AIR QUALITY ANALYSIS

THE PRESERVE

LSA

April 2006

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LSA Project No. AGS434

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1.0 EXECUTIVE SUMMARY

LSA Associates, Inc. (LSA) was retained to prepare an air quality study for the proposed Atlas Tract/The Preserve project, located in the sphere of influence of the City of Stockton (City), California.

This air quality analysis provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The analysis provides data on existing air quality, evaluates potential air quality impacts associated with the proposed project, and identifies mitigation measures. Modeled air quality levels are based upon vehicle data and project trip generation provided by *Atlas Tract EIR Traffic Impact Analysis* (Fehr & Peers Transportation Consultants, January 2006) and peak-hour turn volumes generated for the proposed project combined with emissions factors from the California Air Resources Board (ARB) EMFAC2002 program.

Historical air quality data show that existing carbon monoxide (CO) levels for the project area and the general vicinity do not exceed either State or federal ambient air quality standards. The CO hot spot analysis was conducted with the CALINE4 model and peak-hour intersection vehicle turn volumes for the existing (2005), 2025, and 2035 condition. The results showed that the proposed project would not have any significant impact on local air quality for CO levels under the existing (2005) condition, and the CO concentrations under the 2025 and 2035 conditions would be below the State and federal standards.

Compliance with the San Joaquin Valley Air Pollution Control District (SJVAPCD) Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions to less than significant. Pollutant emissions from project operation would exceed the SJVAPCD criteria pollutant thresholds for both reactive organic gases (ROG) and nitrogen oxides (NO_X). Even after implementing all feasible mitigation measures, these emissions would result in significant impacts.

This evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts (SJVAPCD, adopted August 1998 and revised January 10, 2002).

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The project is located to the west of I-5 and south of Bear Creek within the City of Stockton jurisdictional boundaries. The project site is bounded on the north by Bear Creek, on the west and south by Mosher Slough, and on the east by the existing Twin Creeks Estates (approximately 1,200 feet west of Interstate 5 [I-5]). Local roadways from the project site will connect with Twin Creeks Estates via Otto Drive and Spanos Park West via Trinity Parkway. Figure 1 shows the project location. Figure 2 shows the project's site plan.

2.2 PROJECT DESCRIPTION

The project proposes a General Plan Amendment, Rezoning, Vesting Tentative Tract Map, Development Agreement, Master Development Plan, and Planned Residential Development Plan. Development of The Preserve will include the master planning of approximately 360 acres of residential development, consisting of single-family residential lots (approximately 1,156 units), cluster residential (approximately 355 units) and condominiums (approximately 258 units). In addition, 12.5 acres will be devoted to an easement park, 10.0 acres will be developed as a school site, and 1.25 acres will be developed as a fire station. The project site will also contain 14.59 acres of local park area and 54.18 acres of open space and levees. A 10.74-acre wetland feature is also planned within the power line easement that will serve to improve the water quality of project runoff and provide flood control storage. A separate levee improvement project, administered by Reclamation District 21-26, will surround the site on three sides, providing 100-year flood protection. The project will develop a trails system on top of the levees once the levee improvement project is complete.

Figure 1: Project Location Map

Figure 2: Site Plan

3.0 SETTING

3.1 EXISTING ENVIRONMENTAL SETTING

The project site is located within the City of Stockton, which is part of the San Joaquin Valley Air Basin (SJVAB) and is under the jurisdiction of the SJVAPCD. The air quality assessment for the proposed project includes estimating emissions associated with short-term construction and long-term operation of the proposed project.

A number of air quality modeling tools are available to assess the air quality impacts of projects. In addition, certain air districts, such as the SJVAPCD, have created guidelines and requirements to conduct air quality analyses. The methodologies provided by the SJVAPCD in its *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI, adopted August 20, 1998; revised January 10, 2002) and the Caltrans Transportation Project-Level Carbon Monoxide Protocol (December 1997) were adhered to in the assessment of air quality impacts for the proposed project.

3.1.1 Regional Air Quality

Both the State of California (State) and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As shown in Table A, these pollutants include ozone (O_3), CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), coarse particulate matter with a diameter of 10 microns or less (PM_{10}), fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to setting out primary and secondary AAQS, the State has established a set of episode criteria for O_3, CO, NO_2, SO_2, suspended particulate matter (PM_{10} and $PM_{2.5}$), and lead. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three. Table B lists the primary health effects and sources of common air pollutants. These health effects would not occur unless the standards are exceeded by a large margin or for a prolonged period of time. The State AAQS are more stringent than the federal AAQS.

The California Clean Air Act (CCAA) provides the air districts, such as SJVAPCD, with the authority to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. Examples of this would be the motor vehicles at an intersection, a mall, and on highways. SJVAPCD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the California Air Resources Board (ARB).

Table A: 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/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 µg/m^3)		0.08 ppm (157 µg/m^3)[8]		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	--
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	--	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.25 ppm (470 µg/m^3)		--		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	--	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	--	
	3-Hour	--		--	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		--	--	
Lead[9] (Pb)	30 Day Average	1.5 µg/m^3	Atomic Absorption	--	--	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m^3	Same as Primary Standard	
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/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Cloride[9]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: ARB, November 29, 2005.

Footnotes:

1 California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1 and 24 hour); nitrogen dioxide; suspended particulate matter - PM_{10}, $PM_{2.5}$, and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. 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 PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, 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 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 that 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 New federal eight-hour ozone and fine particulate matter standards were promulgated by EPA on July 18, 1997. Contact EPA for further clarification and current federal policies.

9 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.

Table B: Health Effects Summary of Some of the Common Pollutants Found in Air

Pollutant	Health Effects	Examples of Sources
Particulate Matter (PM_{10}: less than or equal to 10 microns)	• Increased respiratory disease • Lung damage • Premature death	• Cars and trucks, especially diesels • Fireplaces and wood stoves • Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	• Breathing difficulties • Lung damage	• Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon Monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen Dioxide (NO_2)	• Lung damage	• See carbon monoxide sources
Toxic Air Contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: ARB 2005.

