4.4 AIR QUALITY

4.4.1 INTRODUCTION

This section includes a description of existing air quality in the project area, a summary of applicable regulations, and analyses of potential short-term and long-term air quality impacts of the proposed project. The methods of analyzing emissions described in this section are consistent with the recommendations of the San Joaquin Valley Air Pollution Control District (SJVAPCD). Mitigation measures are recommended as necessary to reduce significant air quality impacts.

4.4.2 ENVIRONMENTAL SETTING

The project site is located in unincorporated San Joaquin County, which is within the San Joaquin Valley Air Basin (SJVAB). The SJVAB also includes all of Fresno, Kings, Madera, Merced, Stanislaus, and Tulare Counties and the valley portion of Kern County. Ambient concentrations of air pollutants are determined by the levels of emissions released by pollutant sources and the ability of the atmosphere to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

TOPOGRAPHY, METEOROLOGY, AND CLIMATE

The SJVAB, which occupies the southern half of the Central Valley, is approximately 250 miles long and, on average, 35 miles wide. The SJVAB is a well-defined climatic region with distinct topographic features on three sides. The Coast Ranges, which have an average elevation of 3,000 feet, are located on the western border of the SJVAB. The San Emigdio Mountains, which are part of the Coast Ranges, and the Tehachapi Mountains, which are part of the Sierra Nevada, are both located on the south side of the SJVAB. The Sierra Nevada forms the eastern border of the SJVAB. The northernmost portion of the SJVAB is San Joaquin County. No topographic feature delineates the northern edge of the basin. The SJVAB can be considered a “bowl” open only to the north.

The SJVAB is basically flat with a downward gradient in terrain to the northwest. Air flows into the SJVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento–San Joaquin Delta (Delta) from the San Francisco Bay Area. The mountains surrounding the SJVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution. As a result, the SJVAB is highly susceptible to pollutant accumulation over time.

The inland Mediterranean climate type of the SJVAB is characterized by hot, dry summers and cool, rainy winters. The climate is a result of the topography and the strength and location of a semipermanent, subtropical high-pressure cell. During summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Because of the northwesterly flow, upwellings of cold ocean water to the surface produce a band of cold water off the California coast. Daily summer high temperatures often exceed 100 degrees Fahrenheit (ºF), averaging in the low 90s in the north and the high 90s in the south. In the entire SJVAB, daily summer high temperatures average 95ºF. Over the last 30 years, temperatures in the SJVAB averaged 90ºF or higher for 106 days a year, and 100ºF or higher for 40 days a year. The daily summer temperature can vary by as much as 30ºF (SJVAPCD 2002). In winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and storms. Average high temperatures in the winter are in the 50s, but lows in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature in the winter is 45ºF (SJVAPCD 2002).

Most of the precipitation in the SJVAB occurs as rainfall during winter storms. The rare occurrence of precipitation during the summer is in the form of convective rain showers (showers caused due to rising warm

air). The amount of precipitation in the SJVAB decreases from north to south primarily because the Pacific storm track often passes through the northern portion of the SJVAB, while the southern portion remains protected by the Pacific high-pressure cell. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. Average annual rainfall for the entire SJVAB is approximately 9.25 inches on the valley floor (SJVAPCD 2002).

The winds and unstable atmospheric conditions associated with passing winter storms result in periods of low air pollution and excellent visibility. Precipitation and fog tend to reduce or limit some pollutant concentrations. For instance, clouds and fog block sunlight, which is required to fuel photochemical reactions that form ozone. Because carbon monoxide (CO) is partially water soluble, precipitation and fog also tend to reduce CO concentrations in the atmosphere. In addition, respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}) can be washed from the atmosphere through wet deposition processes (e.g., rain). However, between winter storms, high pressure and light winds lead to the creation of low-level temperature inversions and stable atmospheric conditions, resulting in the concentration of air pollutants (e.g., CO and PM_{10}).

Summer is considered the ozone season in the SJVAB. This season is characterized by poor air movement in the mornings and by longer daylight hours, which provide a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO_X), which result in ozone formation. Data about wind speed and direction indicate that winds blowing during the summer usually originate at the north end of the San Joaquin Valley and flow in a south-southeasterly direction through the Tehachapi Pass and into the Southeast Desert Air Basin (SJVAPCD 2002).

EXISTING AIR QUALITY—CRITERIA AIR POLLUTANTS

Concentrations of ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health, and because there extensive documentation is available on health-effects criteria for these pollutants, they are commonly referred to as “criteria air pollutants.”

A brief description of each criteria air pollutant (source types, health effects, and future trends) is provided below along with the most current attainment area designations and monitoring data for the project area and vicinity.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of ROG and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NO_X levels are present to sustain the ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional scale, ozone is a regional pollutant.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in forming ozone. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for ozone formation. As a result, summer is generally the peak season for ozone. Because of

the reaction time involved, peak concentrations often occur far downwind of the precursor emissions. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 part per million (ppm) for 1–2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing the amount of air inhaled and exhaled, and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia; such increased permeability leads to an increased response of the respiratory system to challenges, and a decrease in the immune system's ability to defend against infection (Godish 2004).

Emissions of the ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. The SJVAB's ozone problem ranks among the most severe in the state. The number of days that air quality standards have been exceeded has declined more quickly than peak levels. From 1987 to 2007, peak levels declined by 10% while the number of days when the California and national 8-hour standards declined by 38% and 35%, respectively. Most of this progress has occurred since 2003; however, the number of exceedance days in 2006 and 2007 were among the lowest in this 18-year period (ARB 2008a).

Carbon Monoxide

CO, is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56% of all CO emissions nationwide. Other nonroad engines and vehicles (such as construction equipment and boats) contribute about 22% of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85–95% of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions are industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Wood stoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO indoors. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air (EPA 2008a).

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, drastically reducing the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO include dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2008a).

The highest CO concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to problems caused by ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal-combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2008a). The combined emissions of NO and NO_2 are referred to as NO_X and

reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with ozone, the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty breathing, vomiting, headache, and eye irritation during or shortly after exposure. After approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions (EPA 2008a).

Sulfur Dioxide

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant; constriction of the bronchioles occurs with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2008a). Fine particulate matter ($PM_{2.5}$) is a subgroup of PM_{10}, consisting of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (ARB 2008a).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulate matter (referred to as the "piggybacking effect"), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2008a). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of PM_{10} remained relatively unchanged between 1975 and 2005 and are projected to remain unchanged through 2020. PM_{10} emissions in the SJVAB are dominated by emissions from areawide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, waste burning, and residential fuel combustion. Available PM_{10} data show some variation during the period, but overall, there has been a downward trend. Over the period from 1990 to 2006, the 3-year average of the annual averages shows a decrease of 32%. The calculated number of days exceeding the California and national 24-hour standards also shows a decrease. The California standard was exceeded on 292 days and the national standard was exceeded on 31 days during 1990. A total of 167 exceedance days for the California standard and 13 exceedance days for the national standard were calculated during 2006 (ARB 2008a).

Annual average $PM_{2.5}$ concentrations in the SJVAB show a definite downward trend from 1999 through 2006. California's annual average concentrations remained relatively constant from 1999 through 2006, with a slight drop in 2003. The differences in trends are the result of differences in California and national monitoring

methods. The 98th percentile of 24-hour $PM_{2.5}$ concentrations also declined during this period. As with PM_{10}, year-to-year changes in meteorology can mask the impacts of emission control programs (ARB 2008a).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. Historically, the major sources of lead emissions have been mobile and industrial sources. As a result of the phase-out of leaded gasoline (as discussed in detail below), processing of metal is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. Environmental Protection Agency (EPA) set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2008a).

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector declined dramatically (95% between 1980 and 1999), and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (EPA 2008a).

The decrease in lead emissions and ambient lead concentrations over the past 25 years is California's most dramatic success story with regard to air quality management. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent regulations issued by the California Air Resources Board (ARB) have eliminated virtually all lead from gasoline now sold in California. All areas of the state are currently designated as attainment for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB has identified lead as a toxic air contaminant (TAC).

Monitoring Station Data and Attainment Area Designations

Concentrations of criteria air pollutants are measured at several monitoring stations in the SJVAB. The closest station to the project site is the Stockton–Hazelton Street station. All these monitoring stations are located on the valley floor and thus are at elevations similar to that of the project site. Table 4.4-1 summarizes the air quality data from the Stockton–Hazelton Street station for the most recent 3 years, 2005–2007.

Both ARB and EPA use this type of monitoring data to designate areas according to attainment status for criteria air pollutants. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. The "unclassified" designation is used in areas that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called "nonattainment-transitional." This designation is given to nonattainment areas that are progressing and nearing attainment. The most current attainment designations for the San Joaquin County portion of the SJVAB for each criteria air pollutant are shown in Table 4.4-2. On September 25, 2008, EPA redesignated the SJVAB to attainment for the national PM_{10} standard and approved the PM_{10} maintenance plan (SJVAPCD 2008b).

Existing Emissions

According to San Joaquin County's emissions inventory, mobile sources are the largest contributor to the estimated annual average levels of ROG, CO, and NO_X, accounting for approximately 56%, 89%, and 83%, respectively, of the total emissions. Areawide sources account for approximately 79% and 54% of the county's PM_{10} and $PM_{2.5}$ emissions, respectively. Stationary sources generate 78% of the county's emissions of oxides of sulfur (SO_X) (ARB 2008e).

