Air Quality Impact Assessment
GOLDEN STATE CORRIDOR DEVELOPMENT

This Air Quality Impact Assessment (AQIA) has been prepared for the purpose of identifying potential air impacts that may result from the proposed Golden State Corridor Development (Project). The proposed area of study is along Golden State Boulevard, a 14.2-mile stretch of Old Highway 99 generally from American Avenue to the Tulare County line.

1.0 INTRODUCTION

1.1 DESCRIPTION OF THE PROJECT/REGION

The proposed Project limits are approximately 200 feet south of American Avenue in Fowler, to the terminus point of Golden State Boulevard near Mission Street in Kingsburg. The Project width is 300 feet wide, centered on the current Golden State Boulevard centerline. The area of study passes through the cities of Fowler, Selma, and Kingsburg, and unincorporated areas under the responsibility of the County of Fresno.

The proposed Project lies within the central portion of the San Joaquin Valley (SJV). The proposed Project is located on the Valley floor at an elevation of approximately 300 feet above sea level with the surrounding area mostly flat. Figures 1-1 and 1-2 show the location of the Project along with major roadways and highways.

Fresno County is located in one of the most polluted air basins in the country – the San Joaquin Valley Air Basin. The surrounding topography includes foothills and mountains to the east and west. These mountain ranges direct air circulation and dispersion patterns. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Fresno County is classified as Mediterranean, with moist cool winters and dry warm summers.

Ozone, classified as a “regional” pollutant, often afflicts areas downwind of the original source of precursor emissions. Ozone can be easily transported by winds from a source area. Peak ozone levels tend to be higher in the southern portion of the Valley, as the prevailing summer winds sweep precursors downwind of northern source areas before concentrations peak. The separate designations reflect the fact that ozone precursor transport depends on daily meteorological conditions.

Other primary pollutants, CO, for example, may form high concentrations when wind speed is low. During the winter, Fresno County experiences cold temperatures and calm conditions that increase the likelihood of a climate conducive to high CO concentrations.

Precipitation and fog tend to reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble so precipitation and fog tends to “reduce” CO concentrations in the atmosphere. PM-10 is somewhat “washed” from the atmosphere with precipitation. Precipitation in the SJV is strongly influenced by the position of the semi-permanent subtropical high-pressure belt located off the Pacific coast (Pacific High). In the winter, this high-

Regional Location	Figure 1-1
Legend ★ Project Location	VRPA TECHNOLOGIES INC

VRPA TECHNOLOGIES INC

Project Location	Figure 1-2
Legend Project Location	

pressure system moves southward, allowing Pacific storms to move through the SJV. These storms bring in moist, maritime air that produces considerable precipitation on the western, upslope side of the Coast Ranges. Significant precipitation also occurs on the western side of the Sierra Nevada. On the valley floor, however, there is some down slope flow from the Coast Ranges and the resultant evaporation of moisture from associated warming results in a minimum of precipitation. Nevertheless, the majority of the precipitation falling in the SJV is produced by those storms during the winter. Precipitation during the summer months is in the form of convective rain showers and is rare. It is usually associated with an influx of moisture into the SJV through the San Francisco area during an anomalous flow pattern in the lower layers of the atmosphere. Although the hourly rates of precipitation from these storms may be high, their rarity keeps monthly totals low.

Precipitation on the SJV floor and in the Sierra Nevada decreases from north to south. 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. This is primarily because the Pacific storm track often passes through the northern part of the state while the southern part of the state remains protected by the Pacific High. Precipitation in the San Joaquin Valley Air Basin (SJVAB) is confined primarily to the winter months with some also occurring in late summer and fall. Average annual rainfall for the entire SJV is 9.25 inches on the SJV floor. Snowstorms, hailstorms, and ice storms occur infrequently in the SJV and severe occurrences of any of these are very rare.

The winds and unstable air conditions experienced during the passage of storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the SJV floor. This creates strong low-level temperature inversions and very stable air conditions. This situation leads to the SJV's famous Tule Fogs. The formation of natural fog is caused by local cooling of the atmosphere until it is saturated (dew point temperature). This type of fog, known as radiation fog is more likely to occur inland. Cooling may also be accomplished by heat radiation losses or by horizontal movement of a mass of air over a colder surface. This second type of fog, known as advection fog, generally occurs along the coast.

Conditions favorable to fog formation are also conditions favorable to high concentrations of CO and PM-10. Ozone levels are low during these periods because of the lack of sunlight to drive the photochemical reaction. Maximum CO concentrations tend to occur on clear, cold nights when a strong surface inversion is present and large numbers of fireplaces are in use. A secondary peak in CO concentrations occurs during morning commute hours when a large number of motorists are on the road and the surface inversion has not yet broken.

The water droplets in fog, however, can act as a sink for CO and nitrogen oxides (NOx), lowering pollutant concentrations. At the same time, fog could help in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of winter season violations of the PM-10 and PM-2.5 standards.

1.2 PURPOSE AND NEED

The purpose of the Golden State Corridor Development is to maximize the economic development potential of the Golden State Corridor. This corridor contains the "Old Highway 99", a historic four-lane roadway that connects the three cities. The four jurisdictions, along with Council of Fresno County Governments (Fresno COG), have developed a common vision and goals for the Corridor that encompass the desires of the

adjacent communities in the areas and land use, preserving the agricultural industry, protecting the environment, promoting tourism and recreation, encouraging and supporting economic development, and fostering new partnerships focused on economic success.

1.3 EXISTING ROADWAY NETWORK

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the type of service they are intended to provide. Fundamental to this process is the recognition that individual streets and highways do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. Local major roadways within the vicinity of the proposed Project include:

- **Freeways** - are high-speed facilities with full access control. Access and egress to freeways are provided by a system of ramps and interchanges. There are no at-grade intersections on freeways and no traffic control devices such as traffic signals. Right-of-way and cross-sections for freeways are determined by Caltrans on a case-by-case basis.

    - **State Route 99 –** currently exists as a six-lane freeway from Kingsburg to Fowler, and includes a total of 9 interchanges. According to the California Department of Transportation's website, the average annual daily traffic (AADT) along SR 99 in this area consisted of approximately 74,000 trips in 2010.

- **Expressways** – are high-speed, four- to six-lane divided roadways, primarily servicing through and cross-town traffic, with no direct access to abutting property and at-grade intersections located at approximately half-mile intervals.

    - **Manning Avenue –** currently a divided four-lane road without bike lanes, with a posted speed limit of 50 mph.
    - **Mountain View Avenue (East of SR 99) -** currently a divided four-lane road without bike lanes, with a posted speed limit of 45 mph.
    - **Temperance Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 30 mph.

- **Super Arterials** – Four-to six-lane divided roadways with a primary purpose of moving traffic to and from major traffic generators and between community plan areas. Access will typically be limited to right-turn entrance and exit vehicular movements.

    - **Golden State Boulevard –** currently a divided four-lane road with bike lanes at various sections, with a posted speed limit of 35 – 65 mph.
    - **Highland Avenue –** currently a divided four-lane road without bike lanes, with a posted speed limit of 40 mph.

- **Arterials** – Four- to six-lane divided roadways, with somewhat limited access to abutting properties, and with the primary purpose of moving traffic within and between community plan areas and to and from freeways and expressways.

- **Mountain View Avenue (West of SR 99) -** currently a divided four-lane road without bike lanes, with a posted speed limit of 45 mph.
- **Floral Avenue –** currently an undivided four-lane road without bike lanes, with a posted speed limit of 40 mph.
- **2nd Street –** currently an undivided four-lane road without bike lanes, with a posted speed limit of 30 mph.
- **Dinuba Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 40 mph.
- **Highland Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 35 mph.
- **Kamm/Bethel Avenue –** currently an undivided two-lane road without bike lanes, with a speed limit of 40 mph.
- **Draper Street –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 25 mph.
- **Whitson Street -** currently a divided four-lane road without bike lanes, with a posted speed limit of 40 mph.
- **Clovis Avenue -** currently a divided four-lane road with bike lanes, with a posted speed limit of 45 mph.

♦ **Local Routes** – Two to four-lane undivided roadways, with the primary function of connecting local streets and arterials and neighborhood traffic generators and providing access to abutting properties.

- **Adams Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 35 mph.
- **Mariposa Street –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 30 mph.
- **Merced Street –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 35 mph.
- **Vine Street –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 30 mph.
- **South Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 40 mph.
- **Valley Drive –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 35 mph.
- **Thompson Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 25 mph.
- **Nebraska Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 35 mph.
- **Dockery Avenue –** currently an undivided two-lane road without bike lanes, with a posted speed limit of 15 mph.
- **Saginaw Avenue –** currently an undivided two-lane road without bike lanes, with a speed limit of 40 mph.
- **Stroud Avenue –** currently an undivided two-lane road without bike lanes, with a speed limit of 40 mph.
- **Sierra Street –** currently an undivided four-lane road without bike lanes, with a speed limit

of 35 mph.

- **De Wolf Avenue –** currently an undivided two-lane road without bike lanes, with a speed limit of 30 mph.
- **Clayton Avenue -** currently an undivided two-lane road without bike lanes, with a speed limit of 35 mph.

Certain intersections are included in the geographic area of Golden State Boulevard that was under study, but were not included in the traffic analysis study area because there was no question regarding how the traffic control or lane geometry should be handled. For example, the segment of Golden State Boulevard between American Avenue and Adams Avenue includes the following intersections that were not included in the traffic analysis study area:

- Bonita Avenue;
- Clayton Avenue;
- Clovis Avenue;
- Lincoln Avenue; and
- Jefferson Avenue.

1.4 REGULATORY

Air quality within the Project area is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality within Fresno County are discussed below along with their individual responsibilities.

1.4.1 Federal Regulations

- **National Environmental Policy Act (NEPA)**

The National Environmental Policy Act (NEPA) provides general information on the effects of federally funded projects. The act was implemented by regulations included in the Code of Federal Regulations (40CFR6). The code requires careful consideration concerning environmental impacts of federal actions or plans, including projects that receive federal funds. The regulations address impacts on land uses and conflicts with state, regional, or local plans and policies, among others. They also require that projects requiring NEPA review seek to avoid or minimize adverse effects of proposed actions and to restore and enhance environmental quality as much as possible.