Climate/Meteorology. Air pollution is directly related to a region's topographic features. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000–14,000 feet in elevation), the Coast Range in the west (averaging 3,000 feet in elevation), and the Tehachapi Mountains in the south (6,000–8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Strait, where the Sacramento-San Joaquin Delta empties into San Francisco Bay. Thus, the San Joaquin Valley (SJV) could be considered a "bowl" open only to the north.

Although marine air generally flows into the basin from the San Joaquin River delta, the region's topographic features restrict air movement through and out of the basin. The Coast Range hinders wind access into the SJV from the west, the Tehachapis prevent southerly passage of air, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak air flow, which becomes blocked vertically by high barometric pressure over the SJV. As a result, the SJVAB is susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500–3,000 feet).

During the summer, wind speed and direction data indicate that wind usually originates at the north end of the SJV, through Tehachapi Pass, into the SJVAB. During the winter, wind speed and direction data indicate that wind occasionally originates in the south end of the SJV and flows in a north-northwesterly direction. Also during the winter months, the SJV experiences light, variable winds of less than 10 mph. Low wind speeds combined with low inversion layers in the winter create a climate conducive to high CO and PM_{10} concentrations.

The monthly average maximum temperature recorded at this station in the past 57 years ranged from 54.1°F in January to 92.5°F in July, with an annual average maximum of 74.4°F. The monthly average minimum temperature recorded at this station in the past 57 years ranged from 36.5°F in January to 57.0°F in July, with an annual average minimum of 46.7°F. January is typically the coldest month, and July is typically the warmest month in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers along the coastal side of the mountains. Average monthly rainfall measured at the Stockton Station during that period varied from 3.25 inches in January to 0.48 inch or less between May and October, with an annual total of 16.09 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

Air Pollution Constituents and Attainment Status. The following describes the six criteria air pollutants and their attainment status in the Basin based on ARB's Area Designations (Activities and Maps) (http://www.arb.ca.gov/desig/desig.htm). ARB provided the Environmental Protection Agency (EPA) with California's recommendations for eight-hour ozone area designations on July 15, 2003. The recommendations and supporting data were an update to a report submitted to the EPA in July 2000. On December 3, 2003, the EPA published its proposed designations. EPA's proposal differs from the State's recommendations primarily on the appropriate boundaries for several nonattainment areas. ARB responded to the EPA's proposal on February 4, 2004. EPA finalized the eight-hour ozone designations in April 2004.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004 and issued the final designations on December 14, 2004.

Table C summarizes the attainment status in the Basin for the major criteria pollutants.

The SJVAPCD, together with ARB, maintains ambient air quality monitoring stations in the San Joaquin area. The attainment status in the San Joaquin area of the SJVAB is shown in Table C.

Table C: Attainment Status in the San Joaquin Area

Emissions	State	Federal
Ozone: 1-hour	Severe Nonattainment	No Federal Standard
Ozone: 8-hour	Not Established	Serious Nonattainment
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment/Unclassified
NO_2	Attainment	Attainment/Unclassified
SO_2	Attainment	Unclassified
All others	Attainment/Unclassified	Attainment/Unclassified

Source: ARB, April 2006.

Ozone. O_3 (smog) is formed by photochemical reactions between NO_X and reactive organic gases (ROG) rather than being directly emitted. O_3 is a pungent, colorless gas. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. The Basin is nonattainment for the federal 8-hour and State 1-hour zone standards. Effective June 15, 2005, the EPA revoked in full the federal 1-hour ozone ambient air quality standard, including associated designations and classifications, in all areas except 14 early action compact areas that do not include the SJVAB.

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The San Joaquin area is designated as attainment/unclassified for federal CO standards and attainment for State CO standards.

Nitrogen Oxides. NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire Basin is designated as attainment/unclassified under federal standards and attainment under State standards.

Sulfur Dioxide. SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The San Joaquin area is designated as unclassified for federal CO standards and attainment for State SO_2 standards.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire Basin is in attainment for federal and State lead standards.

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles, PM_{10}, derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle, $PM_{2.5}$, levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The entire Basin is a nonattainment area for federal and State PM_{10} and $PM_{2.5}$ standards.

Local Air Quality

The SJVAPCD, together with the ARB, maintains ambient air quality monitoring stations in the Basin. The air quality monitoring station closest to the site is the Stockton-Hazelton Station, and its air quality trends are representative of the ambient air quality in the project area. The pollutants monitored are CO, O_3, PM_{10}, $PM_{2.5}$, and NO_2.[1]

The ambient air quality data in Table D show that CO and NO_2 levels are well below relevant State and federal standards. $PM_{2.5}$ levels were consistently lower than standards. O_3 and PM_{10} levels occasionally exceeded State and federal standards during the last three years. Also shown in Table D, SO_2 levels are not monitored in the San Joaquin Basin.

[1] Air quality data, 2002–2005; EPA and ARB Web sites.