Table 4.4-1
Summary of Annual Ambient Air Quality Data (2005–2007)[a]

	2005	2006	2007
Ozone			
Maximum concentration (1-hour/8-hour, ppm)	0.099/0.086	0.109/0.092	0.093/0.081
Number of days state standard exceeded (1-hour)	3	6	0
Number of days national standard exceeded (1-hour/8-hour)	0/1	0/3	0/0
Nitrogen Dioxide (NO_2)			
Maximum concentration (1-hour, ppm)	0.087	0.072	0.070
Number of days state standard exceeded (1-hour)	0	0	0
Annual average (ppm)	0.017	0.018	0.016
Fine Particulate Matter ($PM_{2.5}$)			
Maximum concentration ($\mu g/m^3$) (national/California[b])	63.0/70.0	47.0/53.3	52.0/66.8
Number of days national standard exceeded (measured/estimated[c])	0/0	0/0	0/0
National/California annual average ($\mu g/m^3$)[b]	13.1/12.5	12.9/13.5	12.8/13.5
Respirable Particulate Matter (PM_{10})			
Maximum concentration ($\mu g/m^3$) (national/California[b])	79.0/84.0	82.0/85.0	71.0/75.0
Number of days state standard exceeded (measured/estimated[c])	8/46.5	11/62.9	4/23.5
Number of days national standard exceeded (measured/estimated[b])	0/0	0/0	0/0
Carbon Monoxide (CO)			
Maximum concentration (1-hour/8-hour, ppm)	4.3/2.86	4.4/2.25	3.6/2.31
Number of days state standard exceeded (8-hour)	0/0	0/0	0/0
Number of days national standard exceeded (1-hour/8-hour)	0/0	0/0	0/0

Notes:
$\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million

[a] Measurements were recorded at the Stockton–Hazelton Street monitoring station.

[b] California and national statistics may differ for the following reasons: California statistics are based on California-approved samplers, whereas national statistics are based on samplers using national reference or equivalent methods. State and national statistics may therefore be based on different samplers. California statistics are based on local conditions and national statistics are based on standard conditions. California criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[c] Measured days are those days that an actual measurement was greater than the level of the California daily standard or the national daily standard. Measurements are typically collected every 6 days. Estimated days are the mathematically derived number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Sources: ARB 2008b, EPA 2008b

Table 4.4-2
Ambient Air Quality Standards and Designations for San Joaquin County

Pollutant	Averaging Time	California		National Standards [a]		
		Standards [b,c]	Attainment Status [d]	Primary [c,e]	Secondary [c,f]	Attainment Status [g]
Ozone	1-hour	0.09 ppm (180 μg/m^3)	N (Severe)	–	Same as Primary Standard	–
	8-hour	0.070 ppm	–	0.075 ppm (147 μg/m^3)		N(Serious) [h]
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	–	U/A
	8-hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
	8-hour (Lake Taboe)	6 ppm (7 mg/m^3)	–	–	–	–
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	–	0.053 ppm (100 μg/m^3)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (339 μg/m^3)	A	–		–
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	–	0.030 ppm (80 μg/m^3)	–	U
	24-hour	0.04 ppm (105 μg/m^3)	A	0.14 ppm (365 μg/m^3)	–	
	3-hour	–	–	–	0.5 ppm (1300 μg/m^3)	
	1-hour	0.25 ppm (655 μg/m^3)	A	–	–	–
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 μg/m^3	N	50 μg/m^3	Same as Primary Standard	A [i]
	24-hour	50 μg/m^3		150 μg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 μg/m^3	N	15 μg/m^3	Same as Primary Standard	N [j]
	24-hour	–	–	35 μg/m^3		
Lead [k]	30-day Average	1.5 μg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 μg/m^3	Same as Primary Standard	A

Table 4.4-2
Ambient Air Quality Standards and Designations for San Joaquin County

Pollutant	Averaging Time	California		National Standards [a]		
		Standards [b,c]	Attainment Status [d]	Primary [c,e]	Secondary [c,f]	Attainment Status [g]
Sulfates	24-hour	25 μg/m^3	A	No National Standards		
Hydrogen Sulfide	1-hour	0.03 ppm (42 μg/m^3)	U			
Vinyl Chloride [9]	24-hour	0.01 ppm (26 μg/m^3)	U/A			
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer —visibility of 10 miles or more	U			

Notes:
μg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppm = parts per million;
[a] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency (EPA) for further clarification and current federal policies.
[b] California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
[c] Concentration expressed first in units in which it was promulgated (i.e., parts per million [ppm] or micrograms per cubic meter [μg/m^3]). Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
[d] Unclassified (U): The data are incomplete and do not support a designation of attainment or nonattainment.
Attainment (A): The state standard for that pollutant was not violated at any site in the area during a 3-year period.
Nonattainment (N): There was a least one violation of a state standard for that pollutant in the area.
Nonattainment/Transitional (NT): A subcategory of the nonattainment designation. The area is close to attaining the standard for that pollutant.
[e] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
[f] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
[g] Nonattainment (N): Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
Attainment (A): Any area that meets the national primary or secondary ambient air quality standard for the pollutant.
Unclassifiable (U): Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.
[h] On April 30, 2007, the Governing Board of the San Joaquin Valley Air Pollution Control District (SJVAPCD) voted to ask EPA to reclassify the San Joaquin Valley Air Basin (SJVAB) as extreme nonattainment for the federal 8-hour ozone standards. The California Air Resources Board approved this request on June 14, 2007. This request must be forwarded to EPA by the California Air Resources Board and would become effective upon EPA final rulemaking after a notice and comment process; it is not yet in effect.
[i] On September 25, 2008, EPA redesignated the SJVAB to attainment and approved the PM_{10} maintenance plan.
[j] The SJVAB is designated nonattainment for the 1997 national $PM_{2.5}$ standards. EPA designations for the 2006 $PM_{2.5}$ standards will be finalized in December 2009. SJVAPCD has determined, as of the 2004–2006 $PM_{2.5}$ data, that the SJVAB has attained the 1997 24-hour $PM_{2.5}$ standard.
[k] ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
Sources: SJVAPCD 2008b; ARB 2008c, 2008d; EPA 2008c

EXISTING AIR QUALITY—TOXIC AIR CONTAMINANTS

Concentrations of TACs, or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient-air-quality conditions. A TAC is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the *California Almanac of Emissions and Air Quality* (ARB 2008a), most of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

No ambient monitoring data are available for diesel PM (unlike the other TACs) because no routine measurement method currently exists. However, ARB has made preliminary estimates of concentrations based on a PM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs. Based on receptor modeling techniques, ARB estimated the SJVAB's health risk from diesel PM in 2000 to be 390 excess cancer cases per million people. The health risk of diesel PM in the SJVAB has been reduced by 50% since 1990. Overall, levels of TACs have gone down since 1990, except for *para*-dichlorobenzene and formaldehyde (ARB 2008a).

According to ARB's Community Health Air Pollution Information System, no major stationary sources of TACs exist near the project site (ARB 2008f). A sanitary landfill operated by Forward Inc., located approximately 1 mile south of the proposed project site on Austin Road, contains stationary sources such as flare stations and diesel fired internal combustion engines that emit TACs. These sources are permitted under applicable federal regulations (40 CFR Parts 60 and 62), SJVAPCD rules (Rules 2201, 2520, 4101, 4102), and the California Health and Safety Code. These sources were analyzed by SJVAPCD through health risk assessments to determine the risks associated with toxic emissions. It was determined that these sources individually would not emit toxics in excess of SJVAPCD's threshold of significance for TACs. The TAC sources at the landfill must implement the best available control technology for TACs (T-BACT) to reduce emissions to ensure that the collective health risk associated with toxic emissions from the landfill does not exceed SJVAPCD's significance threshold. Vehicles on State Route (SR) 99 are sources of diesel PM and other TACs associated with vehicle exhaust.

EXISTING AIR QUALITY CONDITIONS—ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may be sensitive to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast-food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because

of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs when the intensity of the odor changes.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the concentration decreases. As this occurs, the intensity of the odor weakens and eventually becomes so low that the odor is quite difficult to detect or recognize. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the threshold means that the concentration in the air is not detectable by the average human.

Existing potential sources of odors in the project vicinity are a sanitary landfill operated by Forward Inc. approximately 1 mile south of the proposed project site on Austin Road; surrounding agricultural uses; and wastewater treatment facilities located 1 mile to the south. However, no major agriculture-related odor sources (e.g., pig or dairy operations) are located within 2 miles. According to SJVAPCD, there have been no confirmed odor complaints for these identified sources.

EXISTING AIR QUALITY—GREENHOUSE GASES AND GLOBAL CLIMATE CHANGE

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. The absorbed radiation is then emitted from the earth, not as high-frequency solar radiation, but as lower frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits radiation at a lower frequency (longer wavelength). Most solar radiation passes through GHGs; however, infrared radiation is selectively absorbed by GHGs. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Without the greenhouse effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. Human-caused emissions of these GHGs exceeding natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is extremely unlikely that global climate change over the past 50 years can be explained without the contribution from human activities (IPCC 2007).

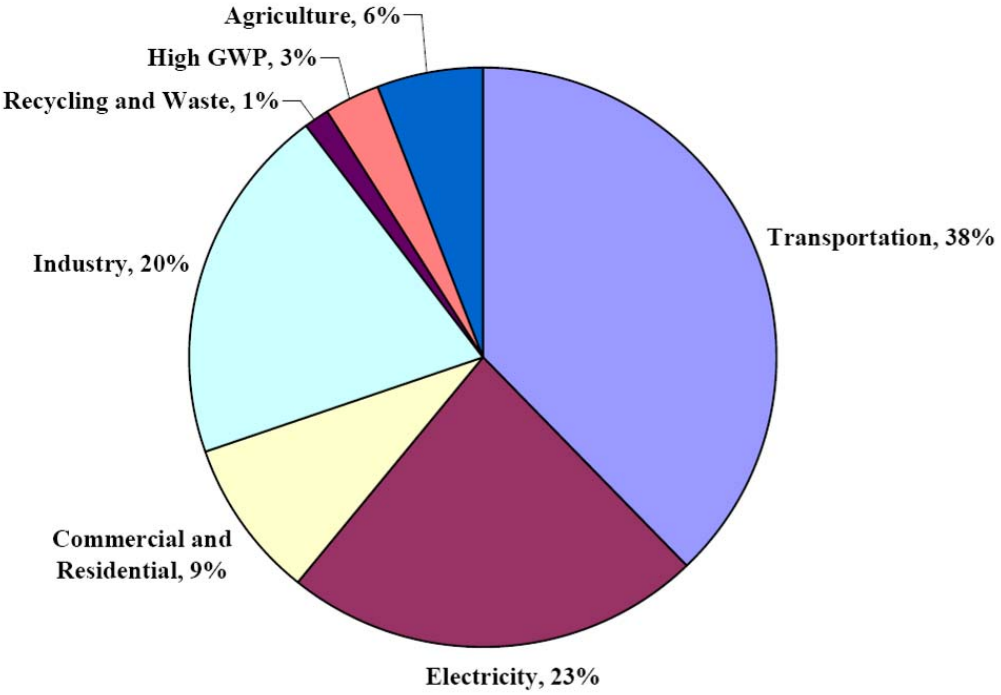
Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, it is understood that more CO_2 is currently emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54% is sequestered through ocean uptake, uptake by forest regrowth in the Northern Hemisphere, and other terrestrial sinks within a year, whereas the remaining 46% of human-caused CO_2 emissions remains stored in the atmosphere (Seinfeld and Pandis 1998).

