Measures

Operation of Alternative 2 would result in an exceedance of the applicable thresholds for CCAPCD for ROG. The net increase in emissions would resulting in a cumulatively considerable net increase of a criteria pollutant. The impact is conservatively assumed to be significant in GCAPCD as well, because of the reservoir's location on the border of CCAPCD and GCAPCD. As with Alternatives 1 and 3, implementation of Mitigation Measure AQ-2.1 could reduce emissions by implementing strategies to minimize the effects of boating activity but not sufficiently to be below the applicable threshold. Mitigation Measure AQ-2.2 would be required to offset emissions from the boats to be below the threshold. However, for the reasons discussed in Impact AQ-1 for Mitigation Measure AQ-1.1, there are considerable uncertainties with respect to the implementation of offsets in the study area. Given these uncertainties, there is no assurance that sufficient offsets could be obtained to fully mitigate the emissions generated during operations. Operation of Alternative 2 would result in a cumulatively considerable net

increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Operation of Alternative 2 would also conflict with applicable air quality plans. Operation impacts of Alternatives 2 would be significant and unavoidable, even with the implementation of Mitigation Measures AQ-2.1 and AQ-2.2.

Table 20-11. Criteria Pollutant and Precursor Emissions from Maintenance Activities and Recreational Activity (Worst-Case Year) [a]

Year	CCAPCD [b] Average lbs./day			GCAPCD [b] Average lbs./day			YSAQMD Tons/year – ROG, NOx Maximum lbs./day – PM10			TCAPCD Average lbs./day		
	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10	ROG	NO_X	PM10
Alternatives 1 and 3												
Maintenance Activities	< 1	2	44	< 1	1	28	< 1	< 1	< 1	< 1	< 1	< 1
Recreational Vehicles + Boats	**231**	79	31	39*	10	< 1	NA	NA	NA	NA	NA	NA
Total	**231**	80	75	39*	11	26	< 1	< 1	< 1	< 1	< 1	< 1
Alternative 2												
Maintenance Activities	< 1	2	43	< 1	1	25	< 1	< 1	< 1	< 1	< 1	< 1
Recreational Vehicles + Boats	**234**	87	46	37*	9	< 1	NA	NA	NA	NA	NA	NA
Total	**234**	88	89	37*	10	23	< 1	< 1	< 1	< 1	< 1	< 1
CEQA Threshold	137	137	137	137	137	137	10	10	80	137	137	137

[a] Exceedances of CEQA thresholds are shown in **bolded underline**. Emissions indicated with a "*", although below the threshold in isolation, could result in a significant impact if summed across both CCAPCD and GCAPCD.

[b] Thresholds used for CCAPCD and GCAPCD are those adopted by TCAPCD.

Impact AQ-3: Result in impacts on Federal Air Quality Conformity

Alternatives 1, 2, and 3

This impact is applicable to NEPA only, and thus there are no CEQA determinations for Impact AQ-3.

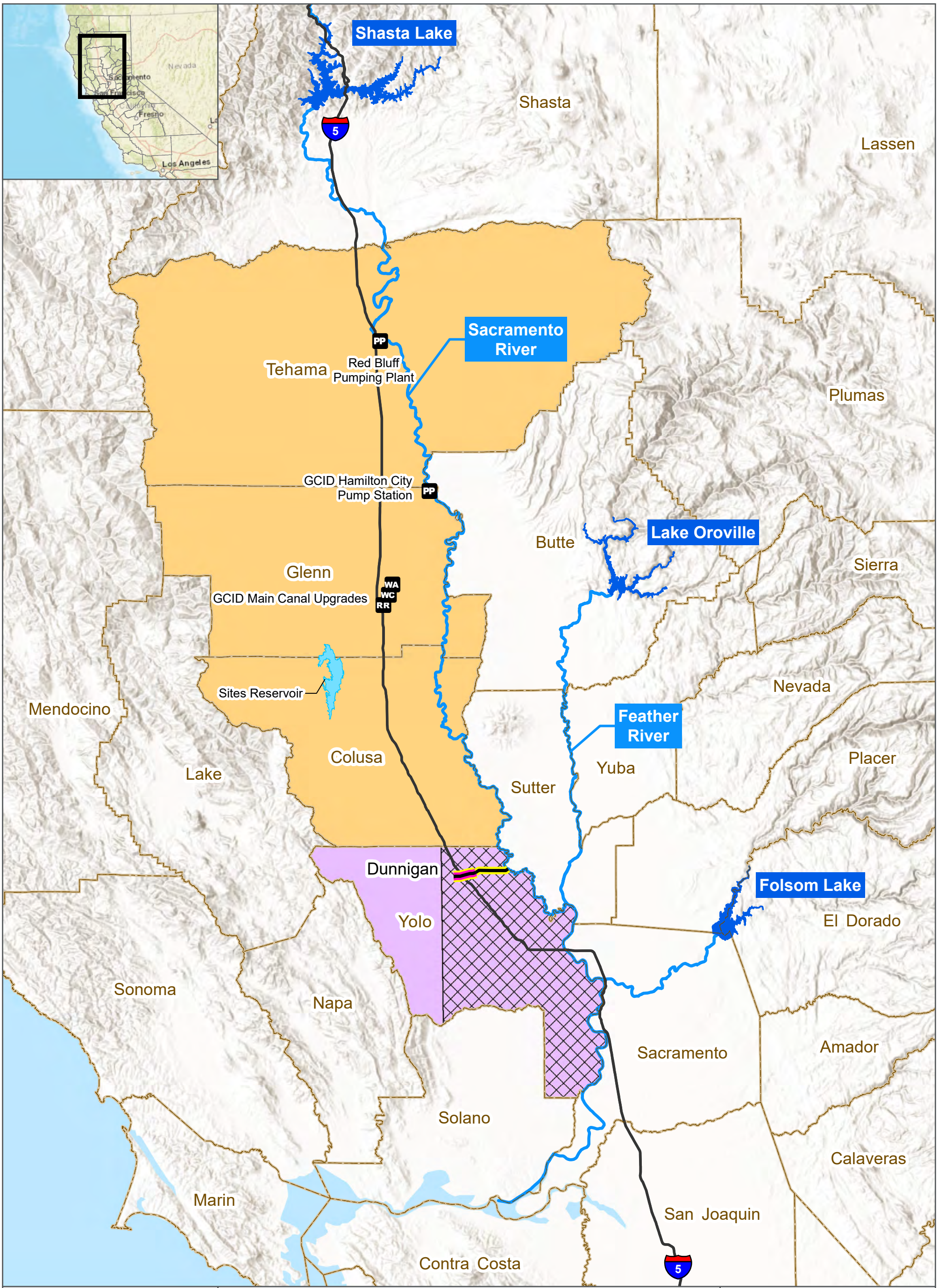
Construction

USEPA's General Conformity Rule (40 C.F.R. Parts 51 and 93) applies to federal actions that are taken in USEPA-designated "nonattainment" or "maintenance" areas. Accordingly, as outlined in Section III.A of the General Conformity Rule, "only actions which cause emissions in designated nonattainment and maintenance areas are subject to the regulations". In Yolo County, this portion of the SVAB is currently designated as severe-15 for 8-hour ozone, and moderate nonattainment for PM2.5. As such, Reclamation is required to demonstrate project-level compliance with the General Conformity Rule for ROG and NO_X (ozone precursors), PM2.5, and SO_2 (PM2.5 precursor) if Project-related emissions of these pollutants in the SVAB would exceed the General Conformity *de minimis* thresholds. The portions of the SVAB within Glenn, Colusa, and Tehama Counties are not nonattainment areas for any pollutants and thus the General Conformity Rule does not apply to these areas. Figure 20-2 illustrates the study area with respect to the nonattainment areas. Table 20-4a summarizes the attainment statuses for each county in the study area.