Table D: Ambient Air Quality at the Stockton-Hazelton Air Monitoring Station

Pollutant	Standard	2005	2004	2003
Carbon Monoxide (CO)				
Maximum 1 hr concentration (ppm)		3.2	3.7	5.8
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8 hr concentration (ppm)		2.9	2.5	3.1
Number of days exceeded:	State: ≥ 9.0 ppm	0	0	0
	Federal: ≥ 9 ppm	0	0	0
Ozone (O_3)				
Maximum 1 hr concentration (ppm)		0.099	0.096	0.104
Number of days exceeded:	State: > 0.09 ppm	3	1	3
Maximum 8 hr concentration (ppm)		0.086	0.080	0.088
Number of days exceeded:	State: > 0.07 ppm	ND	ND	ND
	Federal: > 0.08 ppm	1	0	1
Coarse Particulates (PM_{10})				
Maximum 24 hr concentration ($\mu g/m^3$)		79.0	60.0	88.0
Number of days exceeded:	State: > 50 $\mu g/m^3$	8	3	3
	Federal: > 150 $\mu g/m^3$	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		29.8	29.4	28.4
Exceeded for the year:	State: > 20 $\mu g/m^3$	Yes	Yes	Yes
	Federal: > 50 $\mu g/m^3$	No	No	No
Fine Particulates ($PM_{2.5}$)				
Maximum 24 hr concentration ($\mu g/m^3$)		44.0	41.0	45.0
Number of days exceeded:	Federal: > 65 $\mu g/m^3$	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		ND	13.2	13.6
Exceeded for the year:	State: > 12 $\mu g/m^3$	No	Yes	Yes
	Federal: > 15 $\mu g/m^3$	No	No	No
Nitrogen Dioxide (NO_2)				
Maximum 1 hr concentration (ppm)		0.087	0.079	0.088
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.017	0.017	0.018
Exceeded for the year:	Federal: > 0.053 ppm	No	No	No
Sulfur Dioxide (SO_2) (Bethel Island, Contra Costa)				
Maximum 1 hr concentration (ppm)		0.017	0.015	0.016
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Maximum 3 hr concentration (ppm)		0.010	0.009	0.013
Number of days exceeded:	Federal: > 0.5 ppm	0	0	0
Maximum 24 hr concentration (ppm)		0.006	0.006	0.008
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.002	0.002	0.002
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

Source: ARB and EPA Web sites.
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
ND = No data. There was insufficient (or no) data to determine the value.

3.2 REGULATORY SETTINGS

3.2.1 Federal Regulations/Standards

Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established national ambient air quality standards (NAAQS) for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas have additional restrictions as required by the EPA.

The San Joaquin Valley is a single air quality nonattainment area containing six metropolitan planning organizations (MPOs) and two rural transportation-planning agencies (TPAs) that conduct transportation planning activities within the Valley. The EPA has designated the Merced County Association of Governments (MCAG) as the MPO responsible for ensuring the area's compliance with the CAA.

The EPA established new national air quality standards for ground-level O_3 and $PM_{2.5}$ matter in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the CAA, as applied in setting the new public health standards for O_3 and particulate matter, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the U.S. Supreme Court upheld the way the government sets air quality standards under the CAA. The court unanimously rejected industry arguments that the EPA must consider financial cost as well as health benefits in writing standards. The justices also rejected arguments that the EPA took lawmaking power from Congress when it set tougher standards for O_3 and particulate matter in 1997. Nevertheless, the court threw out the EPA's policy for implementing new O_3 rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the eight-hour ground-level O_3 standard. The EPA issued the proposed rule implementing the eight-hour O_3 standard in April 2003. The EPA completed final eight-hour nonattainment status on April 15, 2004 and revoked the one-hour standard on June 15, 2005.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004. The EPA issued final designations on December 14, 2004.

3.2.2 State Regulations/Standards

The State of California began to set California ambient air quality standards (CAAQS) in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are also listed in Table A.

Originally, there were no attainment deadlines for CAAQS. However, the CCAA of 1988 provided a time frame and a planning structure to promote their attainment. The CCAA required nonattainment

areas in the State to prepare attainment plans and proposed to classify each such area on the basis of the submitted plan, as follows: moderate, if CAAQS attainment could not occur before December 31, 1994; serious, if CAAQS attainment could not occur before December 31, 1997; and severe, if CAAQS attainment could not be conclusively demonstrated at all.

The attainment plans require a minimum 5 percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented. The Merced County area of the SJVAB is currently classified as a nonattainment area for three criteria pollutants: ozone (O_3), suspended coarse particulates (PM_{10}), and suspended fine particulates ($PM_{2.5}$).

3.2.3 Regional Air Quality Planning Framework

The 1976 Lewis Air Quality Management Act established the SJVAPCD and other air districts throughout the State. The federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

The ARB coordinates and oversees both State and federal air pollution control programs in California. It oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for EPA approval. The ARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by the ARB to classify air basins as "attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. The ARB has divided the State into 15 air basins. Significant authority for air quality control within them has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

The California Clean Air Act (CCAA) provides the SJVAPCD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, a mall, and on highways. As a State agency, the ARB regulates motor vehicles and fuels for their emissions.

3.2.4 Regional Air Quality Management Plan (AQMP)

The SJVAPCD has adopted several attainment plans to achieve State and federal air quality standards to comply with CCAA and federal Clean Air Act Amendments (FCAAA) requirements. The SJVAPCD must continuously monitor its progress in implementing attainment plans and must periodically report to the ARB and the EPA. It must also periodically revise its attainment plans to reflect new conditions and requirements in accordance with schedules mandated by the CCAA and FCAAA.

The CCAA requires districts to adopt air quality attainment plans and to review and revise their plans to address deficiencies in interim measures of progress once every three years. The SJVAPCD's AQMP was adopted in 1991 and was most recently updated in 2001.

To meet FCAAA and CCAA requirements, the SJVAPCD has submitted numerous plans for attaining ozone, PM_{10}, and CO standards. The ozone plan projected attainment of the federal ozone standard by 1999, but did not achieve its goal. The SJVAPCD is in the process of preparing a draft ozone plan and has requested a redesignation of extreme nonattainment status for the federal one-hour ozone standard. The CO plan demonstrates that CO attainment has already been reached. The PM_{10} attainment plan sets forth the approach the SJVAPCD will use to attain the NAAQS for PM_{10}. The SJVAPCD Governing Board adopted a 2003 PM_{10} plan in June 2003 and forwarded it to the ARB. The ARB adopted the plan in June 2003 and forwarded it to the EPA. The EPA found the plan complete in August 2003 and finalized approval of the 2003 PM_{10} plan in April 2004.