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and TACs. The quantity of GHGs required to ultimately result in climate change is not precisely known; suffice it

to say that the quantity is enormous, and no single project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climate.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (Exhibit 4.4-1) (ARB 2008g). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB 2008g). Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through photosynthesis and dissolution, respectively, two of the most common processes of CO_2 sequestration.

California is the 12th to 16th largest emitter of CO_2 in the world (CEC 2006a). California produced 480 million gross metric tons of CO_2 equivalent (CO_2e) in 2004 (ARB 2008g). CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is dependent in large part on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, "Calculation References," of the *General Reporting Protocol of the California Climate Action Registry* (CCAR) (2008), 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 23 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in CO_2e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.



Source: ARB 2008h

California's Greenhouse Gas Emissions by Economic Sector (2002–2004 Average) Exhibit 4.4-1

Combustion of fossil fuels in the transportation sector was the single largest source of California's GHG emissions during 2002–2004, accounting for 38% of total GHG emissions in the state (ARB 2008g). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (23%) and the industrial sector (20%) (ARB 2008g).

Climate change could affect environmental conditions in California in a variety of ways. One is sea level rise. Sea level rose worldwide approximately 7 inches during the last century (CEC 2006b), and it is predicted to rise an additional 7–22 inches by 2100, depending on the future levels of GHG emissions (IPCC 2007). However, the Delta Vision Blue Ribbon Task Force, appointed by Governor Arnold Schwarzenegger, has recommended that the state plan for a scenario of 16 inches of sea level rise by 2050, and 55 inches by 2100 (California Resources Agency 2008). Resultant effects of sea level rise could include increased coastal flooding, saltwater intrusion (especially a concern in the low-lying Delta, where pumps delivering potable water could be threatened), and disruption of wetlands (CEC 2006b). Some low-lying populated areas throughout the Central Valley and Delta inundated by sea level rise could experience population displacement and economic disruption.

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available. Additional concerns associated with climate change are a reduction in the snowpack, leading to less overall water storage in the mountains, the largest "reservoir" in the state, and increased risk of wildfire caused by changes in rainfall patterns and plant communities.

4.4.3 REGULATORY CONSIDERATIONS

Air quality within the project area is regulated by EPA, ARB, SJVAPCD, and San Joaquin County. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

CRITERIA AIR POLLUTANTS

Federal Plans, Policies, Regulations, and Laws

EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the CAA, which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.4-2, EPA has established primary and secondary NAAQS for several criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA must review all SIPs to determine whether they conform to the mandates of the CAA and CAAA and whether implementing them will achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may cause sanctions to be applied to transportation funding and stationary air pollution sources in the air basin.

State Plans, Policies, Regulations, and Laws

ARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish the California ambient air quality standards (CAAQS) (Table 4.4-2). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing local air districts' compliance with federal and California laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

ARB and local air pollution control districts are currently developing plans for meeting new national air quality standards for ozone and $PM_{2.5}$. California's adopted 2007 state strategy was submitted to EPA as a revision to the SIP in November 2007 (ARB 2008i).

Local Plans, Policies, Regulations, and Ordinances

San Joaquin Valley Air Pollution Control District

SJVAPCD seeks to improve air quality conditions in San Joaquin County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean-air strategy of SJVAPCD includes preparing plans and programs for the attainment of ambient air quality standards, adopting and enforcing rules and regulations, and issuing permits for stationary sources. SJVAPCD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA, CAAA, and CCAA.

Guide for Assessing and Mitigating Air Quality Impacts

In January 2002, SJVAPCD released a revision to the previously adopted guidelines document. The revised *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2002) is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The guide contains the following applicable components:

- criteria and thresholds for determining whether a project may have a significant adverse air quality impact,
- specific procedures and modeling protocols for quantifying and analyzing air quality impacts,
- methods available to mitigate air quality impacts, and
- information for use in air quality assessments that will be updated more frequently such as air quality data, regulatory setting, climate, and topography.

Air Quality Attainment Plans

SJVAPCD prepares and submits air quality attainment plans (AQAPs) to ARB in compliance with the requirements set forth in the CCAA. ARB incorporates these plans into the SIP and forwards SIP revisions to EPA for approval and publication in the Federal Register. The CCAA also requires that air quality management districts and air pollution control districts conduct a triennial assessment of the extent to which air quality has improved and emissions have been reduced through the use of control measures. As part of the assessment, the AQAPs must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. Because the SJVAB is a nonattainment area, SJVAPCD is also required to submit rate-of-progress milestone evaluations in accordance with the CAAA. These milestone reports include demonstrations that the requirements for the nonattainment area have been met. The AQAPs and reports present comprehensive strategies to reduce emissions of ROG, NO_X, and PM_{10} from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of CEQA participation; implementation of a new and modified indirect-source review program; adoption of local air quality plans; and development of stationary-, mobile-, and indirect-source control measures. Table 4.4-3 summarizes SJVAPCD's current AQAPs.

Table 4.4-3
Summary of the San Joaquin Valley Air Pollution Control District's Air Quality Attainment Plans

Pollutant	Plan Title	Date	Status
Ozone	*Extreme Ozone Attainment Demonstration Plan, San Joaquin Valley Air Basin Plan Demonstrating Attainment of Federal 1-Hour Ozone Standards*	October 2004, Amended October 2005	Adopted by SJVAPCD and ARB in October 2004. Submitted to EPA in November 2004.
	Draft Staff Report, 8-Hour Ozone Reasonably Available Control Technology—State Implementation Plan (RACT SIP) Analysis	April 2006	Adopted by SJVAPCD on August 17, 2006.
	8-Hour Ozone Attainment Demonstration Plan for the San Joaquin Valley	June 2007	Adopted by SJVAPCD in April 2007. Submitted to ARB in June 2007. Approved by ARB on June 14, 2007.
Carbon monoxide (CO)	*2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for the Federal Planning Areas*	July 2004	Adopted by ARB July 2004.
Respirable and fine particulate matter (PM_{10} and $PM_{2.5}$)	*2007 PM_{10} Maintenance Plan and Request for Redesignation*	September 2007	Adopted by SJVAPCD September 20, 2007. Submitted to ARB.
	2008 $PM_{2.5}$ Plan	April 2008	Adopted by SJVAPCD April 2008. Submitted to ARB.
	Natural Events Action Plan for High Wind Events in the San Joaquin Valley	February 2006	Adopted by SJVAPCD February 2006. Submitted to ARB.

Notes: ARB = California Air Resources Board; EPA = U.S. Environmental Protection Agency; SJVAPCD = San Joaquin Valley Air Pollution Control District
Source: SJVAPCD 2005, 2008c; ARB 2008g

Rules and Regulations

As mentioned above, SJVAPCD adopts rules and regulations. All projects are subject to SJVAPCD rules and regulations in effect at the time of construction. The specific rules listed below are applicable to the construction of the proposed project.

- **Regulation VIII—Fugitive Dust PM_{10} Prohibitions:** Rules 8011–8081 are designed to reduce PM_{10} emissions (predominantly dust and dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, and landfill operations. Compliance with Regulation VIII is mandatory, so compliance by CPR is assumed in this analysis.

  If a nonresidential project is 5.0 or more acres in area, a dust control plan must be submitted as specified in Section 6.3.1 of Rule 8021. Therefore, CPR is required to submit a dust control plan, and construction activities will not commence until SJVAPCD has approved the plan.

- **Rule 2010—Permits Required:** This rule applies to anyone who plans to or does operate, construct, alter, or replace any source operation that may emit air contaminants or may reduce the emission of air contaminants. The proposed project may be subject to SJVAPCD permitting requirements. If SJVAPCD permits are required, permit applications should be submitted as soon as possible to avoid project delays.

- **Rule 2201—New and Modified Stationary Source Review Rule:** This rule applies to all new stationary sources and all modifications of existing stationary sources. They are subject to SJVAPCD permit requirements if, after construction, they emit or may emit one or more affected pollutant.

- **Rule 2550 – Federally Mandated Preconstruction Review for Major Sources of Air Toxics:** This rule applies to applications to construct or reconstruct a major air toxics source with Authority to Construct issued on or after June 28, 1998.

- **Rule 3135—Dust Control Plan Fee:** This rule requires applicants to submit a fee in addition to a dust control plan. The purpose of this fee is to recover SJVAPCD's cost for reviewing such plans and conducting compliance inspections.

- **Rule 4002 – National Emissions Standards for Hazardous Air Pollutants**: This rule applies to all sources of hazardous air pollution and requires them to comply with the standards, criteria, and requirements set forth therein.

- **Rule 4101—Visible Emissions:** This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.

- **Rule 4102—Nuisance:** This rule applies to any source operation that emits or may emit air contaminants or other materials. If such emissions create a public nuisance, the owner/operator could be in violation and be subject to enforcement action by SJVAPCD.

- **Rule 4601—Architectural Coatings:** This rule limits volatile organic compounds from architectural coatings by specifying storage, cleanup, and labeling requirements for architectural coatings.

- **Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations:** This rule applies to the manufacture and use of the aforementioned asphalt types for paving and maintenance operations.

- **Rule 9510—Indirect Source Review:** This rule was adopted to reduce the impacts of growth in emissions from all new development in the San Joaquin Valley. The purposes of Rule 9510 are to (1) fulfill SJVAPCD's emissions reduction commitments in the PM_{10} and ozone attainment plans, (2) reduce emissions from development projects through design features and on-site measures, and (3) reduce emissions from development projects through off-site measures.