- **Transportation Conformity Analysis**

Transportation conformity requirements were added to the FCAA in the 1990 amendments, and the EPA adopted implementing regulations in 1997. See §176 of the FCAA (42 U.S.C. §7506) and 40 CFR Part 93, Subpart A. Transportation conformity serves much the same purpose as general conformity: it ensures that transportation plans, transportation improvement programs, and projects that are developed, funded, or approved by the United States Department of Transportation or that are recipients of funds under the Federal Transit Act or from the Federal Highway Administration (FHWA),

conform to the State Implementation Plan (SIP) as approved or promulgated by EPA.

Currently, transportation conformity applies in nonattainment areas and maintenance areas. Under transportation conformity, a determination of conformity with the applicable SIP must be made by the agency responsible for the project, such as the Metropolitan Planning Organization (MPO), the Council of Governments (COG), or a federal agency. The agency making the determination is also responsible for all the requirements relating to public participation. Generally, a project will be considered in conformance if it is in the transportation improvement plan and the transportation improvement plan is incorporated in the SIP. If an action is covered under transportation conformity, it does not need to be separately evaluated under general conformity.

- **Transportation Control Measures**

One particular aspect of the SIP development process is the consideration of potential control measures as a part of making progress towards clean air goals. While most SIP control measures are aimed at reducing emissions from stationary sources, some are typically also created to address mobile or transportation sources. These are known as transportation control measures (TCMs). TCM strategies are designed to reduce vehicle miles traveled and trips, or vehicle idling and associated air pollution. These goals are achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs, transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.

1.4.2 Federal Agencies

- **U.S. Environmental Protection Agency (EPA)**

The federal Clean Air Bill first adopted in 1967 and periodically amended since then, established federal ambient air quality standards. A 1987 amendment to the Bill set a deadline for the attainment of these standards. That deadline has since passed. The other federal Clean Air Bill Amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources. U.S. Environmental Protection Agency (U.S. EPA) is responsible for enforcing the 1990 amendments.

The Federal Clean Air Act (CAA) and the national ambient air quality standards identify levels of air quality for six "criteria" pollutants, which are considered the maximum levels of ambient air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The six criteria pollutants include ozone, CO, nitrogen dioxide, sulfur dioxide, particulate matter 10 microns in size and smaller (PM_{10}), and lead.

The U.S. EPA requires each state to prepare and submit a State Implementation Plan (SIP) that describes how the state will achieve the federal standards by the specified dates, depending on the severity of the air quality within the state or basin. Based on the provisions contained in the 1990 amendment, EPA designated the entire San Joaquin Valley as non-attainment for two pollutants: ozone and particle matter less than 10 microns in size or PM_{10}.

In 2004, the EPA reclassified the San Joaquin Valley ozone nonattainment area from its previous severe status to "extreme" at the request of the SJVAPCD Board. Fresno County is considered to be

in non-attainment of ozone and $PM_{2.5}$ standards.

1.4.3 State Regulations

- **CARB Mobile-Source Regulation**

The State of California is responsible for controlling emissions from the operation of motor vehicles in the state. Rather than mandating the use of specific technology or the reliance on a specific fuel, the CARB's motor vehicle standards specify the allowable grams of pollution per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved. Towards this end, the CARB has adopted regulations, which required auto manufacturers to phase in less polluting vehicles.

- **California Clean Air Act**

The California Clean Air Act (CCAA) was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. The CCAA establishes more stringent ambient air quality standards than those included in the FCAA. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the California Health and Safety Code (CH&SC) [§39606(b)], which are similar to the federal standards. The San Joaquin Valley Air Pollution Control District is one of 35 air quality management districts that have prepared air quality management plans to accomplish a five percent annual reduction in emissions documenting progress toward the state ambient air quality standards.

- **Tanner Air Toxics Act**

California regulates Toxic Air Contaminants (TACs) primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted EPA's list of Hazardous Air Pollutants (HAPs) as TACs. Most recently, diesel PM was added to the CARB list of TACs. Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure (ATCM) 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 Best Available Control Technologies (BACT) to minimize emissions.

The AB 2588 requires that existing facilities that emit toxic substances above a specified level 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. CARB 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 December 2010, CARB adopted an amendment to a regulation to reduce emissions of diesel particulate matter, oxides of nitrogen and other criteria pollutants from in-use on-road diesel fueled vehicles, the heavy-duty vehicle greenhouse gas emission reduction measure, and the regulation to

control emissions from in-use on-road diesel fueled heavy-duty drayage trucks at ports and intermodal rail yard facilities. The amended regulation would require installation of PM retrofits beginning January 1, 2012 and replacement of older trucks starting January 1, 2015. By January 1, 2023, almost all vehicles would need to have 2010 model year engines or equivalent.

- **California Environmental Quality Act (CEQA)**

CEQA defines a significant impact on the environment as a substantial, or potentially substantial, adverse change in the physical conditions within the area affected by the project. Land use is a required impact assessment category under CEQA. CEQA documents generally evaluate land use in terms of compatibility with the existing land uses and consistency with local general plans and other local land use controls (zoning, specific plans, etc).

1.4.4 State Agencies

- **California Air Resources Board (CARB)**

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing its own air quality legislation called the California Clean Air Act (CCAA), adopted in 1988. The CARB was created in 1967 from the merging of the California Motor Vehicle Pollution Control Board and the Bureau of Air Sanitation and its Laboratory.

The ARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. Whereas the CARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. The CARB combines its data with all local district data and submits the completed SIP to the EPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by the CARB, and attainment plans adopted by the Air Pollution Control Districts (APCDs) and Air Quality Management Districts (AQMDs) and approved by the CARB.

States may establish their own standards, provided the state standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to California Health and Safety Code (CH&SC) [§39606(b)] and its predecessor statutes.

The CH&SC [§39608] requires the CARB to "identify" and "classify" each air basin in the state on a pollutant-by-pollutant basis. Subsequently, the CARB designated areas in California as nonattainment based on violations of the CAAQSs. Designations and classifications specific to the SJVAB can be found in the next section of this document. Areas in the state were also classified based on severity of air pollution problems. For each nonattainment class, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment categories, attainment plans are required to demonstrate a five-percent-per-year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. In addition, air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that lays out a program to attain and maintain the CCAA mandates.

Other CARB duties include monitoring air quality. The CARB has established and maintains, in conjunction with local air pollution control districts (APCDs) and air quality management districts, a network of sampling stations (called the State and Local Air Monitoring [SLAMS] network), which monitor the present pollutant levels in the ambient air.

Fresno County is in the CARB-designated, SJVAB. A map of the SJVAB is provided in Figure 1-3. In addition to Fresno County, the SJVAB includes San Joaquin, Kern, Kings, Madera, Merced, Stanislaus, and Tulare Counties.

Federal and State standards for criteria pollutants are provided in Table 1-1.

1.4.5 Regional Agencies

- **San Joaquin Valley Air Pollution Control District**

The San Joaquin Valley Air Pollution Control District (SJVAPCD or District) is the agency responsible

California Air Basins | **Figure 1-3**

Legend

SJVAB

Table 1-1
Federal and State Standards

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.075 ppm (147 µg/m³)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)	24 Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	15.0 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	53 ppb (100 µg/m³) (see footnote 8)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m³)		100 ppb (188 µg/m³) (see footnote 8)	None	
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m³)	Ultraviolet Fluorescence	—	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)[9]
	3 Hour	—		—	0.5 ppm (1300 µg/m³) (see footnote 9)	
	1 Hour	0.25 ppm (655 µg/m³)		75 ppb (196 µg/m³) (see footnote 9)	—	
Lead[10]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m³	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average[11]	—		0.15 µg/m³		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 California Air Resources Board (09/08/10)

Footnotes:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

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

4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

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

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

7. Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

8. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that the (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

9. On June 2, 2010, the U.S. EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum of 0.14 ppm and the annual primary SO2 standard of 0.030 ppm, effective August 23, 2010. standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

11. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources within Fresno County and throughout the SJVAB. The District also has responsibility for monitoring air quality and setting and enforcing limits for source emissions. CARB is the agency with the legal responsibility for regulating mobile source emissions. The District is precluded from such activities under State law.

The District was formed in mid-1991 and prepared and adopted the San Joaquin Valley Air Quality Attainment Plan (AQAP), dated January 30, 1992, in response to the requirements of the State CCAA. The CCAA requires each non-attainment district to reduce pertinent air contaminants by at least five percent (5%) per year until new, more stringent, 1988 State air quality standards are met.

Activities of the SJVAPCD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

The SJVAPCD has prepared the *2007 Ozone Plan* to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone. The *2007 Ozone Plan* provides a comprehensive list of regulatory and incentive-based measures to reduce emissions of ozone and particulate matter precursors throughout the SJVAB. The 2007 Ozone Plan calls for major advancements in pollution control technologies for mobile and stationary sources of air pollution. The *2007 Ozone Plan* calls for a 75-percent reduction in ozone-forming oxides of nitrogen emissions.

The SJVAPCD has also prepared the *2007 PM10 Maintenance Plan and Request for Redesignation* (2007 PM10 Plan). On April 24, 2006, the SJVAPCD submitted a Request for Determination of PM10 Attainment for the Basin to CARB. CARB concurred with the request and submitted the request to the EPA on May 8, 2006. On October 30, 2006, the EPA issued a Final Rule determining that the Basin had attained the NAAQS for PM10. However, the EPA noted that the Final Rule did not constitute a redesignation to attainment until all of the FCAA requirements under Section 107(d)(3) were met.

The SJVAPCD has prepared the *2008 PM.2.5 Plan* to achieve Federal and State standards for improved air quality in the San Joaquin Valley Air Basin. The *2008 PM.2.5 Plan* provides a comprehensive list of regulatory and incentive based measures to reduce PM2.5.