4.0 METHODOLOGY

4.1 THRESHOLDS OF SIGNIFICANCE

A project would normally be considered to have a significant effect on air quality if the project would conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standards or contribute substantially to an existing or projected air quality violation; result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors); expose sensitive receptors to substantial pollutant concentrations; or create objectionable odors affecting a substantial number of people (Guidelines for the implementation of the California Environmental Quality Act, Appendix G, Public Resources Code §15000–15387).

In addition to the federal and State AAQS, as listed in Table A, there are annual emissions thresholds for operation of a proposed project in the SJVAB. The San Joaquin area of the SJVAB is administered by the SJVAPCD, and guidelines and emissions thresholds established by the SJVAPCD in its Guide for Assessing and Mitigating Air Quality Impacts (SJVAPCD, adopted August 1998 and revised January 10, 2002) are used in this analysis.

SJVAPCD also requires evaluation of cumulative air quality impacts. CEQA defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor, but collectively significant, projects. An adequate cumulative impact analysis considers a project over time and in conjunction with other related past, present, and reasonably foreseeable future projects whose impacts might compound or interrelate with those of the project being assessed.

4.1.1 Thresholds of Significance for Construction Emissions

A project's construction phase produces many types of emissions, but PM_{10} is the pollutant of greatest concern. Rather than provide a quantitative significance threshold for PM_{10}, the SJVAPCD has determined that a project's impacts will be less than significant if the project complies with certain mitigation measures. Accordingly, the SJVAPCD has determined that compliance with Regulation VIII for all sites and implementation of all other control measures indicated in Tables E and F below (as appropriate, depending on the size and location of the project site) will constitute sufficient mitigation to reduce PM_{10} impacts to a level considered less than significant.

The control measures listed in Table E (Regulation VIII Control Measures) are required for all construction sites by regulation. Table F lists additional measures that may be required due to sheer project size or proximity of the project to sensitive receptors. Table F also lists additional control measures (Optional Measures) that may be implemented if further emissions reductions are deemed necessary by the Lead Agency.

Table E: Regulation VIII Control Measures for Construction Emissions of PM_{10}

Regulation VIII Control Measures. The following controls are required to be implemented at all construction sites. (Includes changes effective May 15, 2002)
• 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 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, trackouts shall be immediately removed when they extend 50 or more feet from the site, and at the end of each workday.
• Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

Source: SJVAPCD, January 2002.

Table F: Enhanced and Additional Control Measures for Construction Emissions of PM_{10}

Enhanced Control Measures. The following measures should be implemented at construction sites when required to mitigate significant PM_{10} impacts (note, these measures are to be implemented in addition to Regulation VIII requirements):
• 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 Control Measures. The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or which for other reason warrant additional emissions reductions:
• Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site; • Install wind breaks at windward side(s) of construction areas; • Suspend excavation and grading activity when winds exceed 20 mph; and* • Limit area subject to excavation, grading, and other construction activity at any one time. *Regardless of windspeed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.

Source: SJVAPCD, January 2002.

The SJVAPCD recognizes that the measures listed in Tables E and F focus on PM_{10} emissions from fugitive dust sources. It indicates that Lead Agencies seeking to reduce emissions from construction equipment exhaust should also consider the mitigation measures listed in Table G. The SJVAPCD recognizes that these measures are difficult to implement due to poor availability of alternative fueled equipment and the challenge of monitoring these activities.

4.1.2 Thresholds of Significance for Operational

The term "project operations" refers to the full range of activities that can or may generate pollutant emissions when the development is functioning in its intended use. Ozone precursor emissions from project operations should be compared to the following thresholds:

- Ozone Precursor Thresholds
    - 10 tons per year of ROG
    - 10 tons per year of NO_X

Projects with operation related emissions that exceed any of the above listed emissions thresholds are considered significant.

- Local Carbon Monoxide Concentrations Thresholds
    - California State one hour CO standard of 20.0 ppm
    - California State eight hour CO standard of 9.0 ppm

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have significant impacts if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a State or federal standard, project emissions are considered significant if they increase one-hour CO concentrations by 1.0 part per million (ppm) or more or eight-hour CO concentrations by 0.45 ppm or more. There are no local emission concentration standards for other criteria pollutants.

Table G: Construction Equipment Mitigation Measures

Emissions Source	Mitigation Measures
Heavy duty equipment (scrapers, graders, trenchers, earth movers, etc.)	• Use of alternative fueled equipment or catalyst equipped diesel construction equipment. • Minimize idling time (e.g., 10 minutes 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 • Implement activity management (e.g., rescheduling activities to reduce short-term impacts)

Source: SJVAPCD, January 2002.

Projects that would result in CO concentrations exceeding the above standards are considered significant.

- Odor Impacts Threshold

Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact.

- Hazardous Air Pollutants (HAPs)

The definition of substantial pollutant concentrations varies for pollutants without defined significance standards or air contaminants not covered by the standard criteria cited above. With regard to hazardous air pollutants, also known as toxic air contaminants (TAC), "substantial" is taken to mean that the individual cancer risk exceeds a threshold considered to be a prudent risk management level. If best-available control technology for toxics (T-BACT) has been applied, the

individual cancer risk to the maximum exposed individual (MEI) must not exceed 10 in 1 million in order for an impact to be determined not to be significant.

Airborne impacts are also derived from materials considered to be a nuisance for which there may not be associated standards. Odors or the deposition of large-diameter dust particles outside of the PM_{10} size range would be included in this category. It is considered a significant impact for odors and large-diameter dust particles if the SJVAPCD Nuisance Rule (#4102) would be potentially violated.