Ozone precursor and criteria pollutant emissions resulting from Project construction in nonattainment and maintenance areas of the SVAB are presented in Tables 20-12 and 20-13. Only emissions generated within Yolo County are included in Tables 20-12 and 20-13, because this county is the only one that is nonattainment for ozone and PM2.5. The emissions estimates are presented without and with implementation of quantifiable BMPs.

Table 20-12. Criteria Pollutant and Precursor Emissions from Construction of Alternatives 1–3 in Nonattainment Areas of the SVAB – without Best Management Practices [a]

Year	ROG	NO_X	PM2.5	SO_2[b]
Alternatives 1 and 3 – Variant 1				
2024	< 0.1	0.3	0.2	< 0.1
2025	0.8	7.0	5.7	< 0.1
2026	-	-	0.1	-
Alternatives 1 and 3 – Variant 2				
2024	< 0.1	0.3	0.2	< 0.1
2025	0.8	7.0	5.7	< 0.1
2026	-	-	0.1	-
Alternative 2 – Variant 1				
2024	-	-	-	-
2025	0.9	8.1	6.5	< 0.1
2026	1.3	11.2	9.3	< 0.1


Shasta Lake
Shasta
Lassen
Nevada
Sacramento
Fresno
Los Angeles
5
PP
Red Bluff
Pumping Plant
Tehama
Sacramento
River
Plumas
GCID Hamilton City
Pump Station
Lake Oroville
Butte
Sierra
Glenn
GCID Main Canal Upgrades
WA
WC
RR
Sites Reservoir
Mendocino
Nevada
Feather
River
Colusa
Placer
Lake
Yuba
Sutter
Dunnigan
Folsom Lake
Yolo
El Dorado
Sonoma
Napa
Amador
Solano
Calaveras
Marin
San Joaquin
Contra Costa
0
15
30
MILES
LEGEND
Walker Creek Siphon Replacement
Willow Creek Siphon Replacement
RR Siphon Modification
Pumping Plant/Station
Rivers
County Boundaries
Sites Reservoir (Alternatives 1,2, and 3)
Dunnigan Pipeline (Alternatives 1 and 3)
Dunnigan Pipeline (Alternative 2)
Attainment (Tehama, Glenn, and Colusa Counties)
Federal Non-Attainment - Ozone (Yolo County)
Non-Attainment - Partial PM2.5 (Yolo County)
DATA SOURCES: City\Town - GNIS, 2020; Canals, Rivers and Regional Reservoirs (NHD) - USGS, 2018; Proposed Sites Reservoir - AECOM, 2020; World Hillshade - ESRI, 2020; Counties - CALFIRE-FRAP, 2019.
DISCLAIMER: This exhibit is preliminary and is subject to change.
FIGURE 20-2
OZONE AND PM2.5 FEDERAL ATTAINMENT AND NON-ATTAINMENT AREAS IN THE STUDY AREA
MAP DATE: 7/16/2021
Sites
PATH: \\PDCCITRDSGIS1\PROJECTS_1\SITES_PA\00528_20\FIGURES\DOC\EIREIS\1_DEIR\01_ADEIR\AQ\FIG20_2_FEDATTAINMENT_NONATTAIN.MXD - USER: 24991 - DATE: 7/16/2021

Year	ROG	NO_X	PM2.5	SO_2[b]
Alternative 2 – Variant 2				
2024	-	-	-	-
2025	0.9	8.1	6.5	< 0.1
2026	1.3	11.2	9.3	< 0.1
Threshold	*25*	*25*	*100*	*100*

ROG = reactive organic gases; lbs = pounds; NO_X = nitrogen oxide; PM2.5 = particulate matter that is 2.5 microns in diameter and smaller; SO_2 = sulfur dioxide.

[a] These emissions only include those that would occur in Yolo County, the only federal nonattainment area in the study area for ozone and PM2.5.

[b] The General Conformity *de minimis* thresholds are based on the federal attainment status of the study area in the SVAB. Although SVAB is in attainment for SO_2, because SO_2 is a precursor for PM2.5, the PM2.5 General Conformity *de minimis* thresholds are used.

Table 20-13. Criteria Pollutant and Precursor Emissions from Construction of Alternatives 1–3 in the Nonattainment Areas of the SVAB – with Best Management Practices [a]

Year	ROG	NO_X	PM2.5	SO_2[b]
Alternatives 1 and 3 – Variant 1				
2024	< 0.1	0.2	< 0.1	< 0.1
2025	0.5	4.5	1.3	< 0.1
2026	-	-	0.1	-
Alternatives 1 and 3 – Variant 2				
2024	< 0.1	0.2	< 0.1	< 0.1
2025	0.5	4.5	1.3	< 0.1
2026	-	-	0.1	-
Alternative 2 – Variant 1				
2024	-	-	-	-
2025	0.6	5.1	1.6	< 0.1
2026	0.9	7.1	2.2	< 0.1
Alternative 2 – Variant 2				
2024	-	-	-	-
2025	0.6	5.1	1.6	< 0.1
2026	0.9	7.1	2.2	< 0.1
Threshold	*25*	*25*	*100*	*100*

ROG = reactive organic gases; lbs = pounds; NO_X = nitrogen oxide; PM2.5 = particulate matter that is 2.5 microns in diameter and smaller; SO_2 = sulfur dioxide.

[a] These emissions only include those that would occur in Yolo County, the only-nonattainment area in the study area for ozone.

[b] The General Conformity *de minimis* thresholds are based on the federal attainment status of the study area in the SVAB. Although SVAB is in attainment for SO_2, because SO_2 is a precursor for PM2.5, the PM2.5 General Conformity *de minimis* thresholds are used.

Tables 20-12 and 20-13 demonstrate that Project construction emissions would be below the federal *de minimis* levels both with and without the implementation of BMPs.

Operations

Ozone precursor and criteria pollutant emissions resulting from the operational phase of Alternatives 1, 2, and 3 in nonattainment and maintenance areas of the SVAB are presented in Table 20-14. For Project operation, only Yolo County is both a nonattainment area and has emissions generated within it for operational-related activity. As such, the emissions in Table 20-14 reflect the maximum annual emissions between 2030 and 2040 for each pollutant in YSAQMD.