In addition to the *2007 Ozone Plan, the 2008 PM2.5 Plan,* and the *2007 PM10 Plan*, the SJVAPCD prepared the *Guide for Assessing and Mitigation Air Quality Impacts* (GAMAQI). The GAMAQI is an advisory document that provides Lead Agencies, consultants, and project applicants with analysis guidance and uniform procedures for addressing air quality impacts in environmental documents. Local jurisdictions are not required to utilize the methodology outlined therein. This document describes the criteria that SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether or not projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. An update of the GAMAQI was approved on January 10, 2002, and is used as a guidance document for this analysis.

The SJVAPCD 2007 Ozone, 2007 PM_{10}, 2008 PM2.5 as well as the 2004 Revision to the California State Implementation Plan contain statewide technology controls mandated by the California Air Resources Board (ARB). A summary of the ARB mandated control measures applicable to the 2011 RTP can be found in the Draft Fresno COG 2011 Conformity Analysis for the 2011 Federal Transportation Improvement Program and the 2011 Regional Transportation Plan (Conformity Analysis). The Draft Conformity Analysis can be found at the following link:

http://www.fresnocog.org/files/Air%20Quality/Conformity/Fresno%20COG%202011%20Draft%20Conformity%20Analysis%204-28-10.pdf

The SJVAPCD Plans identified above represent that SJVAPCD's plan to achieve both state and federal air quality standards. The regulations and incentives contained in these documents must be legally enforceable and permanent. These plans break emissions reductions and compliance into different emissions source categories. For this technical report only on-road mobile sources are considered as 2011 RTP does not impact the implementation of any SJVAPCD regulations or incentives on other emissions source categories.

Each of the SJVAPCD plans (2007 Ozone Plan, 2008 $PM_{2.5}$ Plan, and 2007 PM10 Maintenance Plan, which relies on the 2003 PM_{10} Plan for emissions reductions measures) identifies a "budget" for measuring progress toward achieving attainment of the national air quality standard. A "budget" is, in effect, an emissions "threshold" or "not to exceed value" for specific years in which progress toward attainment of the standard must be measured. These specific years can also be described as "budget years" and are established to ensure achievement of the "budget" to demonstrate continued progress toward attainment of the national air quality standard. The term "base year" also reflects a "threshold" or "not to exceed" value against which future emissions from the 2011 RTP are measured.

The United States Environmental Protection Agency defines specific years in which attainment of the federal standards must be reached, and therefore each of these SJVAPCD plans for which the San Joaquin Valley Air Basin is nonattainment contains different "budget years" in which progress must be made toward achievement of the federal standards. These years are documented below. Again the emissions budgets in Tables 1-2 through 1-5 below reflect "thresholds" or "not to exceed" values in the "budget years" for the identified pollutant in order to achieve attainment.

Table 1-2
On-Road Motor Vehicle CO Emissions Budgets
(Winter tons/day)

County	2018 Emissions (Winter Tons/Day)
Fresno	240

Source: San Joaquin Valley Air Pollution Control District, 2007

Table 1-3
On-Road Motor Vehicle Budgets from the 2007 Ozone Plan
(Summer tons/day)

County	2011		2014		2017	
	ROG	NOx	ROG	NOx	ROG	NOx
Fresno	14.3	36.2	10.7	30.0	9.3	22.6

Source: San Joaquin Valley Air Pollution Control District, "2007 Ozone Plan", 2007

Table 1-4
On-Road Motor Vehicle PM-10 Emissions Budgets
(Tons per average annual day)

County	2020	
	PM-10	NOx
Fresno	16.1	23.2

Source: San Joaquin Valley Air Pollution Control District, "2007 PM10 Maintenance Plan", 2007

Table 1-5
On-Road Motor Vehicle PM-2.5 Emissions Budgets
(Tons per average annual day)

County	2012		2014	
	PM2.5	NOx	PM2.5	NOx
Fresno	1.5	35.7	1.1	31.4

Source: San Joaquin Valley Air Pollution Control District, "2008 PM.2.5 Plan", 2008

The SJVAPCD has adopted numerous rules and regulations to implement its air quality plans. Following, are significant rules that will apply to the proposed project.

- **Regulation VIII – Fugitive PM10 Prohibitions**

  Regulation VIII is comprised of District Rules 8011 through 8081, which are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc.

- **Rule 8021 – Construction, Demolition, Excavation, and Other Earthmoving Activities**

  District Rule 8021 requires owners or operators of construction projects to submit a Dust Control Plan to the District if at any time the project involves non-residential developments of five or more acres of disturbed surface area or moving, depositing, or relocating of more than

2,500 cubic yards per day of bulk materials on at least three days of the project. The proposed project will meet these criteria and will be required to submit a Dust Control Plan to the District in order to comply with this rule.

- **Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations**

  If asphalt paving will be used, then paving operations of the proposed project will be subject to Rule 4641. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

- **Rule 9510 – Indirect Source Review (ISR)**

  District Rule 9510 is designed for the purposes of reducing emissions of NOx and PM10 from new development projects. In general, new development contributes to the air-pollution problem in the Valley by increasing the number of vehicles and vehicle miles traveled. In 2005, on-road vehicles generated approximately 200 tons per day of NOx and direct PM10 pollution in the Valley. The ISR rule will apply to future development along the Golden State Boulevard corridor.

San Joaquin Valley Air Basin Monitoring

The SJVAB consists of eight counties, from Fresno County in the north to Kern County in the south. SJVAPCD and CARB maintain numerous air quality monitoring sites throughout each County in the Air Basin to measure ozone, PM2.5, and PM10. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. The closest monitoring station to the Project is located at Fresno's Drummond Street Monitoring Station. The station monitors particulates, ozone, carbon monoxide, and nitrogen dioxide. Monitoring data for the past three years is summarized in Table 1-6.

Table 1-6
Maximum Pollutant Levels at Fresno's Drummond Street Monitoring Station

Pollutant	Time Averaging	2008 Maximums	2009 Maximums	2010 Maximums	Standards National	Standards State
Ozone (O_3)	1 hour	0.124 ppm	0.118 ppm	0.108 ppm	-	0.09 ppm
Ozone (O_3)	8 hour	0.112 ppm	0.100 ppm	0.091 ppm	0.08 ppm	-
Carbon Monoxide (CO)	8 hour	2.14 ppm	1.95 ppm	1.45 ppm	9.0 ppm	9.0 ppm
Nitrogen Dioxide (NO_2)	1 hour	0.076 ppm	0.076 ppm	0.062 ppm	-	.025 ppm
Nitrogen Dioxide (NO_2)	Annual Average	0.015 ppm	0.014 ppm	*	0.053 ppm	-
Particulates (PM_{10})	24 hour	98.8 mg/m^3	84.0 mg/m^3	68.1 mg/m^3	150 mg/m^3	50 mg/m^3
Particulates (PM_{10})	Federal Annual Arithmetic Mean	40.0 mg/m^3	35.1 mg/m^3	26.9 mg/m^3	50 mg/m^3	20 mg/m^3
Particulates ($PM_{2.5}$)[a]	24 hour	79.5 mg/m^3	82.3 mg/m^3	58.3 mg/m^3	65 mg/m^3	-
Particulates ($PM_{2.5}$)[a]	Federal Annual Arithmetic Mean	17.3 mg/m^3	15.1 mg/m^3	16.5 mg/m^3	15 mg/m^3	12 mg/m^3

a. Fresno's 1st Street Monitoring Station

* There was insufficient data available to determine the value.

Source: CARB Website, 2011

Table 1-7 identifies the District's attainment status. As indicated, the SJVAB is nonattainment for Ozone (1 hour and 8 hour) and PM (2.5 microns in size). In accordance with the federal Clean Air Act, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. The Federal Clean Air Act contains provisions for changing the classifications using factors such as clean air progress rates and requests from States to move areas to a higher classification. On April 16, 2004 EPA issued a final rule classifying the SJVAB as extreme nonattainment for Ozone, effective May 17, 2004 (69 FR 20550). The (federal) 1-hour ozone standard was revoked on June 6, 2005. However, many of the requirements in the 1-hour attainment plan (SIP) continue to apply to the SJVAB. The current ozone plan is the (federal) 8-hour ozone plan adopted in 2007. The SJVAB was reclassified from a "serious" nonattainment area for the 8-hour ozone standard to "extreme' effective June 4, 2010.

Table 1-7
San Joaquin Valley Air Basin – District Attainment Status

Pollutant	Federal Standards	State Standards
Ozone - 1 Hour	No Federal Standard	Nonattainment/Severe
Ozone - 8 Hour	Nonattainment/Extreme [a]	Nonattainment
PM10	Attainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead Particulates	No Designation/Classification	Attainment

a. Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
Source: SJVAPCD Website, 2011

1.5 ENVIRONMENTAL SETTINGS

This section describes existing air quality within the San Joaquin Valley Air Basin and in Fresno County, including the identification of air pollutant standards, meteorological and topological conditions affecting air quality, and current air quality conditions. Air quality is described in relation to ambient air quality standards for criteria pollutants such as, ozone, carbon monoxide, and particulate matter less than 10 microns in size (PM_{10}). A complete description of the current air quality requirements is provided in the 2011 RTP and FTIP Air Quality Conformity Finding. The Conformity Finding provides a review of the current status of air quality planning and implementation, including the status of the current State Implementation Plan (SIP), Rate of Progress (ROP) Plans, and the implementation of various transportation control measures (TCMs) that are committed to in the current SIP and are needed to "offset" nonattainment emission increases associated with the Project.

1.5.1 Geographical Location

The SJVAB is comprised of eight counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus,

and Tulare. Encompassing 24,840 square miles, the San Joaquin Valley is the second largest air basin in California. Cumulatively, counties within the Air Basin represent approximately 16 percent of the State's geographic area. The Air Basin is bordered by the Sierra Nevada Mountains on the east (8,000 to 14,492 feet in elevation), the Coastal Range on the west (4,500 feet in elevation), and the Tehachapi Mountains on the south (9,000 feet elevation). The San Joaquin Valley is open to the north extending to the Sacramento Valley Air Basin.

Figure 1-3 above provides a map of California Air Basins. Air basins are geographic areas sharing a common "air shed." A description of the Air Basin in the County, as designated by CARB, is provided below.

