APPENDIX C

Mariposa Lakes Specific Plan:
Air Quality Report – Version 3

MARIPOSA LAKES SPECIFIC PLAN:

AIR QUALITY REPORT – VERSION 3

Prepared for:

InSite Environmental
Stockton, CA

MARIPOSA LAKES SPECIFIC PLAN: AIR QUALITY REPORT – VERSION 3

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0 EXECUTIVE SUMMARY

0.1 Purpose of Study

This Air Quality Study presents environmental setting information relevant to the consideration of the potential air quality impacts of the proposed Mariposa Lakes Specific Plan (MLSP). It then discusses those impacts and recommends mitigation measures for significant impacts to the extent that feasible and effective measures are available. It does not address odor impacts or potential hazardous air pollutant impacts associated with the nearby BNSF Railways Intermodal Facility; those impacts have been addressed by Air Permitting Specialists in separate reports.

0.2 Environmental Setting

The proposed project site is located in the San Joaquin Valley Air Basin (SJVAB), which continues to experience ozone and particulate matter concentrations that exceed relevant health-based standards. It is located north of a railroad intermodal facility; the State of California has recently directed substantial attention to the potential health risks from particulate matter generated by the diesel exhaust of locomotives operating within and through such yards.

0.3 Impacts

This study finds potentially significant impacts related to project-generated criteria air pollutant emissions, and to hazardous air pollutant impacts associated with potential on-site locomotive activities under worst-case exposure circumstances.

0.4 Mitigation Measures

Recommended mitigation for criteria air pollutant emission impacts include a suite of measures included in the project's *Air Quality Mitigation Program*, as well enhanced control of fugitive dust emissions during construction. For hazardous air pollutant impacts, this report recommends follow-up modeling as appropriate before approval of any tentative map including rail-served industrial land uses. That modeling would determine if any physical mitigation is warranted and verify the adequacy of such measures if needed.

1 PROJECT DESCRIPTION

The Mariposa Lakes Specific Plan (MLSP) project involves a request for approvals from the City of Stockton (and other agencies) necessary to permit the development of an approximately 3,810-acre planned mixed-use urban residential, commercial and industrial development adjacent to the City of Stockton[1].

1.1 Proposed Land Uses

Table 1 summarizes the areas within the specific plan boundaries proposed to be dedicated to different land use types:

Table 1 – Summary of Proposed Land Uses

Land Use	Acres
Village Residential Estates	53
Village Low Density Residential	1,021
Village Medium Density Residential	533
Village High Density Residential	66
Village Center/Commercial	93
Industrial	614
Business-Professional	57
Institutional / Maintenance	43
Elementary / High Schools	154
College	21
Parks & Open Space	506
Private Recreation Center	52
Existing Residential	151
Public Utilities	228
Lakes 1,2, & 3	66
Major Circulation (Roads & R.R.)	358
Total	**3,810**

SOURCE: Randall Planning and Design, Inc., 2006

2 ENVIRONMENTAL SETTING

2.1 Climate and Topography

The following discussion is drawn from the Technical Document associated with the Guide for Assessing and Mitigating Air Quality Impacts *(GAMAQI)*[2] prepared by the San Joaquin Valley Air Pollution Control District (SJVAPCD).

The California Air Resources Board (ARB) has divided California into regional air basins according to topographic air drainage features. The San Joaquin Valley Air

Basin (SJVAB) is approximately 250 miles long and averages 35 miles wide. 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 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 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 Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. The San Joaquin Valley (SJV), thus, could be considered a "bowl" open only to the north. Figure 1 provides an aerial view of the SJV and demonstrates the bowl created in the southern end of the SJV. Figure 2 shows a plan-view representation of the SJVAB and the boundaries of the counties within it.

Although marine air generally flows into the basin from the San Joaquin River Delta (resulting – near the Delta at Stockton -- in the predominantly west/northwest wind directions depicted in Figure 3), the region's topographic features restrict air movement through and out of the basin. The Coastal Range hinders wind access into the SJV from the west, the Tehachapis prevent southerly passage of airflow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak airflow, which becomes blocked vertically by high barometric pressure over the SJV. As a result, the SJVAB is highly 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).

Local climatological effects, including wind speed and direction, temperature, inversion layers (depicted schematically in Figure 4), and precipitation and fog, can exacerbate the air quality problem in the SJVAB.