Table 20-14. Criteria Pollutant and Precursor Emissions from Operations in the Nonattainment Areas of the SVAB [a]

Alternative	Annual Emissions (tons/year)			
	ROG	NOx	PM2.5	SO2
1 and 3	< 1	< 1	< 1	< 1
2	< 1	< 1	< 1	< 1
Threshold [b]	*25*	*25*	*100*	*100*

ROG = reactive organic gases; lbs = pounds; NO_X = nitrogen oxide; PM2.5 = particulate matter that is 2.5 microns in diameter and smaller; SO_2 = sulfur dioxide.

[a] These emissions only include those that would occur in Yolo County, the only-nonattainment area for ozone and PM2.5 where emissions during operation would occur.

[b] The General Conformity *de minimis* thresholds are based on the federal attainment status of the Project vicinity in the SVAB. Although SVAB is in attainment for SO_2, because SO_2 is a precursor for PM2.5, the PM2.5 General Conformity *de minimis* thresholds are used.

Table 20-14 demonstrates that operations emissions would be below the federal *de minimis* levels.

NEPA Conclusion

As noted in Appendix 4A, *Regulatory Requirements*, the purpose of the General Conformity rule is to prevent federal actions from generating emissions that interfere with state and local agencies' SIPs and emission-reduction strategies to attain the NAAQS. Because the federal *de minimis* levels would not be exceeded, construction and operation of Alternatives 1, 2, and 3 would not result in a cumulatively considerable net increase of any criteria pollutant in nonattainment areas as compared to the No Project Alternative, and a general conformity determination is not required. There would be no adverse effect with respect to federal actions generating emissions that interfere with SIPs or strategies to attain the NAAQS.

Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations *(impact subdivided into a, b, and c to address the individual pollutant concerns)*:

Impact AQ-4a: Expose sensitive receptors to toxic air contaminants

No Project

The No Project Alternative would not cause a change in pollutant concentrations of TACs, because no Project facilities would be constructed. Construction and operation of other unrelated projects and other existing sources in the Project region would still occur and would generate TAC emissions from sources such as diesel-fueled vehicle traffic and construction and agricultural equipment. These sources of emissions are part of the existing conditions, however.

Significance Determination

The No Project Alternative would not result in a change from existing conditions that would cause TAC emissions that expose sensitive receptors to substantial pollutant concentrations. There would be no impact/no effect.

Alternatives 1 and 3

Construction

Inhalation of DPM from construction of Alternatives 1 and 3 has the potential to create health risks, which may exceed air district significance thresholds for increased cancer and noncancer health hazards at adjacent receptor locations. Construction would result in DPM emissions primarily from diesel-fueled off-road equipment and heavy-duty trucks, as well as toxic metal emissions from concrete batch plants. Cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other air toxic from construction of Alternatives 1 and 3. With the exception of offsite mobile vehicles, sensitive receptors are generally located beyond 1,000 feet from onsite activities that would occur at the Project site. Thus, construction activities would not occur in the immediate vicinity of sensitive receptors for an extended period of time.

Table 20-15 shows estimated construction-related health risks relative to the health risk thresholds for Alternatives 1 and 3 for the maximum exposed individual resident and maximum exposed individual worker. The modeled health risks include implementation of BMP-27 and BMP-28. Local topography and meteorology can greatly influence DPM air concentrations and the resulting exposure and health risk. Consequently, health risks were estimated at multiple locations within and near the Project site based on representative local meteorological conditions. The health risks shown in Table 20-15 represent the maximum modeled offsite risk and include cancer risk and hazard index values (chronic, chronic 8-hour, and acute).

Table 20-15. Excess Cancer and Noncancer Health Risks from Project Construction

Alternative and Air District	Cancer (per million)	Chronic HI	Chronic HI (8-hour)	Acute HI (1-hour) [a]
Alternatives 1 and 3				
Maximum Residential Exposure	0.94	< 0.01	0.03	0.56
Maximum Worker Exposure	1.79	0.64	0.12	
Alternative 2				

Alternative and Air District	Cancer (per million)	Chronic HI	Chronic HI (8-hour)	Acute HI (1-hour) [a]
Maximum Residential Exposure	0.98	< 0.01	0.03	0.56
Maximum Worker Exposure	1.79	0.64	0.12	
Threshold	*10.0*	*1.0*	*1.0*	*1.0*

[a] There is no difference in locations for the residential and worker exposure for acute hazard index.

As shown in Table 20-15, cancer and noncancer risks would be below the applicable thresholds for both residential and worker exposure. These results are consistent with the temporary nature of construction and proximity of sensitive receptors. Health effects from carcinogenic TACs are usually described in terms of individual cancer risk, which is based on a 30-year exposure duration (or residency time) to TACs as the basis for public notification and risk reduction audits and plans (California Office of Environmental Health Hazard Assessment 2015). However, the construction activities are anticipated to last approximately 6 years, depending on the specific location. Therefore, the total exposure period for construction activities would be up to 20% of the total exposure period used for typical health risk calculations (i.e., 30 years). Additionally, there are substantial buffer distances between many of the construction activities and the nearest sensitive receptors. For these reasons, and because of the highly dispersive nature of DPM emissions, health risks are below the applicable thresholds.

Operation

There would not be a substantial source of TACs during maintenance because maintenance activities would be minor, infrequent, and/or brief. The most frequent maintenance activity would be inspections involving pickup trucks, which could be either gasoline- or diesel-fueled. Activities that would be infrequent, such as replacement of instrumentation every 25 years, would occur for a relatively short amount of time (i.e., 25 days). In general, the maintenance activities would occur at far distances from sensitive receptors and would most often involve a low number of trucks and equipment. Thus, these activities would not be a substantial source of DPM.

For impacts associated with visitors traveling to the recreational areas, because the vast majority of on-road vehicles are gasoline-powered rather than diesel-powered, there would not be substantial sources of DPM emissions (U.S. Department of Transportation 2015). Similarly, the use of motorized recreational boats on the reservoir would be mostly gasoline-powered, and the reservoir area where boats would operate would not be located near existing sensitive receptors.

CEQA Significance Determination and Mitigation Measures

Construction of Alternatives 1 and 3 would not result in an exceedance of the applicable health risk thresholds because of the temporary nature of construction activities and the distances to the nearest sensitive receptors. Consequently, construction would not expose sensitive receptors to substantial concentrations of toxic air contaminants, and impacts would be less than significant.

Similarly, operation of Alternative 1 or 3 would not expose sensitive receptors to substantial concentrations of toxic air contaminants because maintenance activities would require only occasional use of diesel-powered equipment or trucks and recreational activities would not

involve appreciable sources of diesel-powered equipment. Operations impacts would be less than significant.

Impacts associated with construction and operation of Alternatives 1 and 3 would be less than significant.

NEPA Conclusion

Construction and operations effects would be the same as described above for CEQA. Construction of Alternatives 1 and 3 would not result in an exceedance of the applicable health risk thresholds as compared to the No Project Alternative because of the temporary nature of construction activities and the distances to the nearest sensitive receptors. Operation of Alternative 1 or 3 would not expose sensitive receptors to substantial concentrations of toxic air contaminants as compared to the No Project Alternative because only occasional use of diesel-powered equipment or trucks would be required for maintenance activities and recreational activities would not involve appreciable sources of diesel-powered equipment. There would be no adverse effect from construction or operation of Alternative 1 or 3 related to the exposure of sensitive receptors to toxic air contaminants.