  The rule applies to any applicant for a development project that would be 9,000 square feet or more upon full buildout of any land uses. Therefore, the rule is applicable to the proposed project.

Rule 9510 requires applicants to provide information that enables SJVAPCD to quantify construction, area-source, and operational NO_X and exhaust PM_{10} emissions. Rule 9510 requires emissions of construction exhaust to be reduced by 20% for NO_X and 45% for PM_{10} when compared to the statewide fleet average. For operations, emissions of NO_X must be reduced by 33.3% and emissions of exhaust PM_{10} must be reduced by 50%; the reductions may occur over 10 years. The applicant may reduce both the construction emissions and the operations emissions by implementing on-site measures or by paying an off-site fee, or through a combination of both methods. However, if the initial calculation shows that emissions would be less than 2 tons per year of NO_X or exhaust PM_{10}, then emission reduction measures are not required.

On-site measures to mitigate construction emissions may include using cleaner fuels, retrofitting equipment on engines and exhaust systems, and using new, low-emissions engine types. Measures to reduce operational emissions include designing buildings for energy efficiency and designing sites to reduce trip generation.

San Joaquin County General Plan 2010

The following objective and policies in the San Joaquin County General Plan 2010 relating to air quality are applicable to the proposed project,

Resources—Air Quality

- **Objective 1:** To protect public health, agricultural crops, scenic resources, and the built and natural environments from air pollution.
  - **Policy 1:** San Joaquin County shall meet and maintain all State and national standards for air quality.
  - **Policy 2:** Motor vehicle emissions shall be minimized through land use and transportation strategies, as well as by promotion of alternative fuels.
  - **Policy 3:** Projects shall be designed to minimize concentrations of carbon monoxide (hot spots).
  - **Policy 4:** Air quality hazards from pesticides shall be minimized.
  - **Policy 5:** The elimination of chlorofluorocarbons shall be supported.

City of Stockton General Plan 2035

The following goals and policies in the *City of Stockton General Plan 2035* relating to air quality are applicable to the proposed project.

Health and Safety—Air Quality

- **Goal HS-4:** To improve air quality and to minimize the adverse effects of air pollution on human health and the economy.
  - **Policy HS-4.1: Cooperation with Local and Regional Agencies.** The City shall cooperate with other local, regional, and State agencies in developing and implementing air quality plans to achieve State and Federal Ambient Air Quality Standards.
  - **Policy HS-4.2: Regional Agency Review.** The City shall participate with cities, surrounding counties, and regional agencies to address crossjurisdictional and regional transportation and air quality issues.
  - **Policy HS-4.4: Support Regional Air Quality Attainment Plans.** The City shall support recommendations to reduce air pollutants found in the SJVAPCD local attainment plans and use its regulatory authority to mitigate "point" sources of air pollution (e.g., factories, powerplants, etc.).

- **Policy HS-4.6: CEQA Compliance and Air Quality Mitigation.** The City shall ensure that air quality impacts identified during the CEQA review process are fairly and consistently mitigated. The City shall require projects to comply with the City's adopted air quality impact assessment and mitigation process, and to provide specific mitigation measures as outlined in policies of Chapter 8 Transportation and Circulation.

- **Policy HS-4.14: Parking Controls.** The City shall provide disincentives for single-occupant vehicle trips through parking supply and pricing controls in areas where supply is limited and alternative transportation modes are available.

- **Policy HS-4.16: Planning Programs.** The City shall support land use, transportation management, infrastructure, and environmental planning programs that reduce vehicle emissions and improve air quality.

- **Policy HS-4.20: Support Statewide Global Warming Solutions.** The City shall monitor and support the efforts of the California Air Resources Board, under AB 32, to formulate mitigation strategies, if any, that may be implemented by local government. If and when any such strategies become available, the City shall consider whether to implement them in some form, such as, for example, by imposing new mitigation measures on new development. If the City Council, after seeking public input on the subject, chooses to implement any such measures it considers to be feasible and desirable, the City's commitment may take the form of a new ordinance, resolution, or other type of policy document.

CITY OF STOCKTON SETTLEMENT AGREEMENT

Following the City of Stockton's adoption of the 2035 General Plan, the Sierra Club and the Morada Area Association sued the City challenging the adequacy of the EIR for the 2035 General Plan under CEQA. In February 2008, the California Attorney General's Office informed the City that the Attorney General was considering intervening in the lawsuit challenging the EIR for allegedly not adequately addressing the General Plan's impacts on GHGs.

While it was the City's belief that the General Plan and its EIR adequately addressed GHGs and global climate change, the City initiated discussions with the Attorney General to explore ways to resolve the Attorney General's concerns. As a result of these discussions, the City and the Attorney General's Office identified a set of implementation measures supporting actions to mitigate GHG emissions and further fulfill policies of the General Plan relating to climate change. The Sierra Club subsequently settled, becoming a party to the Settlement Agreement. The City Council voted to approve the final Settlement Agreement on September 9, 2008. One petitioner, the Morada Area Association, refused to settle and that litigation is ongoing.

The main component of the Settlement Agreement is a requirement that City staff prepare for City Council consideration a Climate Action Plan (CAP) as a separate element of the General Plan or as a component of an existing General Plan Component.

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on TACs, or in federal parlance, HAPs. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.4-2). Instead, EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. These in conjunction with additional rules set forth by SJVAPCD establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP for major sources may differ from the NESHAP for area sources of HAPs. Major sources are stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The CAAA called on EPA to promulgate emissions standards in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to promulgate vehicle or fuel standards containing reasonable requirements to control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the CAAA required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Programs Regulating Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act, also known as the Tanner Act (Assembly Bill [AB] 1807 [Chapter 1047, Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act of 1987, also known as the Hot Spots Act (AB 2588 [Chapter 1252, Statutes of 1987]). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review must occur before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions (e.g., the airborne toxics control measure limits truck idling to 5 minutes [Title 13, Section 2485 of the California Code of Regulations (13 CCR 2485)]).

The Hot Spots Act requires existing facilities emitting toxic substances above a specified level to prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel-exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted new public-transit bus fleet rules and emission standards for new urban buses. These rules and standards provide for:

- more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines;
- zero-emission bus demonstration and purchase requirements, applicable to transit agencies; and
- reporting requirements, under which transit agencies must demonstrate compliance with the public-transit bus fleet rule.

Other recent, current, and future milestones include the low-sulfur diesel fuel requirement and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, as

older vehicles are replaced, the resulting vehicle fleet will produce substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's risk reduction plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020 from the estimated year-2000 level. Adopted regulations are also expected to continue to reduce emissions of formaldehyde from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under SJVAPCD Regulations II and VII, all sources that could emit TACs must obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards and air toxics control measures. SJVAPCD limits emissions and public exposure to TACs through a number of programs. SJVAPCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by SJVAPCD (e.g., through a health risk assessment) on the basis of their potential to emit toxics. If it is determined that the project would emit toxics in excess of SJVAPCD's threshold of significance for TACs, as identified below, sources must implement the best available control technology for TACs (T-BACT) to reduce emissions. If a source cannot reduce the risk below the threshold of significance, even after T-BACT has been implemented, SJVAPCD will deny the permit. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs. It is important to note that SJVAPCD's air quality permitting process applies to stationary sources; properties that are exposed to elevated levels of TACs from nonstationary sources, and the nonstationary sources themselves (e.g., on-road vehicles), are not subject to air quality permits. Further, for reasons of feasibility and practicality, mobile sources (e.g., cars, trucks) are not required to implement T-BACT, even if they do have the potential to expose adjacent properties to elevated levels of TACs. Rather, emissions controls on such sources are subject to regulations implemented on the federal and state levels.

Odors

SJVAPCD has determined some common types of facilities that have been known to produce odors: wastewater treatment facilities, chemical manufacturing plants, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Any actions related to odors are based on citizen complaints to local governments and SJVAPCD. According to SJVAPCD, significant odor problems occur when there is more than one confirmed complaint per year averaged over a 3-year period or when there are three unconfirmed complaints per year averaged over a 3-year period (SJVAPCD 2002).

Two situations increase the potential for odor problems. The first occurs when a new source of odors is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odors. In the first situation, SJVAPCD recommends operational changes, add-on controls, process changes, or buffer zones where feasible to address odor complaints. In the second situation, the potential conflict is considered significant if the project site is at least as close as any other site that has already experienced significant odor problems related to the odor source. For projects locating near a source of odors where there is no nearby development that may have filed complaints, and for odor sources locating near existing sensitive receptors, SJVAPCD requires that the potential for conflict be determined based on the distance and frequency with which odor complaints from the public have occurred in the vicinity of a similar facility (SJVAPCD 2002). SJVAPCD has adopted Rule 4102, as identified above, to apply to odor emissions.

Greenhouse Gases

The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. However, there are no federal regulations or policies regarding GHG emissions applicable to the proposed project at the time of writing.

Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed AB 1493 (Chapter 200, Statutes of 2002), which amended Section 42823 of the California Health and Safety Code and added Section 43018.5 to the Health and Safety Code. AB 1493 (also known as the Pavley Bill) required that ARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet the requirements of AB 1493, ARB approved amendments to the California Code of Regulations in 2004 adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to 13 CCR Sections 1900 and 1961 and adoption of Section 1961.1 require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the 2009 model year. Emissions limits are reduced further in each model year through 2016.

In December 2004, a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of 13 CCR Sections 1900 and 1961 as amended by AB 1493 and 13 CCR 1961.1 (*Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon, in Her Official Capacity as Executive Director of the California Air Resources Board, et al.*). The suit in the U.S. District Court for the Eastern District of California contended that California's implementation of regulations that, in effect, regulate vehicle fuel economy violates various federal laws, regulations, and policies.