The following limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard indices (HI) from project emissions of TACs have been established for the Basin:

- **MICR and Cancer Burden.** MICR is the estimated probability of a potential MEI contracting cancer as a result of exposure to TACs over a period of 70 years for residential and 46 years for worker receptor locations. The MICR calculations include multipathway consideration, when applicable. Cancer Burden is the estimated increase in the occurrence of cancer cases in a population subject to a MICR of greater than or equal to one in one million (1.0×10^{-6}) resulting from exposure to TACs.
- The cumulative increase in MICR that is the sum of the calculated MICR values for all TACs emitted from the project will not result in any of the following:
    - An increased MICR greater than 10 in 1 million (1.0×10^{-5}) at any receptor location (assumes the project will be constructed with T-BACT)
    - A cancer burden greater than 0.5
- **Chronic HI.** This is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multipathway considerations, when applicable.
- The cumulative increase in total chronic HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.
- **Acute HI.** This is the ratio of the estimated maximum one-hour concentration of a TAC for a potential MEI to its acute reference exposure level.
- The cumulative increase in total acute HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.
- Accidental Release/Acutely Hazardous Air Emissions

The determination of significance for potential impacts from accidental release of acutely hazardous air pollutants should be made in consultation with local administering agency of the Risk Management Preventive Program. The County health department, Office of Emergency Services, or local fire department is usually the administering agency.

4.1.3 Evaluating Cumulative Air Quality Impacts

The SJVAPCD recommends the following procedures to evaluate potential cumulative air quality impacts:

- Evaluate cumulative ozone impacts
- Evaluate cumulative PM_{10} impacts
- Evaluate cumulative CO impacts
- Evaluate cumulative HAP impacts

5.0 IMPACTS

5.1 CONSTRUCTION IMPACTS

Air pollutant emissions associated with the project would occur over the short-term from construction activities, such as fugitive dust from site preparation and grading and emissions from equipment exhaust. The SJVAPCD's approach to CEQA analyses of PM_{10} impacts is to require implementation of effective and comprehensive control measures rather than detailed quantification of emissions. Because construction activities will incorporate all feasible mitigation measures, project-related construction emissions will be less than significant. Compliance with Regulation VIII and implementation of applicable control measures, indicated in Tables E and F, will reduce PM_{10} impacts to a level considered less than significant. No additional measures are recommended.

5.1.1 Odors

Heavy-duty equipment in the project area during construction would emit odors. However, the construction activity would be short-term and would cease to occur after individual construction is completed. No other sources of objectionable odors have been identified for the proposed project. No mitigation measures are recommended.

5.2 LONG-TERM PROJECT RELATED EMISSIONS IMPACTS

Long-term air emissions impacts are those associated with project-related stationary and mobile sources. The proposed project consists of residences and a school. Stationary source emissions from this land use would come from its consumption of natural gas, landscaping, and consumer products. The traffic study prepared for this project (Fehr & Peers Transportation Consultants, January 2006) predicted vehicular trips associated with the proposed project that would contribute to the congestion at intersections and along roadway segments in the project vicinity. As indicated in the traffic analysis, the proposed project would generate a total of 14,300 additional daily vehicular trips. Using the ARB model URBEMIS2002 (version 8.7.0), emissions associated with project-related vehicular trips were calculated and are included in Table H. As shown, the project's additional emissions would exceed the SJVAPCD annual emissions thresholds. Therefore, the proposed project's impact is significant, and mitigation measures are required. The URBEMIS2002 (version 8.7.0) model run is included in Appendix A.

Table H: Project Operational Emissions

Source	Pollutants (tons/year)	
	ROG	**NO_X**
Proposed Emissions		
Stationary sources:	16.91	4.14
Vehicular traffic:	33.91	46.59
Proposed Subtotal	**50.83**	**50.73**
SJVUAPCD Threshold	**10**	**10**
Exceeds Threshold?	**Yes**	**Yes**
Significant Impact?	**Yes**	**Yes**

Source: LSA Associates, Inc., April 2006.

Despite great progress in air quality improvement, approximately 146 million people nationwide lived in counties with pollution levels above the NAAQS in 2002. Out of the 230 nonattainment areas identified during the 1990 Clean Air Act Amendment designation process, 124 areas remain as nonattainment today. In these nonattainment areas, however, the severity of air pollution episodes has decreased.

As shown in Table B, long-term exposure to elevated levels of criteria pollutants could result in potential health effects. However, as stated in the Thresholds of Significance, emissions thresholds established by the air district are used to manage total regional emissions within an air basin based on the air basin attainment status for criteria pollutants. These emissions thresholds were established for individual projects that would contribute to regional emissions and pollutant concentrations that may affect or delay the projected attainment target year for certain criteria pollutants.

Due to the conservative nature of the thresholds and the basinwide context of an individual project's emissions, there is no direct correlation of a single project to localized health effects. One individual project having emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This is especially true when the criteria pollutants exceeding thresholds are those with regional effects, such as ozone precursors like ROG and NO_X.

5.3 LONG-TERM MICROSCALE (CO HOT SPOT) ANALYSIS

Vehicular trips associated with the proposed project would contribute to congestion at intersections and along roadway segments in the project vicinity. Localized air quality effects would occur when emissions from vehicular traffic increase in local areas as a result of the proposed project. The primary mobile source pollutant of local concern is CO, which is a direct function of vehicle idling time and, thus, traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels affecting local sensitive receptors (residents, school children, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentration, modeling is recommended to determine a project's effect on local CO levels.

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing CO concentrations in the immediate project vicinity are not available. Per EPA guidelines, the highest of the second-highest CO concentrations measured within the past three years were used as the background levels. At the Stockton-Hazelton Monitoring Station, the background concentrations are 4.9 ppm for the one-hour period and 3.0 ppm for the eight-hour period.