For the purpose of regulating and monitoring air quality, Fresno County is serviced together with the other seven counties in the SJVAB by the San Joaquin Valley Air Pollution Control District (SJVAPCD), which regulates and monitors air quality within the SJVAB.

1.5.2 Topographic Conditions

Fresno County is located within the San Joaquin Valley Air Basin [as determined by the California Air Resources Board (CARB)]. Air basins are geographic areas sharing a common "air shed." A description of the Air Basin in the County, as designated by CARB, is provided below. Air pollution is directly related to the region's topographic features, which impact air movement within the Basin.

Wind patterns within the SJVAB result from marine air that generally flows into the Basin from the San Joaquin River Delta. The Coastal Range hinders wind access into the Valley from the west, the Tehachapis prevent southerly passage of airflow, and the high Sierra Nevada Mountain Range provides a significant barrier to the east. These topographic features result in weak airflow that becomes restricted vertically by high barometric pressure over the Valley. As a result, the SJVAB is highly susceptible to pollutant accumulation over time.

1.5.3 Climatic Conditions

In addition to topographic conditions, the local climate can also contribute to air quality problems. Light winds and atmospheric stability provide frequent opportunities for pollutants to accumulate in the atmosphere. Wind speed and direction also play an important role in the dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations.

Ozone is classified as a "regional" pollutant due in part to the time required for ozone formation. Ozone, however, is not a directly emitted pollutant. Ozone is formed when its precursors, nitrogen oxides (NO_X) and volatile organic compounds (VOC), react in the presence of sunlight. Ozone precursors can be easily transported by winds from a source area before ozone concentrations peak. In addition, temperature and solar radiation are important factors in the chemistry of ozone formation because ozone is formed in a photochemical reaction requiring sunlight. Generally, higher temperatures create greater amounts of ozone, since reaction rates increase with temperature. However, extremely hot temperatures can lift or break the inversion layer.

During summer months, wind speed and direction data indicate that winds usually originate at the north end of the Valley and flow in a southerly direction through the Tehachapi Pass into the Mojave Air Basin. These prevailing winds, known as "up-valley winds", originate with coastal breezes that enter the San Joaquin Valley through breaks in the coastal ranges, particularly though the Carquinez Straits in the San Francisco Bay Area and the Sacramento Valley Area; however, sources of air pollution, including stationary, mobile and area sources within the central and southern portions of the San Joaquin Valley, are considered to be a greater influence under most conditions.

1.5.4 Other Air Quality Determinants

In addition to climatic conditions (wind, lack of rain, etc.), air pollution can be caused by human/socioeconomic conditions. Air pollution in the SJVAB can be directly attributed to human activities, which cause air pollutant emissions. Human causes of air pollution in the Valley consist of population growth, urbanization (gas-fired appliances, residential wood heaters, etc.), mobile sources (i.e., cars, trucks, airplanes, trains, etc.), oil production, and agriculture. These are called anthropogenic, or human-caused, sources of emissions. The most significant factors, which are accelerating the decline of air quality in the SJVAB, are the Valley's rapid population growth and its associated increases in traffic, urbanization, and industrial activity.

Carbon monoxide emissions overwhelmingly come from mobile sources in the San Joaquin Valley; on-road vehicles contribute 65 percent, while other mobile vehicles, such as trains, planes, and off-road vehicles, contribute another 17 percent. The SJVAPCD is the agency empowered to regulate air pollutant emissions. The SJVAPCD regulates air quality through its permit authority for most types of stationary emission sources and through its planning and review activities for other sources.

Motor vehicles account for significant portions of regional gaseous and particulate emissions. Local large employers such as industrial plants can also generate substantial regional gaseous and particulate emissions. In addition, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.).

Ozone is the result of a photochemical reaction between Oxides of nitrogen (NO_x) and Reactive Organic Gases (ROG). Mobile sources contribute 64 percent of all NO_x emitted from anthropogenic sources. In addition, mobile sources contribute 53 percent of all the ROG emitted from sources within the San Joaquin Valley.

The principal factors that affect air quality in and around Fresno County are:

- The sink effect, climatic subsidence and temperature inversions and low wind speeds
- Automobile and truck travel
- Increases in mobile and stationary pollutants generated by local urban growth

Automobiles, trucks, buses and other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

Other sources may not seem to fit into any one of the major categories or they may seem to fit in a number

of them. These could include agricultural uses, dirt roads, animal shelters; animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. For Fresno County, this category includes several agriculturally related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities. Finally, industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Fresno County consist of agricultural production and processing operations, wine production, and marketing operations.

The primary contributors of PM_{10} emissions in the San Joaquin Valley are fugitive windblown dust from "open" fields (38%) and road dust, both paved and unpaved (38%). Farming activities only contribute 14 percent of the PM_{10}.

1.6 AIR QUALITY STANDARDS

The Federal Clean Air Act (CAA), first adopted in 1963, and periodically amended since then, established National Ambient Air Quality Standards (NAAQS). A set of 1977 amendments determined a deadline for the attainment of these standards. That deadline has since passed. Other CAA amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources.

In 1988, the State of California passed the California Clean Air Act [(CCAA), State 1988 Statutes, Chapter 1568], which set forth a program for achieving more stringent California Ambient Air Quality Standards. The California Air Resources Board (ARB) implements State ambient air quality standards, as required in the CCAA, and cooperates with the federal government in implementing pertinent sections of the CAA Amendments (FCAAA). Further, CARB regulates vehicular emissions throughout the State. The SJVAPCD regulates stationary sources, as well as some mobile sources. Attainment of the more stringent State PM_{10} Air Quality Standards is not currently required.

The United States Environmental Protection Agency (EPA) uses six "criteria pollutants" as indicators of air quality, and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS).

The SJVAPCD operates regional air quality monitoring networks that provide information on average concentrations of pollutants for which State or federal agencies have established ambient air quality standards. Descriptions of the six pollutants of importance in Fresno County follow.

1.6.1 Ozone

The most severe air quality problem in the Air Basin is the high level of ozone. Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. Here, ground level, or "bad" ozone, is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up, where it meets the second layer, the stratosphere. The stratospheric, or "good" ozone layer, extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is what is known as a photochemical pollutant. It needs reactive organic gases (ROG), NO_x,

and sunlight. ROG and NO_x are emitted from various sources throughout Fresno County. In order to reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically NO_x and ROG. Sources of precursor gases to the photochemical reaction that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins. Approximately 50 million people lived in counties with air quality levels above the EPA's health-based national air quality standard in 1994. The highest levels of ozone were recorded in Los Angeles, closely followed by the San Joaquin Valley. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the Northeast. Data from 1994 is somewhat dated and up to date information is more desirable. However, this information is provided by EPA as it relates to the health effects of ozone.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

Health Effects

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as: forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in

vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. In addition, children inhale more air per pound of body weight than adults, and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant—it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard leads to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs.

The CARB found ozone standards in Fresno County nonattainment of federal and State standards.

1.6.2 Suspended PM (PM_{10} and $PM_{2.5}$)

Particulate matter pollution consists of very small liquid and solid particles that remain suspended in the air for long periods. Some particles are large or concentrated enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. Particulate matter is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter is emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. PM_{10} refers to particles less than or equal to 10 microns in aerodynamic diameter. $PM_{2.5}$ refers to particles less than or equal to 2.5 microns in aerodynamic diameter and are a subset of PM_{10}. Particulates of concern are those that are 10 microns or less in diameter. These are small enough to be inhaled, pass through the respiratory system and lodge in the lungs, possibly leading to adverse health effects.

In the western United States, there are sources of PM_{10} in both urban and rural areas. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. The composition of PM_{10} and $PM_{2.5}$ can also vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM_{10} and $PM_{2.5}$. In addition to those listed previously, secondary particles can also be formed as precipitates from chemical and photochemical reactions of gaseous sulfur dioxide (SO_2) and NO_x in the atmosphere to create sulfates (SO_4) and nitrates NO_3. Secondary particles are of greatest concern during the winter months where low inversion layers tend to trap the precursors of secondary particulates.

The CARB 2008 PM2.5 Plan builds upon the aggressive emission reduction strategy adopted in the 2007 Ozone Plan and strives to bring the valley into attainment status for the 1997 NAAQS for $PM_{2.5}$. The 2008 $PM_{2.5}$ Plan indicates that all planned reductions (from the 2007 Ozone Plan and state controls) plus significant reductions from new measures will be needed to attain the annual standard.

The following new controls considered in the 2008 $PM_{2.5}$ Plan include:

- Tighter restrictions on residential wood burning and space heating
- More stringent limits on $PM_{2.5}$, SO_2, and NO_x emissions from industrial sources
- Measures to reduce emissions from prescribed burning and agricultural burning
- More effective work practices to control $PM_{2.5}$ in fugitive dust

The control strategy in this plan would also bring the valley closer to attainment status for the 2006 daily $PM_{2.5}$ standard. The district presented the draft 2008 $PM_{2.5}$ Plan to the District Governing Board on April 17, 2008, following a 30-day public comment period. This plan was delivered to the EPA in April 2008.

Health Effects

PM_{10} and $PM_{2.5}$ particles are small enough—about one-seventh the thickness of a human hair, or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system's natural defenses. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings. PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. PM_{10} and $PM_{2.5}$ can aggravate respiratory disease and cause lung damage, cancer, and premature death.

Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to adverse health effects of PM_{10}. These "sensitive populations" include children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis. Of greatest concern are recent studies that link PM_{10} exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM_{10} can also damage manmade materials and is a major cause of reduced visibility in many parts of the United States.

The CARB found PM_{10} standards in Fresno County in attainment of federal and nonattainment State standards. The CARB found $PM_{2.5}$ standards in Fresno County nonattainment of federal and State standards.

1.6.3 Carbon Monoxide (CO)

Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust, contributes more than two thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

Health Effects

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate.

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death.

The CARB found CO standards in Fresno County in attainment of federal and State standards.

1.6.4 Nitrogen Dioxide (NO_2)

Nitrogen oxides (NO_x) is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO_x is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NO_x is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates.

Health Effects

NO_x is an ozone precursor that combines with Reactive Organic Gases (ROG) to form ozone. See the ozone section above for a discussion of the health effects of ozone.