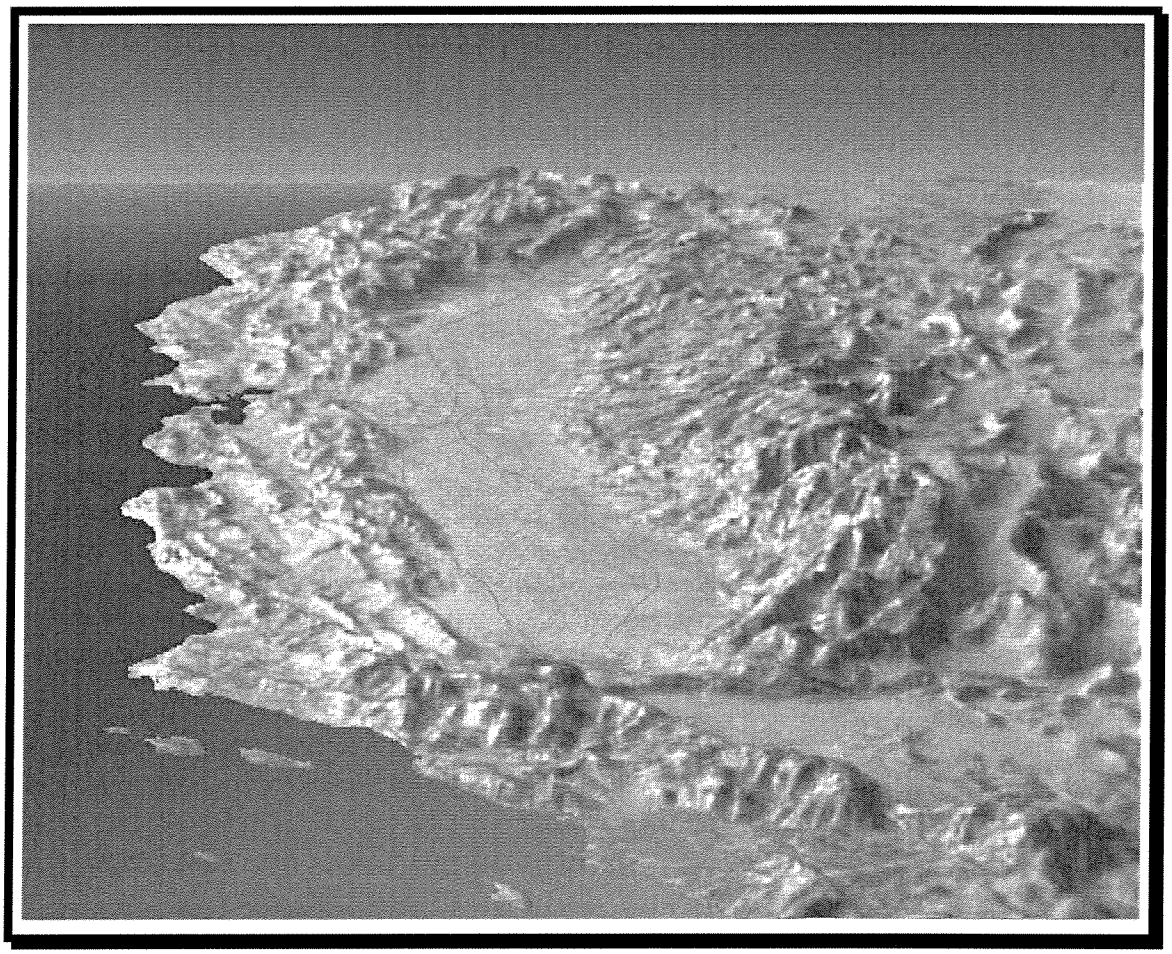
2.2 Air Pollutants of Primary Concern

The health effects of the air pollutants of greatest concern within the SJVAB are summarized in Table 2.

2.2.1 Key Criteria Air Pollutants

A subset of air pollutants are termed "criteria" pollutants because the United States Environmental Protection Agency (U.S. EPA) has established specific concentration threshold criteria for them based upon specific medical evidence of health effects such as those summarized in Table 2. These concentration thresholds identify acceptable air pollution levels that will adequately protect the health of sensitive populations with a margin of safety and protect the general public welfare. The criteria air pollutants of greatest importance for this analysis have been introduced in the context of the preceding discussion of climate and topography. They will be discussed in greater detail below.