The highest CO concentrations would occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis. Based on the same traffic impact analysis used for the long-term regional analysis above, CO hot spot analyses were conducted for existing and cumulative conditions. The impact on local carbon monoxide levels was assessed with the ARB-approved CALINE4 air quality model, which allows microscale CO concentrations to be estimated along roadway corridors or near intersections. This model is designed to identify localized concentrations of carbon monoxide, often termed "hot spots." A brief discussion of input to the CALINE4 model follows. The analysis was performed for the worst-case wind angle and wind speed condition and is based upon the following assumptions:

- Selected modeling locations represent the intersections closest to the project site, with the highest project-related vehicle turning movements and the worst level of service deterioration.
- Twenty receptor locations with the possibility of extended outdoor exposure from 7 to 24 meters (approximately 23 to 79 feet) of the roadway centerline near intersections were modeled to determine CO concentrations.
- The calculations assume a meteorological condition of almost no wind (0.5 m/second), a suburban topographical condition between the source and receptor, and a mixing height of 1,000 m, representing a worst-case scenario for CO concentrations.
- CO concentrations are calculated for the one-hour averaging period and then compared to the one-hour standards. CO eight-hour averages are extrapolated using a persistence factor of 0.7 to predict the eight-hour concentration in an attainment area.
- Concentrations are given in parts per million (ppm) at each of the receptor locations.

- The "at-grade" link option with speed adjusted based on average cruise speed and number of vehicles per lane per hour was used rather than the "intersection" link selection in the CALINE4 model (Caltrans has suggested that the "intersection" link should not be used due to an inappropriate algorithm based on outdated vehicle distribution). Emissions factors from the EMFAC2002 model were used for the vehicle fleet.
- The highest level of the second-highest one-hour and eight-hour CO concentrations monitored at the Stockton-Hazelton Monitoring Station in the past three years were used as background concentrations (4.9 ppm for the one-hour CO and 3.0 ppm for the eight-hour CO). The background concentrations are then added to the model results for future with and without the proposed project conditions.

In order to determine the proposed project's impact on the local air quality, the CO levels were modeled at nine intersections in the project area for the existing and future scenarios. The project will have the most affect on traffic volumes at these intersections. The CALINE4 model printouts are included in Appendix B.

Table I compares the CO concentrations from the existing 2005 traffic and all approved operational projects in the vicinity of this project with CO concentrations from additional traffic related to the proposed project. Table J compares CO concentrations without and with the project in 2025. Table K compares CO concentrations without and with the project in 2035.

As shown in Table I, the intersection of Trinity Parkway and Eight Mile Road exceeds the eight-hour CO concentration under the existing (2005) plus approved project with and without project. However, as CO concentrations would decrease with the implementation of the project due to roadway improvements on Eight Mile Road, the proposed project would not have a significant impact. Also, as shown in Tables J and K, none of the nine intersections analyzed would have a one-hour CO concentration exceeding the State standard of 20 ppm under the 2025 and 2035 conditions. The eight-hour CO concentration at these intersections would also be below the State standard of 9.0 ppm. Therefore, the proposed project will not have a significant impact on local air quality for CO, and no mitigation measures would be required.

5.4 LONG-TERM PROJECT-RELATED HEALTH RISK ANALYSIS

5.4.1 Hazardous Air Pollutants (HAPs)

The proposed project is not expected to generate any HAPs that would result in significant air quality impacts. Compliance with the City and SJVAPCD rules and regulations will ensure that no significant HAPs impacts will occur. No mitigation measures are recommended.

5.4.2 Accidental Release/Acutely Hazardous Air Emissions

The proposed project is not expected to result in any accidental release of acutely hazardous air emissions. Compliance with the City and SJVAPCD rules and regulations will ensure that no significant accidental release/acutely hazardous air emissions impacts will occur. No mitigation measures are recommended.

Table I: Existing (2005) Plus Approved Project without and with CO Concentrations[1]

Intersection	Receptor Distance to Road Centerline (Meters)	Project-Related Increase 1 Hr/8 Hr (ppm)	Without/with Project One-Hour CO Concentration (ppm)	Without/with Project Eight-Hour CO Concentration (ppm)	Exceeds State Standards?[2]	
					1 Hr	8 Hr
Regatta Drive and Eight Mile Road	14 / 14	0.0 / 0.0	7.5 / 7.5	4.8 / 4.8	No	No
	14 / 14	0.0 / 0.0	7.1 / 7.1	4.5 / 4.5	No	No
	10 / 10	0.0 / 0.0	7.0 / 7.0	4.5 / 4.5	No	No
	7 / 7	0.0 / 0.0	6.9 / 6.9	4.4 / 4.4	No	No
Trinity Parkway and Eight Mile Road	15 / 17	-1.1 / -0.7	15.1 / 14.0	10.1 / 9.4	No	Yes
	15 / 17	-0.5 / -0.3	13.8 / 13.3	9.2 / 8.9	No	Yes
	10 / 14	-1.0 / -0.7	13.3 / 12.3	8.9 / 8.2	No	No
	7 / 7	-0.4 / -0.3	12.2 / 11.8	8.1 / 7.8	No	No
Trinity Parkway and McAuliffe Road	14 / 14	0.3 / 0.2	8.9 / 9.2	5.8 / 6.0	No	No
	14 / 14	0.2 / 0.2	8.5 / 8.7	5.5 / 5.7	No	No
	14 / 14	0.4 / 0.3	8.0 / 8.4	5.2 / 5.5	No	No
	10 / 10	0.3 / 0.2	7.9 / 8.2	5.1 / 5.3	No	No
Askland Drive/ Otto Drive	17 / 17	1.6 / 1.2	6.8 / 8.4	4.3 / 5.5	No	No
	17 / 17	1.1 / 0.8	6.8 / 7.9	4.3 / 5.1	No	No
	17 / 17	1.4 / 0.9	6.4 / 7.8	4.1 / 5.0	No	No
	14 / 14	1.4 / 1.0	6.3 / 7.7	4.0 / 5.0	No	No
Mariners Drive/ Otto Drive	12 / 12	2.5 / 1.8	8.2 / 10.7	5.3 / 7.1	No	No
	12 / 12	1.9 / 1.3	8.0 / 9.9	5.2 / 6.5	No	No
	8 / 8	1.8 / 1.3	7.5 / 9.3	4.8 / 6.1	No	No
	7 / 7	1.8 / 1.2	7.3 / 9.1	4.7 / 5.9	No	No
Mariners Drive/ Whitewater Lane	12 / 12	1.7 / 1.2	7.2 / 8.9	4.6 / 5.8	No	No
	12 / 12	1.5 / 1.1	7.1 / 8.6	4.5 / 5.6	No	No
	12 / 12	1.6 / 1.1	7.0 / 8.6	4.5 / 5.6	No	No
	8 / 8	1.6 / 1.2	6.8 / 8.4	4.3 / 5.5	No	No
Mariners Drive/ Blackswain Place	12 / 12	1.7 / 1.2	7.2 / 8.9	4.6 / 5.8	No	No
	8 / 8	1.5 / 1.1	7.1 / 8.6	4.5 / 5.6	No	No
	8 / 8	1.5 / 1.1	7.1 / 8.6	4.5 / 5.6	No	No
	8 / 8	1.6 / 1.1	6.7 / 8.3	4.3 / 5.4	No	No
Mariners Drive/ Sturgeon Road	12 / 12	1.7 / 1.2	7.3 / 9.0	4.7 / 5.9	No	No
	12 / 12	1.5 / 1.1	7.2 / 8.7	4.6 / 5.7	No	No
	12 / 12	1.5 / 1.1	7.1 / 8.6	4.5 / 5.6	No	No
	8 / 8	1.5 / 1.1	6.8 / 8.3	4.3 / 5.4	No	No
Mariners Drive/ Hammer Lane	20 / 20	1.7 / 1.2	9.7 / 11.4	6.4 / 7.6	No	No
	14 / 14	1.7 / 1.2	9.1 / 10.8	5.9 / 7.1	No	No
	14 / 14	1.2 / 0.8	8.9 / 10.1	5.8 / 6.6	No	No
	8 / 8	1.3 / 0.9	8.7 / 10.0	5.7 / 6.6	No	No