Direct inhalation of NO_x can also cause a wide range of health effects. NO_x can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO_2) may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO_2 may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NO_x are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NO_x can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NO_x can also impair visibility. NO_x is a major component of acid deposition in California. NO_x may affect both terrestrial and aquatic ecosystems. NO_x in

the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

NO_2 is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO_2 include experimental studies on animals, controlled laboratory studies on humans, and observational studies.

In animals, long-term exposure to NO_x increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO_2, can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NO_x contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication as discussed above. Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms.

The CARB found NO_2 standards in Fresno County in attainment of federal and State standards.

1.6.5 Sulfur Dioxide (SO_2)

The major source of sulfur dioxide (SO_2) is the combustion of high-sulfur fuels for electricity generation, petroleum refining and shipping. High concentrations of SO_2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term exposures of asthmatic individuals to elevated SO_2 levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO_2, in conjunction with high levels of PM, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO_2 also is a major precursor to $PM_{2.5}$, which is a significant health concern and a main contributor to poor visibility. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain.

The standards for SO_2 are being met in the SJVAB.

1.6.7 Lead (Pb)

Lead, a naturally occurring metal, can be a constituent of air, water, and the biosphere. Lead is neither

created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels; however, the use of leaded fuel has been mostly phased out. Since this has occurred the ambient concentrations of lead have dropped dramatically.

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

The standards for Lead are being met in the SJVAB for state standards.

1.6.8 Toxic Air Contaminants (TACs)

In addition to the criteria pollutants discussed above, TACs are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Existing air quality concerns within Fresno County and the entire SJVAB are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

- **Odors**

  Typically odors are 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 minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another.

It is also important to 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 with an alteration in the intensity.

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 odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

- **Sensitive Receptors**

A sensitive receptor is a location where human populations, especially children, seniors, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to pollutants. Examples of sensitive receptors include residences, hospitals and schools.

1.6.9 Existing TCMs and Air Quality Mitigation

Until the passage of the CCAA, the primary role of air districts in California was the control of stationary sources of pollution such as industrial processes and equipment. With the passage of the FCAA and CCAA, air districts were required to implement transportation control measures (TCMs) and were encouraged to adopt indirect source control programs to reduce mobile source emissions. These mandates created the necessity for the District to work closely with cities and counties and with regional transportation planning agencies (RTPAs) to develop new programs.

A description of the various TCMs that have been incorporated into the SJVAPCD AQAP, Rate of Progress (ROP) Plans, and the SJVAPCD TCM Program, or have been identified as necessary to provide for positive air quality conformity findings, is included in the latest Air Quality Conformity Finding for the 2011 RTP and Federal Transportation Improvement Program (FTIP), dated October 2009. The Conformity Finding includes a complete description of each TCM contained in the current SIP, the SJVAPCD AQAP, the TCM Program, and in the ROP Plans. TCMs listed in the FTIP can be found on the Fresno COG website at:

http://www.fresnocog.org/files/FTIP/2011FTIP/2011%20Draft%20TIP%204-30-10%20pages%20150-268.pdf

Fresno County and its fifteen incorporated cities, private business, and government offices implement some of these programs including traffic flow improvements, public transit, park and ride lots, bicycling programs, and alternate work schedules. Central Valley Ridesharing provides rideshare programs in Fresno County

and is administered by Fresno COG. It also provides ride matching within the four counties of Madera, Kings, Fresno, and Tulare.

A complete description of the current air quality requirements is provided in the 2011 RTP and the latest Air Quality Conformity Findings are included on the Fresno COG website at:

http://www.fresnocog.org/files/Air%20Quality/Conformity/Fresno%20COG%202011%20Draft%20Conformity%20Analysis%204-28-10.pdf

1.6.10 Air Quality Management

Until the passage of the CCAA, the primary role of air districts in California was the control of stationary sources of pollution such as industrial processes and equipment. With the passage of the FCAA and CCAA, air districts were required to implement transportation control measures (TCMs) and were encouraged to adopt indirect source control programs to reduce mobile source emissions. These mandates created the necessity for the SJVAPCD to work closely with cities and counties and with regional transportation planning agencies (RTPAs) to develop new programs.

A description of various TCMs incorporated into the SJVAPCD Air Quality Attainment Plan (AQAP), Rate of Progress (ROP) Plans, and the SJVAPCD TCM Program, together with TCMs that have been identified as necessary to provide for positive air quality conformity findings is included in 2011 RTP Air Quality Conformity Determination. The Conformity Determination includes a complete description of each TCM contained in the current SIP, the SJVAPCD AQAP, the TCM Program, and in the ROP Plans.

Responsibility for managing air quality in California is becoming increasingly regionalized. Air districts have the primary responsibility to control air pollution from all sources other than emissions directly from motor vehicles, which are the responsibility of EPA and CARB. Air districts regulate air quality through their permit authority for most types of stationary emission sources and through their planning and review activities for other sources. Further, air districts adopt and enforce rules and regulations to achieve State and federal ambient air quality standards and enforce applicable State and federal law. The CCAA requires each nonattainment district to reduce pertinent air contaminants by at least five percent per year until State Quality Standards are met.

1.6.11 Air Pollution Sources

The four major sources of air pollutant emissions in the SJVAB include industrial plants, motor vehicles, construction activities, and agricultural activities. Industrial plants account for significant portions of regional gaseous and particulate emissions. Motor vehicles, including those from large employers, generate substantial regional gaseous and particulate emissions. Finally, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.). In addition to these primary sources of air pollution, urban areas upwind from Fresno County, including areas north and west of the San Joaquin Valley, can cause or generate emissions that are transported into Fresno County. All four of the major pollutant sources affect ambient air quality throughout the Air Basin.

- **Motor Vehicles**

  Automobiles, trucks, buses and other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

- **Agricultural and Other Miscellaneous Activities**

  Other sources may not seem to fit into any one of the major categories or they may seem to fit in a number of them. These could include agricultural uses, dirt roads, animal shelters, animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. For Fresno County, this category includes several agriculturally related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities.

- **Industrial Plants**

  Industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Fresno County consist of agricultural production and processing operations, wine production, and marketing operations.

2.0 AIR QUALITY IMPACTS AND SIGNIFICANCE CRITERIA

2.1 Methodology

The impact assessment for air quality focuses on potential effects the Project might have on air quality within the Fresno County region. The assessment is site or project-specific.

2.2 Criteria For Significance

According to the California Environmental Quality Act (CEQA), a project will normally have a significant adverse impact on air quality if it will "violate any ambient air quality standard, conflict with or obstruct implementation of an applicable air quality plan, result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment, create substantial objectionable odors, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations."

For regional pollutants such as ozone, PM_{10}, sulfur dioxide, or nitrogen dioxide, the impact of new development cannot be predicted in terms of concentrations, but is addressed in terms of changes in the regional burden of emissions. For non-attainment pollutants (ozone precursors or PM_{10}), any net increase in regional emissions is considered significant.

For localized pollutants, such as carbon monoxide, an increase in concentrations that would result in a predicted violation of the most stringent State or federal standard (20.0 PPM for 1-hour or 9.0 PPM for 8-

hours) is considered to represent a significant impact. This assessment provides for two types of localized area pollutant impact analysis; street and highway improvements and traffic volumes and construction impacts.

For purposes of this environmental assessment, an impact is considered significant if one or more of the following conditions occur from implementation of the Project:

- regional air quality emission exceed standards;
- local air quality emission exceed standards;
- conflict/obstruct implementation of an applicable air quality plan;
- result in a cumulatively considerable net increase of any criteria pollutant in non-attainment area;
- significant construction related air quality impacts occur; and/or
- the creation of objectionable odors.

The District has established thresholds for certain pollutants shown in Table 2-1.

Table 2-1
SJVAPCD Significance Criteria
Emission Thresholds

Project Type	Ozone Precursor Emissions (tons/year)		
	ROG	NO_X	PM_{10}
Short-term Effects (Construction)	10	10	15
Long-term Effects (Operation)	10	10	15

Source: SJVAPCD 2008

2.3 Short-Term (Construction) Emissions

Short-term impacts are mainly related to the construction phase of a project and are recognized to be short in duration. Construction air quality impacts are generally attributable to dust generated by equipment and vehicles. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Clearing and earth moving activities do comprise major sources of construction dust emissions, but traffic and general disturbances of soil surfaces also generate significant dust emissions. Further, dust generation is dependent on soil type and soil moisture.

Adverse effects of construction activities cause increased dust-fall and locally elevated levels of total suspended particulate. Dust-fall can be a nuisance to neighboring properties or previously completed developments surrounding or within the Project area and may require frequent washing during the construction period. Further, asphalt-paving materials used during construction will present temporary, minor sources of hydrocarbons that are precursors of ozone.

PM_{10} emissions can result from construction activities of the project. The SJVAPCD requires implementation of effective and comprehensive control measures, rather than a detailed quantification of emissions. The SJVAPCD has determined that compliance with Regulation VIII for all sites and other

control measures will constitute sufficient mitigation to reduce PM_{10} impacts to a level considered less-than significant.

Ozone precursor emissions are also an impact of construction activities and can be quantified through calculations. Numerous variables factored into estimating total construction emission include: level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and amount of materials to be transported onsite or offsite. Additional exhaust emissions would be associated with the transport of workers and materials. Because the specific mix of construction equipment in a multi-year build-out period is not presently known for this project, construction emissions from equipment was estimated using the Road Construction Emissions Model, Version 6.3.2. Results of the analysis are shown in Table 2-2 below.

Table 2-2
Project Construction Emissions

Summary Report	ROG	NO_x	PM_{10}
Total Construction Emissions	5.2 tons	29.6 tons	42.5 tons
Construction Emissions Per Year	1.73 tons/year	9.87 tons/year	14.17 tons/year
SJVACPD Level of Significance	10 tons/year	10 tons/year	N/A
Does Project Exceed Standard?	No	No	

The annual emissions from construction of the project will be less than the applicable SJVAPCD emission thresholds. The construction emissions are therefore considered less than significant with the implementation of Regulation VIII control measures.