Alternative 2

Construction

The health risk impacts associated with Alternative 2 are shown in Table 20-15 and are slightly higher than those for Alternatives 1 and 3. As noted above, Alternative 2 would require construction activities that are largely similar to those of Alternatives 1 and 3. Although overall, construction emissions for Alternative 2 would be less than Alternatives 1 and 3, the health risks experienced by sensitive receptors are not necessarily also less than Alternatives 1 and 3. For example, Alternative 2 would result in a longer Dunnigan Pipeline, which would expose nearby sensitive receptors to pollutant concentrations for a longer period of time. As with Alternatives 1 and 3, the health risk impacts for Alternative 2 are below all applicable thresholds for cancer and noncancer risks.

Operation

The potential for Alternative 2 to expose sensitive receptors to pollutant concentrations would be similar to Alternatives 1 and 3. The maintenance-related activities would be largely similar, in that they would most frequently involve the use of pickup trucks and, less frequently, require more additional diesel-powered equipment. This less frequent activity, such as replacement of instrumentation, would occur at similar intervals as Alternatives 1 and 3 (e.g., every 25 years).

Recreation-related activities would have the same limited potential to expose sensitive receptors to pollutant concentrations, because on-road vehicles traveling to the reservoir and boats operating on the reservoir would be mostly gasoline-powered and thus not be a major source of DPM.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would not result in an exceedance of the applicable health risk thresholds, because of the temporary nature of construction activities and the distances to the

nearest sensitive receptors. Consequently, construction would not expose sensitive receptors to substantial concentrations of toxic air contaminants, and impacts would be less than significant.

Operation of Alternative 2 would not result in the exposure of sensitive receptors to substantial concentrations of toxic air contaminants, because maintenance activities would require only occasional use of diesel-powered equipment or trucks and recreational activities would not involve appreciable sources of diesel-powered equipment. Operations impacts would be less than significant.

Impacts associated with construction and operation of Alternative 2 would be less than significant.

NEPA Conclusion

Construction and operations effects would be the same as described above for CEQA. Construction of Alternative 2 would not result in an exceedance of the applicable health risk thresholds as compared to the No Project Alternative because of the temporary nature of construction activities and the distances to the nearest sensitive receptors. Operation of Alternative 2 would not expose sensitive receptors to substantial concentrations of toxic air contaminants as compared to the No Project Alternative because only occasional use of diesel-powered equipment or trucks would be required for maintenance activities and recreational activities would not involve appreciable sources of diesel-powered equipment. There would be no adverse effect from construction or operation of Alternative 2 related to the exposure of sensitive receptors to toxic air contaminants.

Impact AQ-4b: Expose sensitive receptors to localized criteria pollutant emissions

No Project

The No Project Alternative would not cause a change in pollutant concentrations of localized criteria pollutant emissions, because no Project facilities would be constructed. Construction and operation of other unrelated projects and other existing sources in the Project region would still occur and would generate criteria pollutant emissions from sources such as wind-blown dust, vehicle traffic, and construction and agricultural equipment. These sources of emissions are part of the existing conditions.

Significance Determination

The No Project Alternative would not result in a change from existing conditions that would cause localized criteria pollutant emissions that expose sensitive receptors to substantial pollutant concentrations. There would be no impact/no effect.

Alternatives 1 and 3

Construction

Construction of the Project has the potential to cause elevated criteria pollutant concentrations near areas where construction is occurring. Elevated pollutant concentrations may cause or contribute to exceedances of the short- and long-term NAAQS and CAAQS and affect local air quality and public health. The criteria pollutants of concern with established annual standards are

NO_2, PM10, and PM2.5. The criteria pollutants of concern with established hourly or daily standards are as follows.

- CO (1 hour and 8 hours)
- PM10 and PM2.5 (24 hours)
- NO2 (1 hour)
- SO2 (1 hour and 24 hours)

Table 20-16 present the estimated maximum concentrations relative to the CAAQS and NAAQS for all pollutants except PM10 and PM2.5. The tables present both the incremental Project and total pollutant concentration, which is the incremental Project contribution plus the background concentration. To determine if construction would cause an ambient air quality violation, only the total pollutant concentration is compared to the CAAQS and NAAQS. The three highest total concentrations for each pollutant are shown in Table 20-16.

Concentrations of PM from Project construction are evaluated separately because most of the modeled areas have PM background concentrations that exceed the CAAQS and NAAQS even without the Project. Thus, to appropriately evaluate the Project's contributions to those existing violations, it is necessary to compare the Project-only contribution to the SIL established by USEPA, as discussed above and shown in Table 20-8 above. The Project would therefore have a significant impact for PM if it would either cause a new violation of the CAAQS or NAAQS, or, in the areas where the background concentrations already exceed the CAAQS or NAAQS, result in an incremental contribution that exceeds the SIL. Table 20-17 presents the estimated maximum annual concentrations and incremental concentrations of PM10 and PM2.5.

Table 20-16. Maximum CAAQS and NAAQS Criteria Pollutant Concentration Impacts During Construction (µg/m^3) [Non-Particulate Matter Pollutants] [a]

Alternative	CO 1-hour		CO 8-hour		NO_2 1-hour		NO_2 Annual		SO_2 1-hour		SO_2 24-hour	
	Project [b]	Total [c]	Project [b]	Total [c]	Project [b]	Total [c]	Project [b]	Total [c]	Project [b]	Total [c]	Project [b]	Total [c]
CAAQS – Alternatives 1 and 3												
1st Highest	2,540	11,000	398	6,030	232	232	5	18	73	96	4	8
2nd Highest	316	8,820	48	5,680	86	183	1	15	1	24	< 1	5
3rd Highest	236	8,740	48	5,680	67	163	1	14	1	23	< 1	5
CAAQS – Alternative 2												
1st Highest	2,540	11,000	398	6,030	232	232	5	18	73	96	4	8
2nd Highest	316	8,820	51	5,680	86	183	< 1	15	1	24	< 1	5
3rd Highest	196	8,700	37	5,670	55	151	1	14	1	23	< 1	5
CAAQS	–	23,000	–	10,000	–	339	–	57	–	655	–	105
NAAQS – Alternatives 1 and 3												
1st Highest	2,310	10,600	358	4,500	164	164	5	18	32	39	NA	NA
2nd Highest	298	8,570	40	4,180	47	108	1	15	1	8	NA	NA
3rd Highest	219	8,490	40	4,180	39	100	1	14	< 1	7	NA	NA
NAAQS – Alternative 2												
1st Highest	2,310	10,600	358	4,500	164	164	5	18	32	39	NA	NA
2nd Highest	298	8,570	43	4,180	47	108	< 1	15	1	8	NA	NA
3rd Highest	184	8,460	34	4,170	30	91	1	14	< 1	7	NA	NA
NAAQS	–	40,000	–	10,000	–	188	–	100	–	196.5	–	NA

µg/m^3 = microgram per cubic meter; CAAQS = California ambient air quality standards; CO = carbon monoxide; NA = not applicable; NAAQS = National ambient air quality standards; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide.