Source: LSA Associates, Inc., April 2006.

1 Includes ambient one-hour concentration of 4.9 ppm and ambient eight-hour concentration of 3.0 ppm; measured at the Hazelton-Hd, Stockton, CA, AQ Station (San Joaquin County).

2 The State one-hour standard is 20 ppm, and the eight-hour standard is 9 ppm.

Table J: 2025 without and with Project CO Concentrations[1]

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1 Hr /8 Hr (ppm)	Without/with Project One-Hour CO Concentration (ppm)	Without/with Project Eight-Hour CO Concentration (ppm)	Exceeds State Standards?[2]	
					1 Hr	8 Hr
Regatta Drive and Eight Mile Road	21 / 21	0.0 / 0.0	5.2 / 5.2	3.2 / 3.2	No	No
	21 / 21	0.0 / 0.0	5.2 / 5.2	3.2 / 3.2	No	No
	21 / 21	0.0 / 0.0	5.2 / 5.2	3.2 / 3.2	No	No
	15 / 15	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
Trinity Parkway and Eight Mile Road	17 / 17	0.0 / 0.0	6.0 / 6.0	3.8 / 3.8	No	No
	17 / 17	0.0 / 0.0	6.0 / 6.0	3.8 / 3.8	No	No
	17 / 17	0.0 / 0.0	6.0 / 6.0	3.8 / 3.8	No	No
	17 / 17	0.1 / 0.1	5.8 / 5.9	3.6 / 3.7	No	No
Trinity Parkway/ McAuliffe Road	14 / 14	0.0 / 0.0	5.7 / 5.7	3.6 / 3.6	No	No
	14 / 12	0.1 / 0.1	5.5 / 5.6	3.4 / 3.5	No	No
	12 / 10	0.1 / 0.1	5.5 / 5.6	3.4 / 3.5	No	No
	10 / 10	0.1 / 0.1	5.5 / 5.6	3.4 / 3.5	No	No
Askland Drive/ Otto Drive	17 / 17	0.2 / 0.1	5.4 / 5.6	3.4 / 3.5	No	No
	17 / 17	0.3 / 0.2	5.3 / 5.6	3.3 / 3.5	No	No
	17 / 17	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
	14 / 14	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
Mariners Drive/ Otto Drive	17 / 17	0.2 / 0.1	5.3 / 5.5	3.3 / 3.4	No	No
	16 / 16	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
	14 / 14	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
	14 / 14	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
Mariners Drive/ Whitewater Lane	12 / 12	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	12 / 12	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
Mariners Drive/ Blackswain Place	12 / 12	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	12 / 12	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
Mariners Drive/ Sturgeon Road	12 / 12	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	12 / 12	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.1 / 5.1	3.1 / 3.1	No	No
Mariners Drive/ Hammer Lane	21 / 21	0.1 / 0.0	5.4 / 5.5	3.4 / 3.4	No	No
	20 / 21	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
	14 / 20	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
	14 / 14	0.0 / 0.0	5.3 / 5.3	3.3 / 3.3	No	No

Source: LSA Associates, Inc., April 2006.

[1] Includes ambient one-hour concentration of 4.9 ppm and ambient eight-hour concentration of 3.0 ppm; measured at the Hazelton-Hd, Stockton, CA, AQ Station (San Joaquin County).

[2] The State one-hour standard is 20 ppm, and the eight-hour standard is 9 ppm.