Although Project emissions are predicted to be insignificant, the Fresno area and the San Joaquin Valley are designated non-attainment for particulates for both state and federal standards. Fugitive particle emissions will occur during construction and control measures are required and enforced by the District under Regulation VIII. With the implementation of control measures, short-term emissions are considered less than significant. According to the GAMAQI, the fugitive dust control rules listed below apply to this project:

- **Rule 8011 -** Fugitive dust administrative requirements for the control of fine particulate matter
- **Rule 8021 -** Fugitive dust requirements for the control of fine particulate matter from construction, demolition, excavation, extraction, and earthmoving activities
- **Rule 8071 -** Fugitive dust requirements for the control of fine particulate matter from vehicle and/or equipment parking, shipping, receiving, transfer, fueling, and service areas one are or larger

Further, the project should include the following local municipal code requirements:

- Water sprays or chemical suppressants must be applied to all unpaved roads to control fugitive emissions
- All access roads and parking areas must be covered with asphalt-concrete paving

Compliance with the District's Regulation VIII and the local municipal code would reduce particulate emissions impacts to levels that are considered less than significant.

2.3.1 Construction Measures

Compliance with Regulation VIII under the San Joaquin Valley Air District for all construction sites will constitute sufficient measures to reduce PM_{10} impacts to a level considered less-than significant.

The following measures from the GAMAQI are required to be implemented at all construction sites:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.

Additional enhanced control measures are desirable where feasible and include:

- limit traffic speeds on unpaved roads to 15 mph; and
- install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.

Additional mitigation measures should be considered for reducing emissions from construction emissions. The District's GAMAQI suggests the following measures:

- use of alternative fueled or catalyst equipped diesel construction equipment;
- minimize idling time (e.g., 10 minute maximum);
- limit the hours of operation of heavy duty equipment and/or the amount of equipment in use;
- replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set);

- curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways; and
- implement activity management (e.g. rescheduling activities to reduce short-term impacts).

The use of Best Management Practices (BMPs) would reduce or eliminate environmental impacts from construction activities. The applicable BMPs for project construction include the following measures:

- Construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications. Low-sulfur fuel should be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.
- Where available, use electricity from power poles rather than temporary diesel- or gasoline-powered generators.
- Construction activities that affect traffic flow on the arterial roadways shall be scheduled to off-peak hours to the extent possible. Additionally, construction trucks shall be directed away from congested streets or sensitive receptor areas.
- Where possible, enforce truck parking restrictions; provide onsite services to minimize truck traffic in or near residential areas, including services such as meal or cafeteria.
- Wash off trucks as they leave the right-of-way as necessary to control fugitive dust emissions.
- Locate equipment and materials storage sites as far away from residential and park uses as practical. Keep construction areas clean and orderly.
- Use track-out reduction measures such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic.
- Install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area.

Compliance with Rule 9510 under the San Joaquin Valley Air District for construction emissions will constitute sufficient measures to reduce construction emissions to a level considered less-than significant.

2.4 Long-Term Emissions

Long-Term emissions from the project are generated by mobile source (vehicle) emissions from the project site and area sources such as water heaters and lawn maintenance equipment.

2.4.1 Localized Mobile Source Emissions

Carbon Monoxide

The SJVAPCD is currently in attainment for CO. Despite the success in achieving CO standards, an analysis of localized CO concentrations is warranted to ensure that standards are maintained. Also, an analysis is required to ensure that localized concentrations don't reach potentially unhealthful levels that could affect sensitive receptors (residents, school children, hospital patients, the elderly, etc.).

Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the project will reduce the LOS on one or more streets to E or F or if the project will worsen an existing LOS F.

To analyze the build and no build "worst case" CO concentrations at study roadway segments, the analysis methodology considered the highest second annual maximum CO concentration reported in 2010, using 1.45 PPM as an estimate of the background concentration for the 8 hour standard and 2.1 PPM for the 1 hour standard (source: CARB annual publications). Other modeling assumptions include a wind speed of .5 m/s, flat topography, 1,000 meter mixing height, and a 5 degree wind deviation.

Traffic forecasts for the year 2035 were used in the CALINE analysis to determine CO concentrations under worst case conditions with and without the project. Results of the CALINE analysis are shown in Table 2-3. Detailed CALINE analysis worksheets are included in the appendix of this report.

Mobile Source Air Toxic (MSAT)

On February 2, 2006, the Federal Highway Administration (FHWA) issued "Interim Guidance on Air Toxics Analysis for NEPA Documents". This guidance was transmitted to the California Department of Transportation (Caltrans) on February 14, 2006. As indicated in the February transmittal, FHWA expects that this guidance can be incorporated into any NEPA documents for which the completion of the DEIS, FEIA or EA is completed after August 3, 2006.

The guidance can be found on FHWA's website at:

http://www.fhwa.dot.gov/environment/airtoxic/020306guidmem.htm

The Clean Air Act identified 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list of toxics and identified a group of 21 as mobile source air toxics, which are set forth in an EPA final rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17235).* The EPA also extracted a subset of this list of 21 that it now labels as the six priority MSATs. These are *benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene.* As discussed in the FHWA's air toxics guidance, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the build and no build alternatives.

Table 2-3
Local Roadway Air Quality Segment Analysis
(1 Hour and 8 Hour CO Concentration)

	Air Quality Standards				Existing				Future Year 2035			
	Federal		State		No Build		Build		No Build		Build	
Description	1 hr	8 hr	1 hr	8 hr	1 hr	8 hr	1 hr	8 hr	1 hr	8 hr	1 hr	8 hr
					2.1	1.45	2.1	1.45	2.1	1.45	2.1	1.45
Draper St - Simpson St	35.0	9.0	20.0	9.0	5.2	1.7	4.6	1.7	7.0	1.9	6.0	1.8
					N	N	N	N	N	N	N	N
Sierra St - Simpson St	35.0	9.0	20.0	9.0	5.2	1.7	5.1	1.7	7.1	1.9	6.8	1.9
					N	N	N	N	N	N	N	N
Stroud Ave - Golden State Blvd	35.0	9.0	20.0	9.0	4.5	1.5	4.5	1.5	6.1	1.5	6.1	1.5
					N	N	N	N	N	N	N	N
Kamm/Bethel Ave - Golden State Blvd	35.0	9.0	20.0	9.0	5.3	1.7	5.1	1.7	7.4	1.9	7.0	1.9
					N	N	N	N	N	N	N	N
Mountain View Ave - Golden State Blvd	35.0	9.0	20.0	9.0	6.2	1.8	6.0	1.8	9.0	2.1	8.5	2.1
					N	N	N	N	N	N	N	N
Saginaw Ave - Golden State Blvd	35.0	9.0	20.0	9.0	6.3	1.8	6.0	1.8	9.0	2.1	8.5	2.1
					N	N	N	N	N	N	N	N
Dockery Ave - Golden State Blvd	35.0	9.0	20.0	9.0	6.3	1.8	5.9	1.8	9.2	2.1	8.4	2.1
					N	N	N	N	N	N	N	N
Nebraska Ave - Golden State Blvd	35.0	9.0	20.0	9.0	6.2	1.8	5.7	1.8	9.1	2.1	8.1	2.0
					N	N	N	N	N	N	N	N
2nd St - Whitson St	35.0	9.0	20.0	9.0	7.8	2.0	7.0	1.9	11.5	2.4	10.2	2.3
					N	N	N	N	N	N	N	N
Thompson Ave - Whitson St	35.0	9.0	20.0	9.0	7.6	1.9	6.9	1.9	11.2	2.3	10.3	2.3
					N	N	N	N	N	N	N	N
Floral Ave - Whitson St	35.0	9.0	20.0	9.0	6.9	1.9	7.1	1.8	10.4	2.2	10.5	2.1
					N	N	N	N	N	N	N	N
Highland Ave - Golden State Blvd	35.0	9.0	20.0	9.0	7.3	2.0	7.1	1.9	10.8	2.4	10.4	2.3
					N	N	N	N	N	N	N	N
Dinuba Ave - Golden State Blvd	35.0	9.0	20.0	9.0	7.3	1.9	7.1	1.9	10.8	2.3	10.5	2.3
					N	N	N	N	N	N	N	N
De Wolf Ave - Golden State Blvd	35.0	9.0	20.0	9.0	7.3	2.0	7.1	1.9	10.8	2.4	10.6	2.3
					N	N	N	N	N	N	N	N
Manning Ave - Golden State Blvd	35.0	9.0	20.0	9.0	7.3	1.8	7.2	1.8	10.9	2.1	10.6	2.1
					N	N	N	N	N	N	N	N
Valley Dr - Golden State Blvd	35.0	9.0	20.0	9.0	6.8	1.9	6.3	1.8	10.0	2.3	9.1	2.1
					N	N	N	N	N	N	N	N
Temperance Ave - Golden State Blvd	35.0	9.0	20.0	9.0	7.2	1.8	6.2	1.8	10.6	2.1	8.8	2.1
					N	N	N	N	N	N	N	N
South Ave - Golden State Blvd	35.0	9.0	20.0	9.0	6.2	1.8	6.1	1.8	8.9	2.1	8.8	2.1
					N	N	N	N	N	N	N	N
Vine St - Golden State Blvd	35.0	9.0	20.0	9.0	6.2	1.8	6.1	1.8	8.9	2.1	8.8	2.1
					N	N	N	N	N	N	N	N
Merced St - Golden State Blvd	35.0	9.0	20.0	9.0	6.2	1.8	6.1	1.7	8.8	2.0	8.7	2.0
					N	N	N	N	N	N	N	N
Adams Ave - Golden State Blvd	35.0	9.0	20.0	9.0	5.5	1.5	5.5	1.5	7.6	1.5	7.5	1.5
					N	N	N	N	N	N	N	N

The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at:

www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm

For the build and no build alternatives, the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is anticipated to be the same as the No Build Alternative based on the traffic study completed for the proposed project. The proposed improvements increase the efficiency of the roadway and may attract rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the Build scenario along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

Because the estimated VMT under the Build and No Build Alternatives are the same, it is expected there would be no appreciable difference in overall MSAT emissions among the alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

For information purposes only, an analysis was conducted for the six (6) air toxics that are identified as priority MSATs by EPA. The analysis was conducted using the CT-EMFAC Model, Version 2.6, in order to compare the MSAT emissions for each segment along Golden State Boulevard for the Existing and Future Year 2035 conditions. The traffic volumes per hour, average speeds, and percent of trucks during the PM peak hour were used as input data. The estimates show decrease in MSAT emissions from the existing year levels through future year levels. This decrease is prevalent for all of the priority MSATs, and is consistent with EPA's study described above. This is primarily due to the improved pollution emission performance of a modernizing fleet of all diesel-fueled vehicles, which is a trend that is anticipated to continue throughout the planning horizon.