In January 2007, the judge hearing the case accepted a request from the Office of the Attorney General that the trial be postponed until a decision is reached by the U.S. Supreme Court on a separate case addressing GHGs. In the Supreme Court case, *Massachusetts, et al., v. Environmental Protection Agency, et al.*, the primary issue in question was whether the CAA provides authority for EPA to regulate CO_2 emissions. EPA contended that the CAA does not authorize regulation of CO_2 emissions, whereas Massachusetts and 10 other states, including California, sued EPA to begin regulating CO_2. As mentioned above, the U.S. Supreme Court ruled on April 2, 2007, that GHGs are "air pollutants" as defined under the CAA and EPA is granted authority to regulate CO_2 (*Massachusetts v. U.S. Environmental Protection Agency* [2007] 549 U.S. 05-1120).

On December 12, 2007, the court found that if California receives appropriate authorization from EPA (the last remaining factor in enforcing the standard), these regulations would be consistent with and have the force of federal law, thus rejecting the automakers' claim. This authorization to implement more stringent standards in California was requested in the form of a CAA Section 209(b) waiver in 2005. EPA subsequently failed to act on granting California authorization to implement the standards. Governor Schwarzenegger and Attorney General Edmund G. Brown Jr. filed suit against EPA for the delay. EPA denied California's request for the waiver to

implement AB 1493 in late December 2007. The State of California has filed suit against EPA for its decision to deny the CAA waiver.

Executive Order S-3-05

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the snowpack in the Sierra Nevada, exacerbate California's air quality problems, and potentially cause a rise in sea levels. To address those concerns, the executive order established total GHG emission targets. Specifically, emissions must be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80% below the 1990 level by 2050.

The executive order directed the Secretary of the California Environmental Protection Agency to coordinate a multiagency effort to reduce GHG emissions to the target levels. The secretary will also submit biannual reports to the governor and California Legislature describing the progress made toward reaching the emission targets, impacts of global warming on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the Secretary of the California Environmental Protection Agency created the California Climate Action Team, made up of members from various state agencies and commissions. The California Climate Action Team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of California businesses, local government, and communities and through state incentive and regulatory programs.

Assembly Bill 32, California Global Warming Solutions Act of 2006

In September 2006, Governor Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006 (Chapter 488, Statutes of 2006), which enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Executive Order S-1-07

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at more than 40% of statewide emissions. It establishes a goal that carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10% by 2020. This order also directed ARB to determine whether this low-carbon fuel standard could be adopted as a discrete early action measure after meeting the mandates in AB 32.

Senate Bill 97

Senate Bill (SB) 97 (Chapter 185, Statutes of 2007), signed in August 2007 and enacting Sections 21083.05 and 21097 of the Public Resources Code, acknowledges that climate change is a prominent environmental issue that warrants analysis under CEQA. This bill directs the Governor's Office of Planning and Research (OPR) to

prepare, develop, and transmit to the California Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Resources Agency is required to certify and adopt those guidelines by January 1, 2010. This bill also removes, both retroactively and prospectively, the legitimacy of litigation for inadequate CEQA analysis of effects of GHG emissions associated with environmental review for projects funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E). This provision will be repealed by operation of law on January 1, 2010. At that time such projects, if any remain unapproved, will no longer be protected against litigation claims from failure to adequately address climate change issues. In the future, this bill will protect only a handful of public agencies from CEQA challenges on certain types of projects for a few years' time.

In June 2008, OPR released a technical advisory, titled *CEQA and Climate Change*, that offers informal guidance regarding the steps lead agencies should take to address climate change in their CEQA documents (OPR 2008). The technical advisory recommends the following approach, which directs agencies to determine significance of projects evaluated under CEQA:

1. *Identify GHG emissions.* Lead agencies should make a good-faith effort to estimate GHG emissions from a project, including the emissions from vehicles, energy consumption, water usage, and construction activities.

2. *Determine significance.* Lead agencies must describe the baseline conditions, should determine what constitutes a significant impact (even in the absence of a regulatory standard), and determine whether the proposed project would contribute a significant direct or indirect, individual or cumulative impact.

3. *Mitigate Impacts.* If impacts are found significant, lead agencies must impose all feasible mitigation measures necessary to reduce GHG emissions to a less-than-significant level. Mitigation measures may include alternative project sites or designs that reduce vehicle miles traveled, energy and water consumption, and measures that contribute to established regional or programmatic mitigation strategies.

Climate Change Draft Scoping Plan

As discussed above, California strengthened its commitment to developing a comprehensive approach to address climate change when Governor Schwarzenegger signed AB 32, the Global Warming Solutions Act of 2006. By requiring in law that GHGs be reduced to 1990 levels by 2020, California set the stage for its transition to a clean-energy future. This historic step helped put climate change on the national agenda, and has spurred action by many other states. ARB is the lead agency for implementing AB 32, which set the major milestones for establishing the program. ARB met the first milestones in 2007: developing a list of early actions to begin sharply reducing GHG emissions; assembling an inventory of historic emissions; and establishing the 2020 emissions limit. ARB must develop a scoping plan to lower GHG emissions to meet the 2020 limit. A draft scoping plan was released by ARB in June 2008. The draft plan proposes a comprehensive set of actions designed to reduce overall carbon emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, and enhance public health while creating new jobs and enhancing the growth in California's economy. ARB will revise this draft plan based on continuing analysis and public input, and will take the proposed scoping plan, which will be released in early October, to the board for consideration at its meeting in November 2008. The plan will be considered for approval by the Board prior to January 1, 2009. The measures in the final scoping plan adopted by the board will be developed over the next 3 years and be in place by 2012.

Key elements of ARB's preliminary recommendation for reducing California's GHG emissions to 1990 levels by 2020 include:

- expanding and strengthening existing energy efficiency programs and building and appliance standards;

- expanding the Renewables Portfolio Standard to 33%;

- developing a California cap-and-trade program that links with other Western Climate Initiative Partner programs to create a regional market system;
- implementing existing state laws and policies, including California's clean-car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- assessing targeted fees to fund the state's long-term commitment to AB 32 administration.

4.4.4 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G of the State *CEQA Guidelines* and SJVAPCD guidance (SJVAPCD 2002, 2008d), an impact of the proposed project relating to air quality would be significant if project implementation would result in any of the following conditions:

- Short-term construction-related emissions of criteria air pollutants or precursors would violate an air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations, as described below:
    - *PM_{10}*—Emissions would exceed the SJVACPD-recommended threshold of 15 TPY; or SJVAPCD-required control measures in compliance with Regulation VIII, "Fugitive Dust PM_{10} Prohibitions," or other SJVAPCD-recommended mitigation measures applicable to the project would not be incorporated into project design or implemented during project construction.
    - *ROG and NO_X*—Emissions would exceed the SJVAPCD-recommended threshold of 10 TPY.
- Long-term operational (regional) emissions of criteria air pollutants or precursors would violate an air quality standard or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan:
    - *PM_{10}*—Emissions would exceed the SJVACPD-recommended threshold of 15 TPY; or SJVAPCD-required control measures in compliance with Regulation VIII, "Fugitive Dust PM_{10} Prohibitions," or other SJVAPCD-recommended mitigation measures applicable to the project would not be incorporated into project design or implemented during project operation.
    - *ROG and NO_X*—Emissions would exceed the SJVAPCD-recommended threshold of 10 TPY.
- long-term operational (local) emissions of criteria air pollutants or precursors violate any air quality standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations (i.e., for CO, if emissions exceed the 20 ppm (1-hour) or 9 ppm (8-hour) standards),
- Short-term construction-related or long-term operational emissions of TACs would expose sensitive receptors to substantial pollutant concentrations (i.e., exposure to a TAC identified by ARB and/or EPA would exceed 10 in one million for excess cancer risk or one hazard index for noncancer risk at the maximally exposed individual).
- Short-term construction or long-term operations would create objectionable odors affecting a substantial number or people. Specifically, project implementation would locate receptors near an existing odor source where there has been either one confirmed or three unconfirmed complaints per year, averaged over 3 years,

from existing receptors as close as the project to the odor source; or from existing receptors near of a similar facility considering distance, frequency, and odor control, where there is currently no nearby development and for proposed odor sources near existing receptors.

No air district in California, including SJVAPCD, has adopted a significance threshold for GHG emissions generated by a proposed project, or a methodology for analyzing impacts related to GHG emissions or global climate change. By adopting the Climate Solutions Act and Sections 21083.05 and 21097 of the California Public Resources Code, however, the State of California has established GHG reduction targets and has determined that GHG emissions, as they relate to global climate change, are a source of adverse environmental impacts in California that should be addressed under CEQA. Although the Climate Solutions Act did not amend CEQA, the legislation does include language identifying the various environmental problems in California caused by global warming (Health and Safety Code, Section 38501[a].) SB 97, in contrast, did amend CEQA to require OPR to revise the State CEQA Guidelines to address the mitigation of GHG emissions or their consequences. By giving only certain limited projects protection against CEQA claims based on the alleged failure to properly assess climate change impacts in the environmental documents used to approve them, the Legislature implied that the environmental review for other projects would have to address the issue of global warming when impacts (project or cumulative) are potentially significant. In any event, the proper context for addressing the issue in an EIR is the discussion of cumulative impacts: The emissions of one single project will not cause global climate change, but GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change.

To meet the Climate Solutions Act's GHG emission targets, California would need to generate fewer GHG emissions in the future than at the present time. For most projects, however, no simple metric is available to determine whether a single project would substantially increase or decrease overall GHG emissions levels or conflict with the goals of the Climate Solutions Act.

The text of the Climate Solutions Act strongly suggests that, when ARB interprets and applies the definition of "greenhouse gas emission source," the regulations that ARB promulgates to enforce the legislation will apply primarily, if not exclusively, to stationary sources of GHG emissions (see Section 38505[i] of the Health and Safety Code). Still, this mandate demonstrates California's commitment to reducing its rate of GHG emissions and associated contribution to climate change without limiting population or economic growth within the state. Thus, to achieve the goals of the Climate Solutions Act, which are tied to GHG emission rates of specific benchmark years (i.e., 1990), California would have to achieve a lower rate of emissions per person than it has now. Further, to accommodate future population and economic growth, the state would have to achieve an even lower rate of emissions per person than was achieved in 1990. (The goal—to achieve 1990 quantities of GHG emissions by 2020—will need to be accomplished with 30 years of population and economic growth beyond 1990 in place.) Thus, future projects that would not encourage reductions in GHG emissions (or that would operate at "business-as-usual" emissions rates [i.e., emissions at today's rates]) would conflict with the policy decisions contained in the spirit of the Climate Solutions Act, thus impeding California's ability to comply with the mandate. In addition, if a project would be affected by the reasonably foreseeable effects of climate change, the project should be designed to adapt to altered future conditions.