[a] Only the three highest modeled concentrations are presented for each pollutant. Emissions results include implementation of BMPs. If there are exceedances of the CAAQS and NAAQS, those are shown in **bolded underline**.

[b] Represents the maximum incremental offsite concentration from Project construction.

[c] Represents the maximum Project-level incremental contribution plus background concentration.

Table 20-17. Alternative 1 and 3 Maximum Particulate Matter Concentration Impacts During Construction (µg/m^3) [a]

AAQS and Modeled Area	PM10 24-hour			PM10 Annual			PM2.5 24-hour			PM2.5 Annual		
	Project [b]	Background [c]	Total [d]	Project [b]	Background [c]	Total [d]	Project [b]	Background [c]	Total [d]	Project [b]	Background [c]	Total [d]
CAAQS												
Dunnigan Pipeline	**19.8**	304	324	0.5	36	37	NA	NA	NA	0.1	13	13
GCID (Head gate)	0.3	215	215	< 0.1	29	30	NA	NA	NA	< 0.1	16	16
GCID (Imp. A and RR)	0.3	390	390	0.1	29	30	NA	NA	NA	< 0.1	16	16
GCID (Imp. E)	3.3	390	393	0.3	29	30	NA	NA	NA	0.1	16	16
GCID (Imp. F to K)	1.9	390	392	0.1	29	30	NA	NA	NA	< 0.1	16	16
GCID (Willow Creek & Walker Creek Siphons)	1.6	390	392	0.2	29	30	NA	NA	NA	< 0.1	16	16
Saddle Dams	4.3	215	219	0.1	29	30	NA	NA	NA	< 0.1	13	13
Huffmaster Road	**70.0**	215	285	1.0	29	30	NA	NA	NA	0.1	13	13
Dams and Reservoirs	**757.0**	215	972	**56.5**	29	86	NA	NA	NA	**6.7**	13	20
Dams and Reservoirs (Construction Traffic)	**37.6**	215	253	**3.6**	29	33	NA	NA	NA	**0.5**	13	14
Red Bluff	< 0.1	172	172	< 0.1	24	24	NA	NA	NA	< 0.1	13	13
SIL and CAAQS [e]	5.0	50	50	1.0	20	20	NA	NA	NA	0.2	12	12
NAAQS												
Dunnigan Pipeline	**17.9**	210	228	NA	NA	NA	**1.5**	48	49	0.1	7	7
GCID (Head gate)	0.2	152	152	NA	NA	NA	< 0.1	59	59	< 0.1	15	15
GCID (A and RR))	0.3	325	325	NA	NA	NA	0.1	59	59	< 0.1	15	15
GCID (Imp. E)	2.3	325	327	NA	NA	NA	0.3	59	59	0.1	15	15
GCID (Imp. F to K)	1.5	325	326	NA	NA	NA	0.1	59	59	< 0.1	15	15
GCID (Willow Creek & Walker Creek Siphons)	1.5	325	326	NA	NA	NA	0.1	59	59	< 0.1	15	15
Saddle Dams	3.4	152	155	NA	NA	NA	0.4	48	48	< 0.1	7	7
Huffmaster Road	**66.3**	152	218	NA	NA	NA	**4.4**	48	52	0.1	7	7
Dams and Reservoirs	**554.0**	152	706	NA	NA	NA	**33.0**	48	81	5.8	7	**13**
Dams and Reservoirs (Construction Traffic)	**32.7**	152	185	NA	NA	NA	**4.8**	48	52	0.4	7	7
Red Bluff	< 0.1	151	151	NA	NA	NA	< 0.1	55	55	< 0.1	10	10
SIL and NAAQS [e]	5.0	150	150	NA	NA	NA	1.2	35	–	0.2	12	12

µg/m^3 = microgram per cubic meter; AAQS = ambient air quality standard; CAAQS = California ambient air quality standards; CO = carbon monoxide; Imp. = Improvement; NA = not applicable; NAAQS = national ambient air quality standards; NO_2 = nitrogen dioxide; RR = railroad; SO_2 = sulfur dioxide.

[a] Emissions results include implementation of BMPs.

[b] The Project-only concentrations would result in a significant impact if the background concentration exceeds the CAAQS or NAAQS *and* the Project-only concentration exceeds the SIL. For significant impacts, the Project-only concentrations are shown in **bolded underline** in the Project columns above.

[c] The background concentrations in most of the modeled areas exceed the CAAQS and NAAQS even without the Project. In these locations, the Project-only concentration is evaluated with respect to the applicable SIL (as noted above). The background concentrations that exceed the CAAQS or NAAQS are shown in underline in the Background columns above.

[d] The Project would also result in a significant impact if the background concentrations do not exceed the CAAQS or NAAQS but the total concentration with the Project would exceed the CAAQS or NAAQS. These significant impacts are shown in **bolded underline** in the Total columns above.

[e] The SIL are shown in the Project columns, and the CAAQS/NAAQS are shown in the Background and Total columns.

As shown in Table 20-16 above, Alternatives 1 and 3 would not result in any exceedances of the CAAQS or NAAQS with respect to all pollutants except PM. At the three highest concentrations, the total pollutant concentration, which includes the Project contribution and background concentrations, would be below the applicable CAAQS and NAAQS.

With respect to PM, Table 20-17 shows that there would be multiple instances where the Project substantially contributes to an existing PM violation, and one instance where the Project causes a new PM violation. This result is consistent with the conclusion of Impact AQ-1, where it is determined that the Project's exceedances of the air district thresholds would cause a cumulatively considerable net increase of PM.

Operation

Alternatives 1 and 3 would result in substantially less emissions during the operations period than construction, because maintenance activities would be minor, infrequent, and/or brief. The most frequent maintenance activity would be inspections involving pickup trucks. Recreational activities would also contribute emissions through the use of on-road vehicles traveling to the recreation areas and boats on the reservoir. As shown in Table 20-11, emissions of all pollutants would be below the applicable thresholds, except for ROG emissions, which would exceed the applicable threshold primarily from the use of recreational boats on the reservoir. ROG is not considered a local pollutant, and there is no CAAQS or NAAQS for this pollutant, so the use of recreational boats on the reservoir would not expose sensitive receptors to substantial concentrations of localized criteria pollutant emissions that violate the CAAQS or NAAQS. Emissions of criteria pollutants that are considered local pollutants would be below the air district thresholds for operations and maintenance activities.