Table 2-4 shows the estimated emissions of priority MSATs from the project roadway segment. As shown, a significant decrease in MSAT emissions can be expected along the roadway segment from the existing year levels through future year levels. Furthermore, Table 2-4 also shows that MSAT emissions are not expected to change with construction of the project improvements. This is due to the fact that traffic volumes are not expected to differ between the Build and No Build scenarios. However, it should be noted that project improvements at study intersections are expected to improve the efficiency of the roadway segment, thereby decreasing congestion and improving traffic flow. This would lead to a decrease in MSAT emissions by reducing vehicle idling and congestion at intersections.

Table 2-4
Estimate of Priority MSATs Emissions for Project Roadway Segment
(grams)

Golden State Blvd Segment	Existing						Future Year 2035					
	No Build & Build						No Build & Build					
	DPM	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde	DPM	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde
Adams Ave to Merced St	2.23	0.93	0.18	0.39	0.04	1.05	1.06	0.55	0.10	0.23	0.02	0.61
Merced St to Manning Ave	13.45	5.63	1.06	2.35	0.24	6.30	6.37	3.33	0.62	1.36	0.14	3.66
Manning Ave to Highland Ave	17.65	7.70	1.42	3.20	0.32	8.55	8.22	4.42	0.80	1.93	0.18	5.04
Highland Ave to Floral Ave	2.28	1.02	0.18	0.43	0.04	1.14	0.99	0.57	0.10	0.26	0.02	0.67
Floral Ave to Thompson Ave	4.02	1.80	0.33	0.76	0.07	2.02	1.79	1.03	0.18	0.47	0.04	1.21
Thompson Ave to 2nd St	3.94	1.76	0.32	0.74	0.07	1.97	1.66	0.95	0.17	0.44	0.04	1.12
2nd St to Mountain View Ave	10.81	4.36	0.84	1.85	1.89	4.98	4.94	2.67	0.52	1.02	0.12	2.82
Mountain View Ave to Sierra St	11.87	4.79	0.93	2.03	0.21	5.47	5.43	2.93	0.57	1.12	0.13	3.10
Sierra St to Draper St	1.49	0.69	0.12	0.30	0.03	0.78	0.64	0.37	0.06	0.18	0.01	0.45

Diesel Toxics

CARB identified particulate emissions from diesel-fueled engines (diesel PM) as toxic air contaminants (TACs) in August 1998. They have found that diesel particulate matter (PM) poses the greatest cancer risks among all identified air toxics. Diesel exhaust consists of a complex mixture of substances formed in the combustion processes of a diesel engine. The mixture includes compounds in a vapor phase and very fine particles with a carbon core coated by condensed organic compounds. As stated above, the estimated VMT under the Build and No Build Alternatives are the same. As a result it is expected there would be no appreciable difference in overall diesel emissions among the alternatives.

Naturally Occurring Asbestos (NOA)

Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Asbestos is commonly found in ultramafic rock and near fault zones. The amount of asbestos that is typically present in these rocks ranges from less than 1% up to approximately 25% and sometimes more. It is released from ultramafic rock when it is broken or crushed. This can happen when cars drive over unpaved roads or driveways, which are surfaced with these rocks, when land is graded for building purposes, or at quarrying operations. Asbestos is also released naturally through weathering and erosion. Once released from the rock, asbestos can become airborne and may stay in the air for long periods of time. Asbestos is hazardous and can cause lung disease and cancer dependent upon the level of exposure. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem.

The proposed projects construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally-occurring asbestos dust, the project can use some of the following control actions to reduce the release of airborne asbestos fibers:

- Water wetting of road surfaces
- Rinse vehicles and equipment
- Wet loads of excavated material, and
- Cover loads of excavated material

Green House Gas Emissions[1]

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are:

- Carbon Dioxide (CO_2): Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N_2O): Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases").

For the build and no build alternatives, the amount of Green House Gas emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The improvements along Golden State Boulevard will increase the efficiency of the roadway and may attract rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher Green House Gas emissions for the Build scenario along the highway corridor, along with a corresponding decrease in Green House Gas emissions along the parallel routes. The proposed project will not generate more trips to the existing transportation network, but rather cause some existing trips in the network to be rerouted and therefore creating a more efficient roadway network.

2.4.2 Transportation Conformity

The proposed Project is located in an area designated as nonattainment/extreme for the federal O_3 standards and attainment for the federal PM_{10}[2] and CO standards. Because PM_{10} and O_3 precursors are

1 Environmental Protection Agency (EPA) website: http://epa.gov/climatechange/emissions/index.html#ggo
2 The San Joaquin Valley was redesignated by the EPA to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan on September 25, 2008.

regional nonattainment pollutants, the proposed Project must be evaluated under the transportation conformity requirements. An affirmative regional conformity determination must be made before the proposed Project can proceed. The proposed Project is identified in the Regional Transportation Program (RTP) and Federal Transportation Improvement Program (FTIP). The project extends from American Avenue to the Tulare County Line as identified in the Adopted Amendment No. 1 to the 2011 RTP as project FRE111334. Project FRE111334 is described in the Fresno Council of Governments (Fresno COG's) Adopted Amendment No. 1 to the 2011 RTP, Financially Constrained Federal Transportation Improvements Program Projects, on page 6-28, as "Corridor Improvements from American to Tulare County Line (Measure C Project F in the Rural Regional Program)."

The FHWA and the FTA approved the air quality analysis and conformity finding for PM_{10} and O_3 for the 2011 RTP and FTIP on December 14, 2010. Therefore, the proposed project conforms to regional air quality plans. As such, no additional transportation conformity analysis is needed unless the scope of the project changes significantly.

2.4.3 Local Emissions (Hot Spots)

The Transportation Conformity Rules require a statement that:

> Federal projects must not cause or contribute to any new localized CO or PM_{10} violations or increase the frequency or severity of any existing CO or PM_{10} violations in CO and PM_{10} nonattainment and maintenance areas.

The air quality analyses of projects included in the RTP and FTIP do not include the analyses of local CO impacts; these must be addressed on a project level.

Carbon Monoxide

Procedures and guidelines for use by agencies that sponsor transportation projects in evaluating the potential local level CO impacts of a project are contained in Transportation Project-Level Carbon Monoxide Protocol ("the Protocol") (UCD ITS 1997). The Protocol provides a methodology for determining the level of analysis, if any, required on a project. The guidelines comply with the Clean Air Act, federal and state conformity rules, NEPA, and the California Environmental Quality Act (CEQA).

The San Joaquin Valley is a CO attainment area. In CO attainment areas, in accordance with the Protocol, only projects that are likely to worsen air quality necessitate further analysis. Projects that worsen air quality are defined as those that significantly increase the percentage of vehicles in cold start mode, those that significantly increase traffic volumes, and those that worsen traffic flow. These criteria are evaluated when comparing Build and No Build scenarios. The determination of project-level CO impacts was carried out according to the Local Analysis flowchart that was provided in the CO Protocol document.

Figure 1 of the Carbon Monoxide Protocol is the first place to begin in order to determine the conformity requirements for the proposed project. There are a series of questions that need to be answered in order to determine the projects requirements. They are:

Question 3.1.1: Is the Project exempt from all emissions analyses?

The proposed project description **does not** fit any of the projects listed in Table 1 of the Protocol and therefore must proceed to question 3.1.2

Question 3.1.2: Is the Project exempt from regional emissions analyses?

The proposed project description **does not** fit any of the projects listed in Table 2 of the Protocol and therefore must proceed to question 3.1.3

Question 3.1.3: Is the Project locally defined as regionally significant?

The SJVAPCD is currently in attainment for CO. Despite the success in achieving CO standards, an analysis of localized CO concentrations is warranted to ensure that standards are maintained. Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS).

The Traffic Study completed for the project shows that the study intersections located along the project roadway segment will operate at level of service "D" or better, except for several stop-controlled intersections that are not expected to meet signal warrants. As a result the impact of this project is not likely to affect sensitive receptors. The project is not expected to result in significant localized impacts, such as CO "Hot Spots", and is not expected to impact nearby sensitive receptors. Therefore, the proposed project **is not** locally defined as regionally significant and therefore must proceed to section 3.1.9.

Section 3.1.9: The next step is to examine the projects local CO impacts as outlined in Section 4.

Question 4.1.1: Is the Project located in a CO nonattainment area (Level 1 in Figure 3 of Protocol)?

According to District attainment status shown in Table 1-2, the proposed project is located in a CO attainment area and therefore must proceed to Section 4.1.2.

Question 4.1.2: Was the Project area redesignated as "attainment" after the 1990 Clean Air Act?

The Project area **was not** redesignated as "attainment' after the 1990 Clean Air Act. The Fresno Urbanized Area was redesignated in April 1996, along with 9 other federal planning areas, however the Project area is not considered part of the Fresno Urbanized Area. Proceed to Section 4.7 (Level 7 in Figure 3 of Protocol).

Question 4.7.1: Does the Project worsen air quality?

The proposed Project segment would accommodate approximately 1,118 AM Peak Hour trips and 1,557 PM Peak Hour trips per day within the project limits. The intersections along the proposed project segment are expected to operate at acceptable levels of service "D" or better, except for a few stop-controlled intersections that are not expected to meet signal warrants. As shown in the traffic study prepared for the

Project, the overall LOS will improve along Golden State Boulevard with implementation of the Project. As a result, implementation of the Project would improve traffic flow and decrease CO emissions and the percentage of vehicles operating in cold start mode. Therefore the project will not worsen air quality and the proposed Project is considered satisfactory and no further analysis is needed.