Although the text of the Climate Solutions Act focuses on major stationary and area sources of GHG emissions, the primary objective of the act is to reduce California's contribution to global warming by reducing California's total annual production of GHG emissions. The impact of GHG emissions on global climate change does not depend on whether the emissions were generated by stationary, mobile, or area sources, or whether they were generated in one region or another. Thus, helping to meet the state's requirements for GHG emissions reductions is the best metric for determining whether a project would contribute to global warming. In the case of the proposed project, if project implementation would not substantially reduce potential GHG emissions compared to "business-as-usual" emissions, and thereby not help facilitate achieving a GHG emissions level that allows 1990 emissions levels to be attained by the year 2020, then an impact of the proposed project would be considered substantial and cumulatively considerable (significant). Based on a variety of data, including the ARB Draft

Scoping Plan (ARB 2008h), the project would need to produce 30% less GHG emissions than under "business-as-usual" circumstances expected for this type and size of project to attain the efficiency targets that would help the state attain AB 32 goals. Because the nature of global climate change impacts of GHG emissions is cumulative, this impact is discussed further in Chapter 5, "Cumulative Impacts."

PROJECT IMPACTS AND MITIGATION MEASURES

IMPACT AIR-1 **Short-Term Emissions of ROG, NO_X, and PM_{10} during Construction that Violate Air Quality Standards or Contribute Substantially to Air Quality Violations.** *Project construction would generate emissions of ROG and NO_X that would exceed SJVAPCD's significance thresholds of 10 TPY. Construction-related emissions of PM_{10} would not exceed SJVAPCD's significance thresholds of 15 TPY, and the proposed project would be required to comply with Regulation VIII, "Fugitive Dust PM_{10} Prohibitions"; however, additional SJVAPCD-recommended control measures, though applicable to and feasible for the proposed project, are not currently part of the project description. (ROG and NO_X: Significant and unavoidable; PM_{10}: Significant; less than significant with mitigation)*

Construction-related emissions, which would be short-term or temporary in duration, have the potential to represent a significant impact on air quality. Project construction would result in emissions of criteria air pollutants (e.g., PM_{10}) and precursors (e.g., ROG and NO_X). Emissions of ROG and NO_X associated with project construction were modeled using the ARB-approved URBEMIS 2007 Version 9.2.4 computer program (Rimpo and Associates 2008) as recommended by SJVAPCD (2002). URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information.

Construction of the proposed project was considered in two phases, site preparation and building, with each phase composed of a number of elements. Site preparation would include demolishing the existing structures and supporting facilities; remediating and disposing of hazardous materials and soils; grubbing and clearing undeveloped areas; and grading the ground surface before construction. The building phase would involve installing utilities, constructing foundations, building the main structures, applying architectural coatings (painting), paving, and completing ancillary work, such as fencing and finishing. Construction of the main structures was analyzed as three separate elements to account for the increase in the workforce to peak activity and a subsequent decrease as buildings are completed.

A detailed construction plan had not been developed at the time this analysis was prepared. For purposes of estimating emissions of criteria pollutants, a schedule was assumed for each element, as shown in Table 4.4-4. CPR has proposed an aggressive schedule and intensive construction effort. The project is assumed to start construction in March 2009 and be complete by March 2011, a period of 24 months. The peak work period would occur between February and October 2010, with approximately 1,700 workers on-site. The assumptions were developed from estimates of the workforce, the project site plan, and the project description. Each element, except for architectural coatings (painting), has an assumed inventory of off-road construction equipment, which is based on URBEMIS defaults, modified to suit the project size and intensity, and engineering judgment. The equipment for each element is shown in Appendix C.

Emissions of Ozone Precursors

Emissions of NO_X would be associated primarily with exhaust from off-road (e.g., gas and diesel) construction equipment. Secondary sources of NO_X emissions would include on-road trucks for import and export of materials and worker commuting. Worker commute trips in gasoline-fueled vehicles and application of architectural coatings would be the principal sources of ROG, with additional ROG coming from off- and on-road construction equipment.

Table 4.4-5 summarizes the modeled emissions of criteria air pollutants and ozone precursors from project construction. Construction-related air quality impacts were determined by comparing these modeling results with

applicable SJVAPCD significance thresholds. Refer to Appendix C for detailed modeling input parameters and results.

Table 4.4-4
Construction Elements and Periods of Construction

Construction Element	Period of Construction
Demolition	March 2009
Remediation	March 2009
Grading	March–May 2009
Utilities	May 2009–October 2010
Foundations	May 2009–October 2010
Building 1	August 2009–March 2011
Building 2	December 2009–January 2011
Building 3	February–October 2010
Paving	February–March 2011
Painting	November 2010–March 2011
Ancillary work	February–March 2011

Source: Data provided by EDAW in 2008

Table 4.4-5
Summary of Modeled Annual Emissions of Criteria Air Pollutants and Precursors from Project Construction

Phase/Year	Emissions (TPY)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Total Unmitigated Emissions—2009	6.5	**23.1**	7.5	2.4
Total Unmitigated Emissions—2010	**21.5**	**51.3**	4.5	2.9
Total Unmitigated Emissions—2011	9.7	6.5	0.6	0.4
SJVAPCD Significance Threshold	10	10	15	–[1]

Notes:
NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; SJVAPCD = San Joaquin Valley Air Pollution Control District; TPY = tons per year
Bold indicates a value greater than the significance threshold.
[1] SJVAPCD has not identified mass emissions thresholds for construction-related $PM_{2.5}$ emissions; data are shown for information only.
Refer to Appendix C for detailed assumptions and modeling output files.
Source: Data modeled by EDAW in 2008.

As shown in Table 4.4-5, construction-related activities in 2010 would generate annual unmitigated ROG emissions exceeding SJVAPCD's threshold of 10 TPY, and construction-related activities in 2009 and 2010 would generate annual unmitigated NO_X emissions exceeding SJVAPCD's threshold of 10 TPY. PM_{10} emissions would not exceed the threshold of 15 TPY.

Based on the modeling conducted, project construction would generate emissions of ROG and NO_X that would exceed SJVAPCD's significance thresholds of 10 TPY. Thus, emissions of ozone precursors from project construction could violate or contribute substantially to an existing or projected air quality violation, and/or

expose sensitive receptors to substantial pollutant concentrations, especially considering San Joaquin County's nonattainment status. As a result, this impact would be significant.

Emissions of Fugitive PM_{10} Dust

Emissions of fugitive PM dust (e.g., PM_{10} and $PM_{2.5}$) are associated primarily with ground disturbance occurring during site preparation (e.g., demolition, remediation, and grading). The amount of fugitive dust emitted depends on such factors as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled on- and off-site. Exhaust emissions from diesel equipment and worker commute trips also contribute to short-term increases in PM_{10} and $PM_{2.5}$ emissions, but to a much lesser extent.

SJVAPCD does not require projects to quantify the fugitive PM dust emissions associated with construction. Instead, SJAVPCD requires projects to comply with Regulation VIII, "Fugitive Dust PM_{10} Prohibitions," and applicable supplemental dust control measures. Nonetheless, for the purposes of disclosure, please refer to Table 4.4-5, which summarizes the modeled emissions of PM_{10} and $PM_{2.5}$ from construction of the proposed project.

Project construction would not generate emissions of PM_{10} exceeding SJVAPCD's significance threshold of 10 TPY. However, although the proposed project would be legally required to comply with SJVAPCD's Regulation VIII, additional SJVAPCD-recommended control measures, which would be applicable and feasible for the proposed project, are not currently part of the project description. Thus, emissions of fugitive dust from project construction could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering San Joaquin County's nonattainment status. As a result, this impact would be significant.

Mitigation Measure(s) for Impact AIR-1:

Reduction of Emissions of Ozone Precursors during Construction. CPR will comply with SJVAPCD's Rule 9510, "Indirect Source Review," as required by SJVAPCD based on the project's specifications. Rule 9510 applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, that upon full buildout would include 50 residential units, 2,000 square feet of commercial space, 25,000 square feet of light-industrial space, or 9,000 square feet of any space, as well as similar minima for other land use types.

CPR will submit an air impact assessment (AIA) application to SJVAPCD no later than the date on which CPR receives final discretionary approvals for the project. Nothing in Rule 9510 precludes CPR from submitting an AIA application before final discretionary approval of the project. CPR will submit the AIA application as early as possible in the process. The AIA application will be submitted on a form provided by SJVAPCD and will contain, at a minimum, the contact name and address for CPR, a detailed project description, an on-site emission reduction checklist, a monitoring and reporting schedule, and an AIA. The AIA will quantify NO_X and PM_{10} emissions associated with project construction. This assessment will include the estimated construction baseline emissions, and the mitigated emissions for each applicable pollutant for project construction, or each phase thereof, and will quantify the off-site fee, if applicable. CPR will comply with the following general mitigation requirements for construction emissions, as contained in the ISR rule:

- Exhaust emissions for construction equipment greater than 50 horsepower used or associated with the development project shall be reduced by 20% of the total NO_X and by 45% of the total PM_{10} exhaust emissions from the statewide average as estimated by ARB.

- An applicant may reduce construction emissions on-site by using less polluting construction equipment, which can be achieved by utilizing add-on controls, cleaner fuels, or newer lower emitting equipment.

- Additional strategies for reducing construction emissions may include, but are not limited to:
  - providing commercial electric power to the project site in adequate capacity to avoid or minimize the use of portable electric generators and the equipment;
  - substitution of electric-powered equipment for diesel engine–driven equipment; and
  - limiting the hours of operation of heavy duty equipment and/or the amount of equipment in use at any one time.
- The requirements listed above can be met through any combination of on-site emission reduction measures or off-site fees. The ISR rule provides a method of calculating fees to be paid to offset any NO_X and PM_{10} emission reductions that would not be achieved by selection of construction equipment and fuels.