CEQA Significance Determination and Mitigation Measures

Construction of Alternatives 1 and 3 would contribute substantially to existing PM violations of the CAAQS and NAAQS and would cause a new violation of the NAAQS. The modeling results shown in Table 20-17 reflect that fugitive dust emissions would be minimized through implementation of BMP-28, which would involve using soil stabilizers on unpaved road surfaces and watering visibly dry surfaces. As noted above, the use of soil stabilizers and watering on road surfaces would result in substantial reductions in fugitive PM emissions. However, given the magnitude of unpaved road travel that would be required for construction, the fugitive PM emissions would result in several localized impacts even with the implementation of BMP-28 to reduce dust. Mitigation Measure AQ-1.2 would result in the purchase of emissions offsets, but this measure, which would mitigate regional impacts associated with PM, would not mitigate localized impacts from PM. Sensitive receptors and/or other members of the public could be exposed to the concentrations shown in Table 20-17, regardless of whether an equal amount of emissions is offset somewhere else in the SVAB. As a result, the localized PM impacts cannot be mitigated, and the Project would expose sensitive receptors to substantial concentrations of localized criteria pollutants. This impact would be significant and unavoidable.

Operations of Alternative 1 and 3 would not expose sensitive receptors to substantial concentrations of localized criteria pollutants, because emissions, particularly PM emissions, would be substantially less than construction. Maintenance and recreational activities would result in emissions of local criteria pollutants that are below the applicable thresholds, and thus

localized exceedances of the NAAQS or CAAQS are not anticipated. This impact would be less than significant.

NEPA Conclusion

Construction and operations effects of Alternatives 1 and 3 would be the same as described above for CEQA. Construction of Alternatives 1 and 3 would result in elevated criteria pollutant concentrations near areas where construction is occurring, would contribute substantially to existing PM violations of the CAAQS and NAAQS, and would cause a new violation of the NAAQS as compared to the No Project Alternative. There would be a substantial adverse effect from construction related to the exposure of sensitive receptors to localized criteria pollutant concentrations. Fugitive PM emissions would result in several localized effects even with the implementation of BMP-28 to reduce dust from travel on unpaved roads during construction. Mitigation Measure AQ-1.2 would not reduce emissions below thresholds and effects would remain substantially adverse. Operations of Alternatives 1 and 3 would result in emissions that are below the thresholds of the CAAQS and NAAQS as compared to the No Project Alternative. Operation of Alternatives 1 and 3 would not have an adverse effect because sensitive receptors would not be exposed to substantial concentrations of localized criteria pollutants.

Alternative 2

Construction

Construction of Alternative 2 has the potential to cause elevated criteria pollutant concentrations near areas where construction is occurring, which may cause or contribute to exceedances of the short- and long-term NAAQS and CAAQS and affect local air quality and public health. Table 20-16 above presents the estimated maximum concentrations for Alternative 2, relative to the CAAQS and NAAQS for all pollutants except PM10 and PM2.5. Alternative 2 would result in an ambient air quality violation if the total pollutant concentration exceeds the CAAQS and NAAQS.

As noted above, concentrations of particulate matter from Alternative 2 construction are evaluated separately, because most of the modeled areas have PM concentrations that exceed the CAAQS and NAAQS even without the Project. Table 20-18 shows the maximum annual concentrations and incremental concentrations for Alternative 2 to evaluate the contributions to those existing violations.

Table 20-18. Alternative 2 Maximum Particulate Matter Concentration Impacts During Construction (µg/m^3) [a]

AAQS and Modeled Area	PM10 24-hour			PM10 Annual			PM2.5 24-hour			PM2.5 Annual		
	Project [b]	Background [c]	Total [d]	Project [b]	Background [c]	Total [d]	Project [b]	Background [c]	Total [d]	Project [b]	Background [c]	Total [d]
CAAQS												
Dunnigan Pipeline	**47.5**	304	352	**1.3**	36	38	NA	NA	NA	0.1	13	13
GCID (Head gate)	0.3	215	215	< 0.1	29	30	NA	NA	NA	< 0.1	16	16
GCID (Imp. A and RR)	0.3	390	390	0.1	29	30	NA	NA	NA	< 0.1	16	16
GCID (Imp. E)	3.3	390	393	0.3	29	30	NA	NA	NA	0.1	16	16
GCID (Imp. F to K)	1.9	390	392	0.1	29	30	NA	NA	NA	< 0.1	16	16
GCID (Willow Creek & Walker Creek Siphons)	1.6	390	392	0.2	29	30	NA	NA	NA	< 0.1	16	16
Saddle Dams	4.3	215	219	0.1	29	30	NA	NA	NA	< 0.1	13	13
Huffmaster Road	**65.8**	215	281	0.4	29	30	NA	NA	NA	< 0.1	13	13
Dams and Reservoirs	**757.0**	215	972	**56.5**	29	86	NA	NA	NA	**6.7**	13	20
Dams and Reservoirs (Construction Traffic)	**37.6**	215	253	**3.6**	29	33	NA	NA	NA	**0.5**	13	14
Red Bluff	< 0.1	172	172	< 0.1	24	24	NA	NA	NA	< 0.1	13	13
SIL and CAAQS [e]	5.0	50	50	1.0	20	20	NA	NA	NA	0.2	12	12
NAAQS												
Dunnigan Pipeline	**42.6**	210	253	NA	NA	NA	**3.6**	48	51	0.1	7	7
GCID (Headgate)	0.2	152	152	NA	NA	NA	< 0.1	59	59	< 0.1	15	15
GCID (A and RR))	0.3	325	325	NA	NA	NA	0.1	59	59	< 0.1	15	15
GCID (Imp. E)	2.3	325	327	NA	NA	NA	0.3	59	59	0.1	15	15
GCID (Imp. F to K)	1.5	325	326	NA	NA	NA	0.1	59	59	< 0.1	15	15
GCID (Willow Creek & Walker Creek Siphons)	1.5	325	326	NA	NA	NA	0.1	59	59	< 0.1	15	15
Saddle Dams	3.4	152	155	NA	NA	NA	0.4	48	48	< 0.1	7	7
Huffmaster Road	**61.4**	152	213	NA	NA	NA	**3.4**	48	51	< 0.1	7	7
Dams and Reservoirs	**554.0**	152	706	NA	NA	NA	**32.3**	48	80	5.8	7	**13**
Dams and Reservoirs (Construction Traffic)	**32.7**	152	185	NA	NA	NA	**4.8**	48	52	0.4	7	7
Red Bluff	< 0.1	151	151	NA	NA	NA	< 0.1	55	55	< 0.1	10	10
SIL and NAAQS [e]	5.0	150	150	NA	NA	NA	1.2	35	–	0.2	12	12

AAQS = ambient air quality standards; CAAQS = California ambient air quality standards; GCID = Glenn-Colusa Irrigation District; Imp. = Improvement; NA = not applicable; NAAQS = national ambient air quality standards; PM = particulate matter; RR = railroad; SIL = significant impact level.

[a] Emissions results include implementation of BMPs.

[b] The Project-only concentrations would result in a significant impact if the background concentration exceeds the CAAQS or NAAQS *and* the Project-only concentration exceeds the SIL. For significant impacts, the Project-only concentrations are shown in **bolded underline** in the Project columns above.

[c] The background concentrations in most of the modeled areas exceed the CAAQS and NAAQS even without the Project. In these locations, the Project-only concentration is evaluated with respect to the applicable SIL (as noted above). The background concentrations that exceed the CAAQS or NAAQS are shown in underline in the Background columns above.