Based on the questions delineated in the flowchart as shown in Figure 2-1, it was determined that the projects CO impacts are considered less-than significant. Therefore, in accordance with the Protocol, the project is satisfactory for local CO impacts.

PM Hot-Spot Analysis

Method B from the EPA Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas was used for performing a qualitative $PM_{2.5}$ and PM_{10} hot-spot analysis.

The project-level $PM_{2.5}$ and PM_{10} hot-spot analysis relied on air quality data provided at the First Street and Drummond Street monitoring site. Air quality information provided by the CARB website shows that the First Street monitoring site had national violations and was above the annual and 24-hour for $PM_{2.5}$ standards and the Drummond Street monitoring site did have state violations and was above the annual and 24-hour for PM_{10} standards.

The traffic study completed for the project shows that the estimated Average Daily Traffic (ADT) along Golden State Boulevard in the year 2035 will be 15,570, which includes 5% of diesel truck traffic. The EPA's "Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas" states that a project of air quality concern is a project on a new highway or expressway with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic. The traffic study completed for the project also showed that there would not be an increase in traffic as a result of the project. The forecasted 2035 ADT volume of 15,570 is expected with or without the project. The proposed improvement project will increase the capacity of Golden State Boulevard, which will improve the traffic flow and vehicle speeds, and will not involve an increase in idling.

Based on the information provided above, future new or worsened $PM_{2.5}$ and PM_{10} violations of any standards are not anticipated, and therefore, the project meets the conformity hot-spot requirements in 40 CFR 93.116 and 93.123 for $PM_{2.5}$ and PM_{10}. EPA's final rule defines the project of air quality concern that requires a hot-spot analysis as:

- New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
- Projects affecting intersections that are at Level-of-Service (LOS) D, E, or F with a significant number of diesel vehicles related to the project;
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

- Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

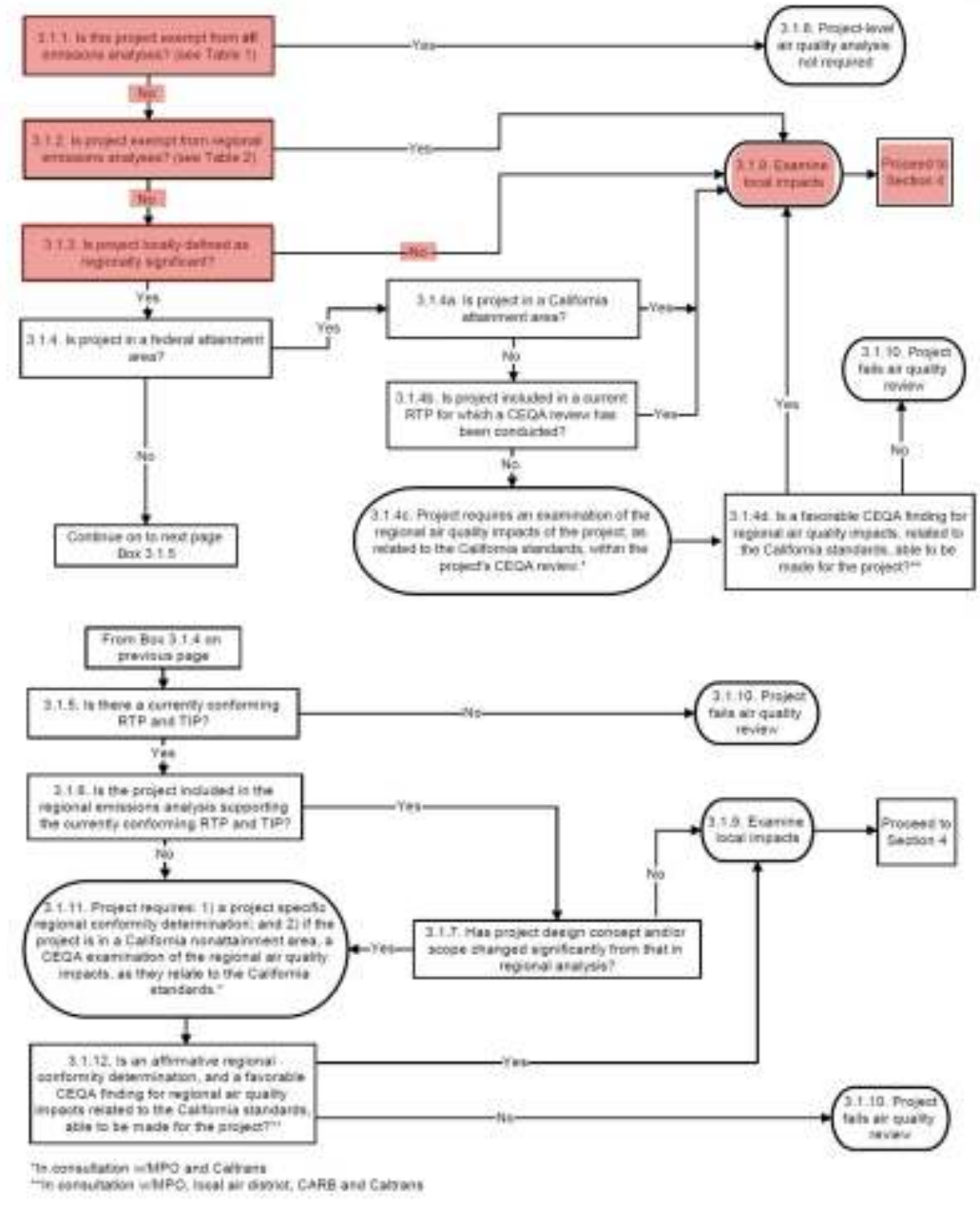

Figure 1 - Requirements for New Projects, from the Transportation Project-Level Carbon Monoxide Protocol (UCD-ITS-RR-97-21)

Figure 2-1a

Legend

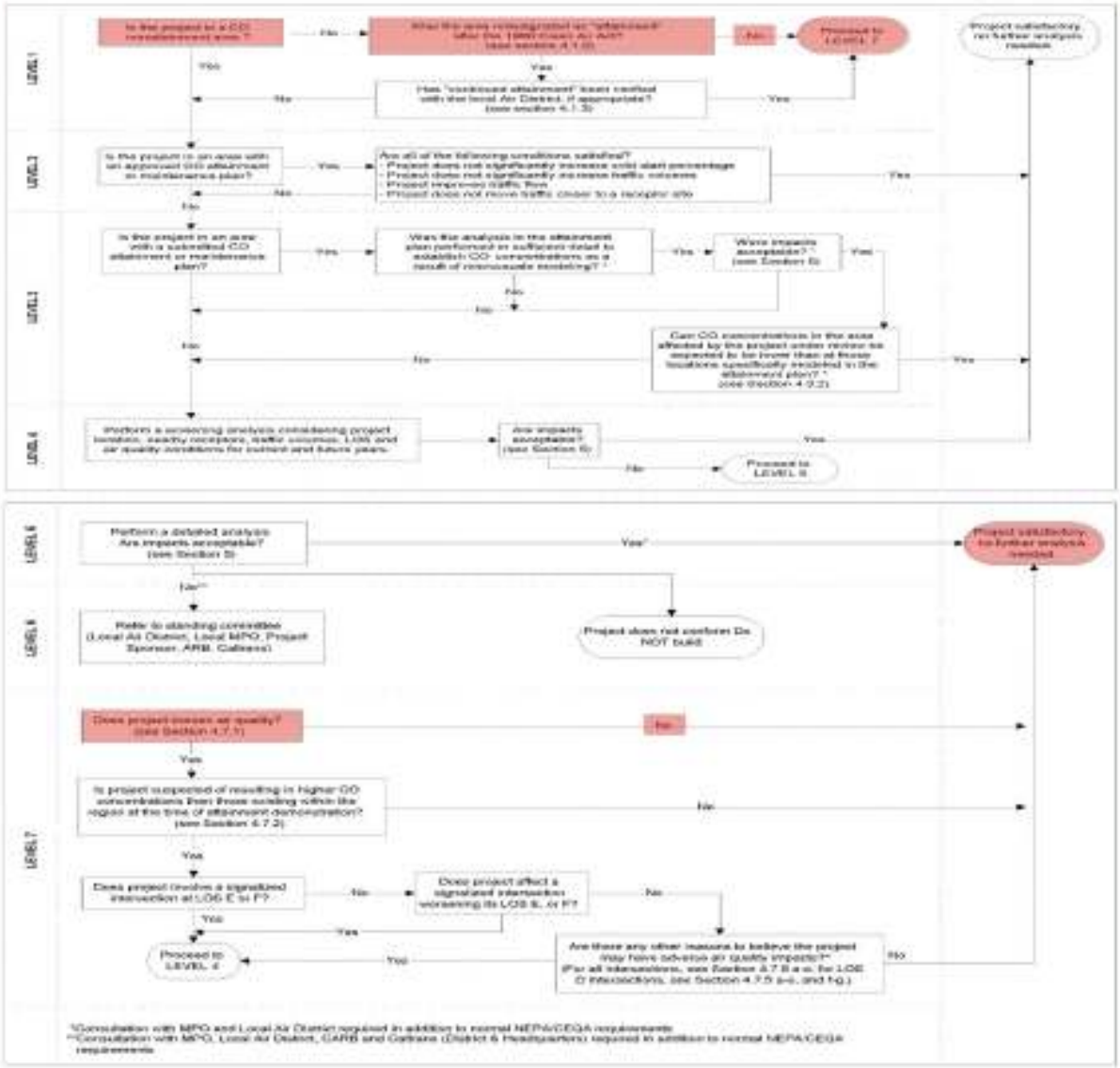

Figure 3 - Local CO Analysis, from the Transportation Project-Level Carbon Monoxide Protocol (UCD-ITS-RR-97-21)

Figure 2-1b

Legend

2.4.4 Level of Significance

This analysis does not identify any significant impacts to air quality that could result from implementation of the Project; therefore, no mitigation measures are required. It should also be noted that the proposed project will not create an increase in traffic based on findings of the traffic impact report; therefore, pollutant emissions would likely be the same without the project.