Table K: 2035 without and with Project CO Concentrations[1]

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1 Hr /8 Hr (ppm)	Without/with Project One-Hour CO Concentration (ppm)	Without/with Project Eight-Hour CO Concentration (ppm)	Exceeds State Standards?[2]	
					1 Hr	8 Hr
Regatta Drive and Eight Mile Road	21 / 21	0.0 / 0.0	5.4 / 5.4	3.4 / 3.4	No	No
	21 / 21	0.0 / 0.0	5.4 / 5.4	3.4 / 3.4	No	No
	21 / 21	0.0 / 0.0	5.4 / 5.4	3.4 / 3.4	No	No
	16 / 16	0.0 / 0.0	5.3 / 5.3	3.3 / 3.3	No	No
Trinity Parkway and Eight Mile Road	24 / 24	0.0 / 0.0	5.8 / 5.8	3.6 / 3.6	No	No
	24 / 24	0.0 / 0.0	5.7 / 5.7	3.6 / 3.6	No	No
	17 / 17	0.1 / 0.1	5.6 / 5.7	3.5 / 3.6	No	No
	17 / 17	0.0 / 0.0	5.6 / 5.6	3.5 / 3.5	No	No
Trinity Parkway/ McAuliffe Road	14 / 14	0.0 / 0.0	5.4 / 5.4	3.4 / 3.4	No	No
	14 / 12	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
	12 / 10	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
	10 / 10	0.1 / 0.1	5.3 / 5.4	3.3 / 3.4	No	No
Askland Drive/ Otto Drive	21 / 21	0.1 / 0.1	5.5 / 5.6	3.4 / 3.5	No	No
	21 / 21	0.2 / 0.1	5.4 / 5.6	3.4 / 3.5	No	No
	19 / 19	0.1 / 0.0	5.4 / 5.5	3.4 / 3.4	No	No
	17 / 15	0.1 / 0.0	5.4 / 5.5	3.4 / 3.4	No	No
Mariners Drive/ Otto Drive	14 / 16	0.1 / 0.1	5.5 / 5.6	3.4 / 3.5	No	No
	14 / 14	0.1 / 0.0	5.4 / 5.5	3.4 / 3.4	No	No
	14 / 14	0.1 / 0.0	5.4 / 5.5	3.4 / 3.4	No	No
	14 / 14	0.0 / 0.0	5.4 / 5.4	3.4 / 3.4	No	No
Mariners Drive/ Whitewater Lane	12 / 12	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
	12 / 12	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
Mariners Drive/ Blackswain Place	12 / 12	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
	12 / 12	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
Mariners Drive/ Sturgeon Road	12 / 12	0.1 / 0.0	5.0 / 5.1	3.1 / 3.1	No	No
	12 / 12	0.1 / 0.0	5.0 / 5.1	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
	8 / 8	0.0 / 0.0	5.0 / 5.0	3.1 / 3.1	No	No
Mariners Drive/ Hammer Lane	24 / 24	0.0 / 0.0	5.6 / 5.6	3.5 / 3.5	No	No
	24 / 24	0.0 / 0.0	5.5 / 5.5	3.4 / 3.4	No	No
	22 / 22	0.0 / 0.0	5.5 / 5.5	3.4 / 3.4	No	No
	16 / 16	0.0 / 0.0	5.4 / 5.4	3.4 / 3.4	No	No

Source: LSA Associates, Inc., April 2006.

[1] Includes ambient one-hour concentration of 4.9 ppm and ambient eight-hour concentration of 3.0 ppm; measured at the Hazelton-Hd, Stockton, CA, AQ Station (San Joaquin County).

[2] The State one-hour standard is 20 ppm, and the eight-hour standard is 9 ppm.

5.5 AIR QUALITY MANAGEMENT PLAN CONSISTENCY

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the AQMP in the following ways. It fulfills the CEQA goal of fully informing local agency decision makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information, assuring local decision makers that they are making real contributions to clean air goals defined in the most current AQMP.

An AQMP describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. Currently, the project region is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$. The AQMP's main purpose is to bring the area into compliance with the requirements of federal and State air quality standards. Implementation of the proposed project would contribute to the delay of the attainment in the region. However, the proposed project has been considered in preparation of the General Plan and, therefore, is consistent with the AQMP.

As shown above, the proposed project will not significantly contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the project. Hence, the proposed project is considered to be consistent with the General Plans of the City of Stockton and the County of San Joaquin and is therefore consistent with the AQMP.

5.6 MITIGATION MEASURES

5.6.1 Construction Impacts

AIR-1: The SJVAPCD Regulation VIII, Control Measures for Construction Emissions of PM_{10} (as shown in Tables F and G), are required to be implemented at all construction sites. Compliance with the above Regulation VIII requirements would lessen the fugitive dust impact during construction to a level considered less than significant.

AIR-2: Short-Term, Construction Equipment Exhaust-Related Impacts

A. The project contractors are required to implement all feasible measures identified in Tables F, G, and H.

AIR-3: Asphalt paving conducted on site shall adhere to rules and regulations stated in the SJVAPCD Rulebook. Compliance with Rule 4641, Asphalt Paving, would lessen impacts from asphalt paving to a level considered less than significant.

The above mitigation measures will reduce construction impacts to the extent feasible.

5.6.2 Operational Impacts

AIR-4: Project Operations-Related Impacts

The project would result in total (vehicular and stationary) daily emissions exceeding the daily emissions thresholds established by the SJVAPCD. No feasible mitigation measures would reduce the impacts to less than significant. However, the proposed project will be required to comply with Title 24 of the California Code of Regulations established by the Energy Commission regarding energy conservation standards. The project applicant shall incorporate the following in building plans:

A. Solar or low-emission water heaters shall be used with combined space/water heater units.
B. Double-paned glass or window treatment for energy conservation shall be used in all exterior windows.
C. Buildings shall be oriented north/south where feasible.

6.0 REFERENCES

California Air Resources Board. Web site: http://www.arb.ca.gov.

Fehr & Peers Transportation Consultants. *Atlas Tract EIR Traffic Impact Analysis*. January 2006.

San Joaquin Valley Air Pollution Control District. Air Quality Attainment Plan. 2001.

San Joaquin Valley Air Pollution Control District. *Guide for Assessing and Mitigating the Air Quality Impacts.* Adopted August 20, 1998, and revised January 10, 2002.

Western Regional Climate Center. Web Site: http://www.wrcc.dri.edu.

APPENDIX A

URBEMIS2002 MODEL RUN PRINTOUTS

APPENDIX B

CALINE4 MODEL PRINTOUTS

APPENDIX C

EMFAC2002 MODEL PRINTOUTS