[d] The Project would also result in a significant impact if the background concentrations do not exceed the CAAQS or NAAQS but the total concentration with the Project would exceed the CAAQS or NAAQS. These significant impacts are shown in **bolded underline** in the Total columns above.

[e] The SIL are shown in the Project columns, and the CAAQS/NAAQS are shown in the Background and Total columns.

Operation

As with Alternatives 1 and 3, Alternative 2 maintenance activities would be minor, infrequent, and/or brief and recreational activities would also contribute emissions through on-road vehicles traveling to the recreation areas and boats on the reservoir. Similar to Alternatives 1 and 3, emissions of all pollutants would be below the applicable thresholds (refer to Table 20-11), except for ROG emissions, which would exceed the applicable threshold from the use of the boats. Because ROG is not considered a local pollutant, the use of recreational boats would not expose sensitive receptors to substantial concentrations of localized criteria pollutants that violate the CAAQS or NAAQS. Emissions of criteria pollutants that are considered local pollutants would be below the air district thresholds for operations and maintenance activities.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would contribute substantially to existing PM violations of the CAAQS and NAAQS and would cause a new violation of the NAAQS. The modeling results shown in Table 20-18 reflect the implementation of BMP-28 to reduce fugitive dust emissions. Nevertheless, Alternative 2 would result in several localized impacts even with this BMP that will be implemented to reduce dust. Mitigation Measure AQ-1.2 would result in the purchase of emissions offsets, but, as noted above, this measure would not mitigate localized impacts from PM. As a result, the localized PM impacts cannot be mitigated, and Alternative 2 would expose sensitive receptors to substantial concentrations of localized criteria pollutants. This impact would be significant and unavoidable.

Operation of Alternative 2 would not expose sensitive receptors to substantial concentrations of localized criteria pollutants, because emissions, particularly PM emissions, would be substantially less than construction. Maintenance and recreational activities would result in emissions of local criteria pollutants that are below the applicable thresholds, and thus localized exceedances of the NAAQS or CAAQS are not anticipated. This impact would be less than significant.

NEPA Conclusion

Construction and operations effects of Alternative 2 would be the same as described above for CEQA. Construction of Alternative 2 would result in elevated criteria pollutant concentrations near areas where construction is occurring, would contribute substantially to existing PM violations of the CAAQS and NAAQS, and would cause a new violation of the NAAQS as compared to the No Project Alternative. There would be a substantial adverse effect from Project construction related to the exposure of sensitive receptors to localized criteria pollutant concentrations. Fugitive PM emissions would result in several localized effects even with the implementation of BMP-28 to reduce dust from travel on unpaved roads during construction. Mitigation Measure AQ-1.2 would not reduce emissions below thresholds, and effects would remain adverse. Operations of Alternative 2 would result in emissions that are below the thresholds of the CAAQS and NAAQS as compared to the No Project Alternative. Operation of Alternative 2 would not have an adverse effect, because sensitive receptors would not be exposed to substantial concentrations of localized criteria pollutants.

Impact AQ-4c: Expose sensitive receptors to asbestos, lead-based paint, or fungal spores that cause Valley Fever

No Project

The No Project Alternative would not cause a change in pollutant concentrations from sources of asbestos, LBP, or fungal spores that cause Valley Fever, because no new facilities would be constructed or operated. Construction and operation of other unrelated projects and other existing activities in the region would still occur and would generate emissions from activities such as demolition of structures, soil movement, and ground disturbance. These sources of emissions are part of the existing conditions, however.

Significance Determination

The No Project Alternative would not result in a change from existing conditions that would cause pollutant concentrations from asbestos or LBP, or fungal spores that cause Valley Fever. There would be no impact/no effect.

Alternatives 1, 2, and 3

Construction

NOA could become airborne if earthmoving or excavation activities occur through ultramafic and metavolcanic bedrock. According to mapping from the California Department of Conservation, there are no geologic features normally associated with NOA (i.e., serpentine rock or ultramafic rock near fault zones) in or near the study area (ESRI 2021). As such, there is no potential for impacts related to NOA emissions during construction activities, and Project construction would not expose sensitive receptors to substantial NOA concentrations.

Demolition of the existing structures may disperse asbestos-containing materials (ACM) if such materials were used during construction of the structures. Some structures may also be contaminated with residual lead, which was used as a pigment and drying agent in oil-based paint until the Lead-Based Paint Poisoning Prevention Act of 1971 prohibited such use. The demolition of ACM and LBP is subject to the limitations of the National Emissions Standards for Hazardous Air Pollutants (40 C.F.R. Parts 61 and 63) regulations. The air districts where demolition would occur (CCAPCD, GCAPCD, and YSAQMD) would be consulted before demolition begins, and demolition would comply with existing asbestos regulations. Alternatives 1, 2, and 3 would involve approximately the same amount of demolition activity, and therefore they have the same potential to expose receptors to impacts from ACM and LBP during the demolition part of the construction phase. BMP-8, Performance of Environmental Site Assessments, includes provisions for the potential to encounter lead or asbestos in building materials. Pre-demolition surveys of structures to be demolished would be conducted to characterize hazardous materials (including ACM and lead based paint) and remove and dispose of them in accordance with applicable regulations, which would both reduce construction worker exposure and minimize effects on sensitive receptors.

While there are several factors that influence receptor exposure and development of Valley Fever, earthmoving and excavation activities during construction could release *C. immitis* spores if they are present in the soil. Receptors near the construction area may therefore be exposed to

increased risk of inhaling *C. immitis* spores and subsequent development of Valley Fever. Dust control measures are the primary defense against infection (U.S. Geological Survey 2000:9). Alternatives 1, 2, and 3 include BMP-28 to control fugitive dust, including using soil stabilizers and routine watering that would minimize dusty conditions and reduce the risk of receptors contracting Valley Fever. Furthermore, the counties in which the primary soil-disturbing activities would occur have a low case rate of the disease, with fewer than 5 cases reported during the period between 2011 and 2017. There are dust-generating activities that currently occur in these counties, such as vehicles traveling on unpaved roads and agricultural activity. Consequently, this leads to the conclusion that *C. immitis* spores do not commonly infect people with Valley Fever in the study area despite the presence of dusty conditions. With respect to workers at the construction sites, BMP-19, Development and Implementation of Worker Occupational Health and Safety Plans, would train workers to identify the symptoms of Valley Fever to ensure cases that occur are identified.

Although Alternatives 1 and 3 would include more dams, Alternative 2 would include more roadway and pipeline construction. Earthmoving and grading would thus be required for all alternatives, though the locations would be different between Alternatives 1 and 3 and Alternative 2. Therefore, all three alternatives would have a similar potential to encounter and expose receptors to impacts from Valley Fever.

Operation

Operation activities would occur primarily around new Project facilities. There is no potential for impacts related to NOA emissions during maintenance activities due the lack of NOA, and Alternatives 1, 2, and 3 would not expose sensitive receptors to substantial NOA concentrations. During operations and maintenance activities, there would be no demolition activities and thus no potential for ACM or LBP exposure.