CPR will implement the following SJVAPCD-recommended additional control measures to further reduce exhaust emissions:

- Minimize idling time (e.g., 10-minute maximum).
- Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

Reduction of Particulate Emissions during Construction. CPR will comply with SJVAPCD's Regulation VIII, "Fugitive Dust PM_{10} Prohibitions," and will implement all applicable control measures. Regulation VIII contains the following required control measures, among others:

- Pre-water site sufficient to limit visible dust emissions (VDE) to 20% opacity.
- Phase work to reduce the amount of disturbed surface area at any one time.
- During active operations, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity.
- During active operations, construct and maintain wind barriers sufficient to limit VDE to 20% opacity.
- During active operations, apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20% opacity and meet the conditions of a stabilized unpaved road surface.
- Limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.
- Post speed limit signs that meet state and federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.
- When handling bulk materials, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity.
- When handling bulk material, construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity.

- When storing bulk materials, comply with the conditions for a stabilized surface as listed above.
- When storing bulk materials, cover bulk materials stored outdoors with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action.
- When storing bulk materials, construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic stabilizers/suppressants to limit VDE to 20% opacity or utilize a three-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity.
- Load all haul trucks such that the freeboard is not less than 6 inches when material is transported across any paved public access road sufficient to limit VDE to 20% opacity.
- Apply water to the top of the load sufficient to limit VDE to 20% opacity.
- Cover haul trucks with a tarp or other suitable cover.
- Clean the interior of the cargo compartment or cover the cargo compartment before the empty truck leaves the site.
- Prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.
- Cleanup of carryout and trackout shall be accomplished by manually sweeping and picking up; or operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit VDE to 20% opacity; or operating a PM_{10}-efficient street sweeper that has a pickup efficiency of at least 80%; or flushing with water, if curbs or gutters are not present and where the use of water would not result as a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.
- Submit a dust control plan to the air pollution control officer (APCO) prior to the start of any construction activity on any site that will include 5 acres or more of disturbed surface area, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least 3 days. Construction activities shall not commence until the APCO has approved or conditionally approved the dust control plan. Provide written notification to the APCO within 10 days prior to the commencement of earthmoving activities via fax or mail.

CPR will implement the following SJVAPCD-recommended enhanced and additional control measures for all construction phases to further reduce fugitive PM_{10} dust emissions:

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from adjacent project areas with a slope greater than 1%.
- Suspend excavation and grading activity when winds exceed 20 mph.

Significance after Mitigation

With implementation of the mitigation measure "Reduction of Emissions of Ozone Precursors during Construction," compliance with SJVAPCD's Rule 9510 would result in the required minimum 20% reduction in NO_X emissions from heavy-duty diesel equipment, as compared with statewide average emissions. Implementation of the ISR rule would also reduce ROG emissions and PM_{10} exhaust emissions from heavy-duty diesel equipment by 5% and 45%, respectively. All or part of the reductions may result from the on-site equipment and fuels selected; the remainder would result from off-site reductions achieved by paying fees that would be applied to other SJVAPCD programs that reduce the same pollutants, but at other sources (e.g.,

replacing the engines in various types of diesel-powered portable industrial equipment with either cleaner diesel engines or converting such equipment to electric motors). The additional SJVAPCD-recommended measures and the worker ridesharing measure would further reduce ROG and NO_X emissions. However, construction emissions of ROG and NO_X would not be reduced to a less-than-significant level and emissions would still exceed SJVAPCD's significance thresholds (e.g., even with the ISR reductions of 20% and 5% for NO_X and ROG, respectively, emissions would still exceed 10 TPY). As a result, this impact, generation of construction-related ROG and NO_X emissions, would remain significant and unavoidable.

With the implementation of the mitigation measure "Reduction of Construction Phase Particulate Emissions," CPR would comply with SJVAPCD Regulation VIII as required by law. This mitigation measure includes additional SJVAPCD-recommended control measures that would further reduce particulate emissions. As a result, this impact, generation of construction-related dust (PM_{10} and $PM_{2.5}$ emissions), would be reduced to a less-than-significant level.

IMPACT AIR-2 **Long-Term Emissions of ROG, NO_X, and PM_{10} during Project Operation that Violate Air Quality Standards or Contribute Substantially to Air Quality Violations.** *Project-related activities in 2011 would generate emissions of NO_X that would exceed SJVAPCD's threshold of 10 TPY.* ***(Significant; less than significant with mitigation)***

Area- and Mobile-Source Emissions

Regional emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from area and mobile sources associated with the proposed project were modeled using the URBEMIS 2007 Version 9.2.4 computer program. URBEMIS allows project-specific location and trip generation rates to be factored into the modeling. URBEMIS accounts for area emissions from the use of natural gas to heat buildings and water and emissions associated with landscape maintenance equipment. Mobile-source emissions are associated with vehicle trip generation for the facility's staff, vendors, and visitors. Assumptions for area-source emissions included an estimated 1.2 million square feet of new building space. Trip generation data are taken from August 2008 draft transportation impact analysis for the project (DKS Associates 2008). Operations were analyzed assuming 2011 as the first year of operation.

Table 4.4-6 summarizes the modeled emissions of criteria air pollutants and ozone precursors from buildout of the proposed project. Operational air quality impacts were determined by comparing these modeling results with applicable SJVAPCD significance thresholds. Refer to Appendix C for detailed modeling input parameters and results. As shown in Table 4.4-6, project-related activities in 2011 would result in annual unmitigated emissions of approximately 10.7 TPY of NO_X, which would exceed SJVAPCD's threshold value of 10 TPY. Thresholds for ROG and PM_{10} would not be exceeded.

Table 4.4-6 also shows the calculated total emissions for 2012, the second year of operation. Because the average emissions of vehicles in California are anticipated to improve each year as older vehicles are retired and newer lower-emission vehicles are added, the project-generated NO_X emissions in 2012 would be less than the SJVAPCD 10-TPY threshold. Calculated emissions for 2012 are included in Appendix C.

Stationary-Source Emissions

Implementation of the proposed project would result in the generation of criteria air pollutant and precursor emissions from the long-term operation of on-site stationary sources (e.g., the central power plant includes cooling towers, emergency generators, boilers, pumps, and chillers). These proposed sources would be subject to SJVAPCD Rule 2010 "Permits Required", which requires that any construction, alteration, replacement, or operation of a source that will emit or may emit emissions must obtain an Authority to Construct (ATC) and/or a Permit to Operate (PTO).

Table 4.4-6 Summary of Modeled Emissions of Criteria Air Pollutants and Precursors from Project Operation				
Source	Emissions (tons per year)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area Sources	1.5	1.6	< 0.1	< 0.1
Mobile Sources	6.5	9.1	4.5	1.0
Total Unmitigated Emissions—2011	7.9	**10.7**	4.5	1.0
SJVAPCD Significance Threshold	10	10	15	NA[a]
Total Unmitigated Emissions—2012	7.5	9.9	4.5	1.0

Notes:
NA = not applicable; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; SJVAPCD = San Joaquin Valley Air Pollution Control District
Bold indicates a value greater than the significance threshold.
[a] SJVAPCD has not identified mass emissions thresholds for operation-related PM_{10} and $PM_{2.5}$ exhaust emissions; data are shown for information only.
Refer to Appendix C for detailed assumptions and modeling output files.
Source: Data modeled by EDAW in 2008

More specifically, the use of any stationary source that may cause the issuance of emissions is required by law to first obtain authorization to construct from the Air Pollution Control Officer (APCO) (e.g., ATC). Before the operation of any new source, a written permit is also required from the APCO (e.g., PTO). No PTO will be granted either by the APCO or the Hearing Board for the operation of any source constructed or installed without these authorizations until the information required is presented to the APCO and conforms to the standards set forth in Rule 2070 "Standards for Granting Applications".

According to Rule 2070, the construction and operation of any source must comply with Rule 2201 "New and Modified Stationary Source Review Rule" and Rule 4001 "New Source Performance Standards", the ATC, and PTO. The APCO will deny any ATC or PTO if the construction and operation of the source is not shown to be designed, controlled, or equipped with such an air pollution control article, machine, equipment, or other contrivance, in a manner not to cause emissions in violation of Section 41700 or 41701 or 42301 of the Health and Safety Code, and the other SJVAPCD applicable rules mentioned above (e.g., compliance with new source review standards).

According to SJVAPCD, new permitted sources emitting more than 2 lb/day of ROG or NOx must provide BACT, and all sources emitting more than the new source review thresholds must offset all emissions in excess of the thresholds. Emission for these sources would not be allowed to exceed the numeric thresholds of significance for ozone precursors (SJVAPCD 2002). Generally, stationary sources of air-pollutant emissions that comply with applicable regulations pertaining to BACT and offset requirements are not considered to have significant air-quality impacts (SMAQMD 2004).

In summary, stationary sources proposed as part of this project would be subject to SJVAPCD permitting and BACT requirements, and would not be allowed individually to exceed applicable thresholds (e.g., new source review and significance). The exact amount of emissions were not quantified for the purposes of this analysis as such would be speculative at this point in the project (e.g., in complete cooling plant design specifications and operation requirements) and will be required as part of the permit process. Nonetheless, the emissions from these sources would be additive to those quantified above from project-generated area- and mobile-source emissions. SJVAPCD Rule 9510 "Indirect Source Review" does not apply to stationary sources.

Based on the calculations shown in Table 4.4-6, project-related activities in 2011 would generate emissions of NO_X exceeding SJVAPCD's applicable threshold of 10 TPY. The proposed project would therefore have the potential to violate or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, and conflict with air quality planning efforts. As a result, this impact would be significant.