With respect to Valley Fever, the operational-related activities would result in some earthmoving and dust-generating activities, although to a substantially lesser degree than construction activities. Project operation and maintenance activities would primarily generate dust through the travel of vehicles on unpaved roads. Such travel would not occur in the same location every time and would be infrequent in most areas (e.g., weekly, twice per month).

CEQA Significance Determination and Mitigation Measures

Alternatives 1, 2, and 3 would not expose sensitive receptors to significant emissions related to asbestos, LBP, or Valley Fever during construction or operation. Construction of Alternatives 1, 2, and 3 would comply with existing ACM and LBP handling and disposal standards, which would prevent exposure of sensitive receptors to substantial pollutant concentrations with respect to ACM and LBP. Soil movement associated with Project construction and operation would have limited to no potential to disturb or expose receptors to NOA because the Project area does not contain NOA. BMP-28 and BMP-19 will control fugitive dust would minimize dusty conditions and reduce the risk of contracting Valley Fever by implementing routine watering and other dust control measures and protecting construction workers. Alternatives 1, 2, and 3 would generate substantially lower dust emissions during operations than those from construction, and the emissions would be dispersed amongst the entire study area. Impacts associated with construction and operation of Alternatives 1, 2, and 3 would be less than significant.

NEPA Conclusion

Construction and operation effects would be the same as described above for CEQA. Construction and operation of Alternatives 1, 2, and 3 would not expose sensitive receptors to significant emissions related to asbestos, LBP, or Valley Fever as compared to the No Project Alternative. The Project area does not contain NOA. Implementation of BMP-28 and BMP-19 would minimize dusty conditions and reduce the risk of contracting Valley Fever. There would be no adverse effect from Project construction or operation related to emissions from ACM, LBP, NOA, or dust related to Valley Fever.

Impact AQ-5: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

No Project

The No Project Alternative would not cause a change in emissions that lead to odors because no new facilities would be constructed. Odors would continue to be generated by existing sources, such as vehicle and equipment exhaust and agricultural activities, but these sources of odors are part of the existing conditions.

Significance Determination

The No Project Alternative would not result in a change from existing conditions that would generate emissions that lead to odors affecting a substantial number of people. There would be no impact/no effect.

Alternatives 1, 2, and 3

The generation and severity of odors is dependent on several factors, including the nature, frequency, and intensity of the source; wind direction; and the location of the receptor(s). Odors rarely cause physical harm, but can cause discomfort, leading to complaints to regulatory agencies. TCAPCD considers wastewater treatment plants, landfills, waste transfer stations, composting and recycling facilities, petroleum refineries, asphalt batch plants, chemical and fiberglass manufacturing plants, painting/coating operations, rendering plants, coffee roasters, food processing facilities, and confined animal facilities as potential odor-emitting facilities (Tehama County Air Pollution Control District 2015). CARB maintains similar definitions of odor-generating sources (California Air Resources Board 2005).

Construction

Sources of odor during construction would include diesel exhaust from construction equipment and asphalt paving. In addition, Alternatives 1, 2, and 3 may require the use of "odor-emitting facilities": asphalt batch plants for paving of maintenance roads. (It is also possible that construction would not include its own asphalt batch plants but rather would obtain asphalt from existing regional commercial sources.) According to TCAPCD's CEQA guidelines, asphalt batch plants are potential odor sources, and the guidelines recommend locating these facilities at a distance of 1 mile from existing sensitive receptors (Tehama County Air Pollution Control District 2015).

Any asphalt batch plants would generally be sited adjacent to construction activities, but the location(s) has yet to be determined. One potential location is adjacent to the footprint of the Construction Field Office near the location of the Administration Building. At this location, there would not be any sensitive receptors within 1 mile of the batch plant, and thus no odor impacts would be expected. It is also possible that asphalt would be obtained from existing sources in the region, which would already have emissions controls in place. Additionally, any onsite batch plant would be used temporarily during construction and would be removed once the paving activities were completed. However, because the location of the batch plant(s) is unknown, there could be adverse odor effects on existing sensitive receptors in the study area if they are less than 1 mile away.

Once obtained from the onsite asphalt batch plant or from existing regional commercial sources, the asphalt would be applied to roadways, where it would normally cause temporary odors. All air districts in the study area have adopted rules that limit the amount of volatile organic compound emissions from cutback asphalt. Accordingly, potential odors generated during asphalt paving would be addressed through mandatory compliance with air district rules (GCAPCD Section 99.1, CCAPCD Rule 231, YSAQMD Rule 2.28, TCAPCD Rule 4:26). Odors from equipment exhaust would be localized and generally confined to the immediate area surrounding the construction site. These odors would be temporary and localized, and they would cease once construction activities have been completed.

Operation

Alternatives 1, 2, and 3 would result in the addition of odor sources. These odor sources would include equipment exhaust from routine maintenance activities and recreational boats. As discussed for construction, odors from maintenance equipment and truck exhaust would be localized and generally confined to the immediate area surrounding the specific site of maintenance activities. Similarly, for boating-related odors, recreational boats could generate odors within the reservoir footprint, but these odors would be generally localized over the water surface where there would likely be few people. Overall, there would be few people exposed to odors from either maintenance activities or boating on a long-term basis given the rural nature and limited number of sensitive receptors. Additionally, Project operations would not include the use of facilities that are typically associated with odors.

CEQA Significance Determination and Mitigation Measures

The distance between asphalt batch plants and existing sensitive receptors during construction would be at least 1 mile per BMP-29. The 1-mile buffer would prevent asphalt batch plant odors from affecting existing sensitive receptors and would be consistent with the screening distance for asphalt batch plants established by TCAPCD.

All other sources of construction odors—asphalt delivered from a commercial batch plant, asphalt applied to roadways, and construction equipment exhaust—would be less intense than the odors from an asphalt batch plant perceived at the same distance. These odors would not be expected to affect a substantial number of people or result in nuisance complaints given the lack of sensitive receptors nearby and dissipation of emission odors from these activities. Construction impacts associated with odors would be less than significant.

Odors from operations of Alternatives 1, 2, and 3 would not be expected to affect a substantial number of people because of the quick dissipation of emissions and/or the lack of sensitive receptors nearby. Operation impacts associated with odors would be less than significant.

NEPA Conclusion

Construction and operations effects would be the same as described above for CEQA. During construction of Alternatives 1, 2, and 3, onsite asphalt batch plants will be located at least 1 mile from existing sensitive receptors to prevent batch plant odors from affecting those receptors as compared to the No Project Alternative (BMP-29). All other sources of construction odors (e.g., construction equipment exhaust) would be less intense than the odors from an asphalt batch plant perceived at the same distance. During operation of Alternatives 1, 2, and 3, odors would not be anticipated to affect a substantial number of people as compared to the No Project Alternative because of the quick dissipation of emissions and/or the lack of nearby sensitive receptors. There would be no adverse effect from construction or operations related to odors under Alternatives 1, 2, and 3.

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20.5.2. Personal Communications

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