Mitigation Measure(s) for Impact AIR-2:

CPR will comply with SJVAPCD's Rule 9510, "Indirect Source Review." Although NO_X emissions would be below the 10-TPY threshold for 2012 and beyond, compliance with Rule 9510 is required for projects where NO_X emissions would exceed 2 TPY. CPR will submit an AIA application to SJVAPCD no later than the date on which CPR receives any final discretionary approvals for the project, as described in the mitigation measure "Reduction of Emissions of Ozone Precursors during Construction" for Impact AIR-1. The AIA will quantify operational emissions of NO_X and PM_{10} exhaust associated with the project. The AIA will include the estimated operational baseline emissions and the mitigated emissions for each applicable pollutant for the project and will quantify the off-site fee, if applicable. CPR will comply with the following general mitigation requirements for operations emissions, as contained in SJVAPCD Rule 9510:

- Applicants shall reduce 50% of the project's operational baseline PM_{10} emissions over a period of 10 years as quantified in the approved AIA.
- Applicants shall reduce 33.3% of the project's operational baseline NO_X emissions over a period of 10 years as quantified in the approved AIA.

The requirements listed above can be met by implementing any combination of on-site emission reduction measures or payment of off-site fees. SJVAPCD Rule 9510 provides a method of calculating fees to be paid to offset any NO_X and PM_{10} emission reductions that would not be achieved by selection of construction equipment and fuels.

Mitigation of potential impacts, especially emissions of ozone precursors and PM_{10}, is best achieved in the project design stage. CPR will implement, at a minimum, the following SJVAPCD-recommended mitigation measures to further reduce operational emissions from mobile sources:

- Rideshare Operational: Implement carpool/vanpool program such as carpool ride matching for employees, assistance with vanpool formation, provisions of vanpool vehicles, and others.
- Parking Operational: Provide preferential parking for carpool and vanpool vehicles, implement parking fees for single occupancy vehicle commuters, implement parking cash-out program for employees.
- Include as many clean alternative energy features as possible to promote energy self-sufficiency (e.g., photovoltaic cells, solar thermal electricity systems, small wind turbines).

CPR will implement the following SJVAPCD-recommended mitigation measures, as feasible, to further reduce operational emissions from area sources:

- Provide electrical outlets at building exterior areas and electric powered landscape maintenance equipment.
- Increase wall and attic insulation beyond Title 24 requirements (residential and commercial).
- Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs.
- Provide highly reflective roofing materials and radiant heat barriers.
- Utilize day lighting systems such as skylights, light shelves, and interior transom windows.

Significance after Mitigation

With the implementation of the mitigation measure for Impact AIR-2, which requires a reduction of 33.3% in NO_X, annual NO_X emissions would be less than 10 TPY. This impact would be reduced to a less-than-significant level.

IMPACT AIR-3 **Long-Term Local Emissions of CO during Project Operation that Violate the Air Quality Standard or Contribute Substantially to an Air Quality Violation.** *Project-related activities would not generate emissions of CO that would exceed SJVAPCD's 20-ppm (1-hour) or 9-ppm (8-hour) standards.* ***(Less than significant)***

The concentration of CO is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels at to local sensitive land uses such as residential areas, schools, and hospitals. As a result, SJVAPCD recommends that CO emissions be analyzed at a local rather than a regional level.

Because increased CO concentrations are usually associated with roadways that are congested and have heavy traffic volumes, SJVAPCD has established preliminary screening criteria to determine with fair certainty that, if not violated, CO emissions from mobile sources associated with long-term project operations would not violate or substantially contribute to a violation of the CAAQS or NAAQS. SJVAPCD's preliminary screening criteria consist of the following (SJVAPCD 2002):

- A traffic study for the project indicates that the level of service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to LOS E or F.
- A traffic study for the project indicates that project implementation would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the vicinity.

The project's traffic analysis indicates that the all signalized intersections would operate at LOS D or better in all analyzed scenarios except the 2035 General Plan scenario. For this scenario, the intersection of SR 99 northbound/southbound access and Arch Road would operate at LOS F in both the a.m. and p.m. peak hours for both the no-project and with-project analyses (DKS Associates 2008). The delay would be greater under with-project conditions; therefore, further investigation of potential CO impacts is warranted.

The SJVAPCD *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2002) recommends a screening analysis as prescribed in the *Transportation Project-Level Carbon Monoxide Protocol* from the University of California, Davis. However, since the SJVAPCD guide was published, the screening method included in the protocol has become obsolete. As a substitute, various air quality agencies in California have developed conservative screening methods. SJVAPCD has not developed quantitative CO screening criteria; therefore, the methods of the Sacramento Metropolitan Air Quality Management District (SMAQMD) were used for purposes of this analysis (SMAQMD 2004). The screening is based on the background concentration of CO and a conservative estimate of project-related CO as a function of peak-hour trip generation. The method is not dependent on the traffic volumes or geometry for a specific intersection. The screening analysis for potential CO impacts at a generalized intersection is shown in Table 4.4-7. As shown in the table, the anticipated 1-hour and 8-hour CO concentrations would be less than the national and state standards. The proposed project would not create a CO hot spot. Therefore, this impact would be less than significant.

Table 4.4-7 Carbon Monoxide Screening for a Generalized Local Intersection		
Concentration	1-Hour (ppm)	8-Hour (ppm)
Background Concentration[a]	5.33[a]	3.73[a]
Project-Related Concentration[b]	1.7	NA
Anticipated Total Concentration[c]	7.0	4.9
NAAQS	35	9.0
CAAQS	20	9.0
Standards exceeded?	No	No

Notes:
CAAQS = California ambient air quality standard; CO = carbon monoxide; ppm = parts per million; NA = not applicable; NAAQS = national ambient air quality standard; ppm = parts per million
[a] The highest 8-hour value from Table 4.4-1; the 1-hour value is the 8-hour value divided by 0.7.
[b] The peak-hour trip generation is fewer than 500 vehicles in either peak hour. The CO contribution, from the Sacramento Metropolitan Air Quality Management District table for 500 added trips, is 1.7 ppm.
[c] The 8-hour concentration is assumed to be 0.7 times the 1-hour concentration.
Sources: Data compiled by EDAW in 2008, SMAQMD 2004

Mitigation Measure(s) for Impact AIR-3:

No significant impacts would occur, so no mitigation measures are required.

IMPACT AIR-4 Potential for Short- and Long-Term Emissions of Substantial Concentrations of TACs. *Off-road heavy-duty diesel equipment would be used only temporarily and CPR would comply with applicable rules and regulations to reduce the risk associated with emissions of TACs from stationary sources. Therefore, project-generated emissions would not exceed 10 in one million for excess cancer risk or one hazard index for noncancer risk at the maximally exposed individual. (Less than significant)*

Separate discussions are provided below analyzing the potential for sensitive receptors to be exposed to TACs from on-site sources during project construction and the potential for exposure to TACs from operational sources.

On-Site Emissions from Construction Equipment

Project construction would result in short-term emissions of diesel PM, a TAC. The exhaust of off-road heavy-duty diesel equipment would emit diesel PM during demolition of buildings; site preparation (e.g., excavation, grading, and clearing); paving; installation of utilities, materials transport and handling; erection of structures; and other miscellaneous activities. The potential cancer risk from inhaling diesel PM, as discussed below, outweighs the potential noncancer health impacts. SJVAPCD has not adopted a methodology for analyzing such impacts and has not recommended that health risk assessments be completed for construction-related emissions of TACs, with a few exceptions (e.g., where construction phase is the only phase of the project) (Reed, pers. comm., 2007).

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., the potential exposure to TACs to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the state Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-

year exposure period; however, such assessments should be limited to the period or duration of activities associated with the proposed project (Salinas, pers. comm., 2004).

The 2-year construction period for the proposed project would be much less than the 70-year period used for risk determination, and the equipment would often be located at a considerable distance from the nearest sensitive receptors. Because off-road heavy-duty diesel equipment would be used only temporarily, and because the highly dispersive properties of diesel PM (Zhu et al. 2002) would result in further reductions in exhaust emissions, project construction would not expose sensitive receptors to substantial emissions of TACs. Therefore, this impact would be less than significant.

On-Site Stationary-Source Emissions from Project Operation

The proposed project would include stationary sources of TACs, such as diesel-fueled backup generators. These types of stationary sources, in addition to any other stationary sources that may emit TACs, would be subject to SJVAPCD's rules and regulations, including SJVAPCD Rule 2201, "New and Modified Stationary Source Rule"; Rule 4002, "National Emission Standards of HAP Emissions"; Rule 2550, "Federally Mandated Preconstruction for Major Sources of Air Toxics"; and MACT and T-BACT requirements. Thus, as discussed above, SJVAPCD would analyze such sources (e.g., through a health risk assessment) based on their potential to emit TACs. If it is determined that the sources would emit TACs in excess of SJVAPCD's applicable significance threshold, MACT or T-BACT would be implemented to reduce emissions. If the implementation of MACT or T-BACT would not reduce the risk below the applicable threshold, SJVAPCD would deny the required permit. Therefore, this impact would be less than significant.

Mitigation Measure(s) for Impact AIR-4:

No significant impacts would occur, so no mitigation measures are required.

IMPACT AIR-5 Potential Emissions of Objectionable Odors during Project Construction and Operations. *The proposed project would not introduce new, permanent sources of substantial objectionable odors, nor would it locate sensitive receptors significantly closer to existing permanent sources of odors. Odors generated during project construction would be intermittent and would dissipate quickly. (Less than significant)*

The occurrence and severity of odor impacts depend on numerous factors: the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

SJVAPCD has developed screening-level distances to potential major odor sources such as wastewater treatment facilities, food processing facilities, and landfills (SJVAPCD 2002). Existing potential sources of odors in the project vicinity include a sanitary landfill operated by Forward Inc. approximately 1 mile south of the project site on Austin Road; surrounding agricultural uses; and wastewater treatment facilities located 1 mile to the south. However, no major agriculture-related odor sources (e.g., pig or dairy operations) are located within 2 miles. According to SJVAPCD, there have been no confirmed odor complaints about these identified sources.

The project would include one potential new source of odors, a regional food service facility located on the site. The food service facility would be controlled under the California Department of Public Health emissions reduction mandates that would limit exhaust emissions from cooking sources. The emissions control systems would also serve to reduce odors from the kitchen and the food factory. Long-term odor impacts would be less than significant.

Construction of the proposed project would result in odors from exhaust emissions from on-site diesel equipment, asphalt paving, and painting. Such emissions would be intermittent and would dissipate rapidly from the source, and therefore would be less than significant.

Mitigation Measure(s) for Impact AIR-5:

No significant impacts would occur, so no mitigation measures are required.