Figure 1 – Aerial View of San Joaquin Valley

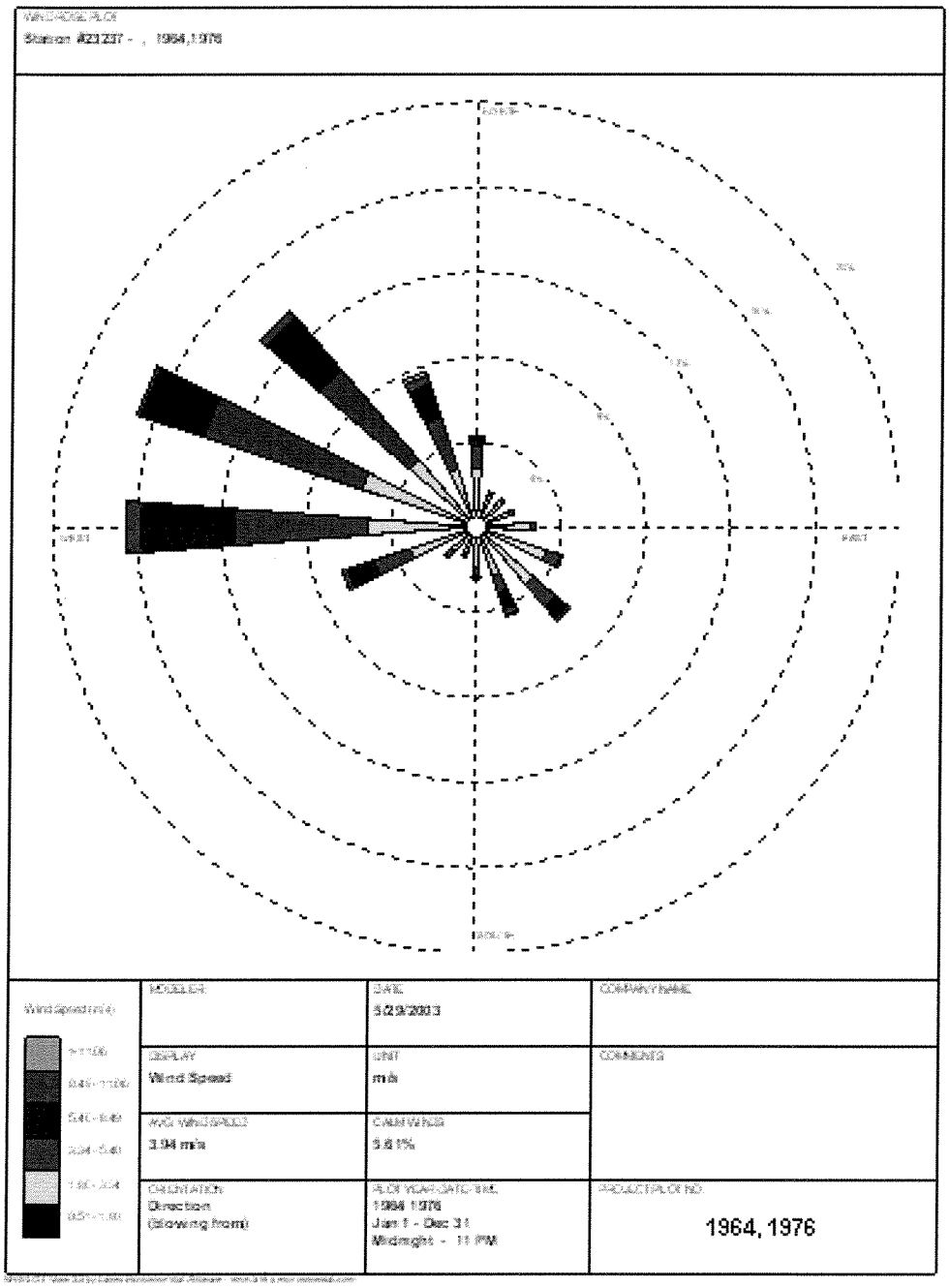


SOURCE: SJVAPCD, 2002

Figure 2 – Counties and Major Cities within SJVAB

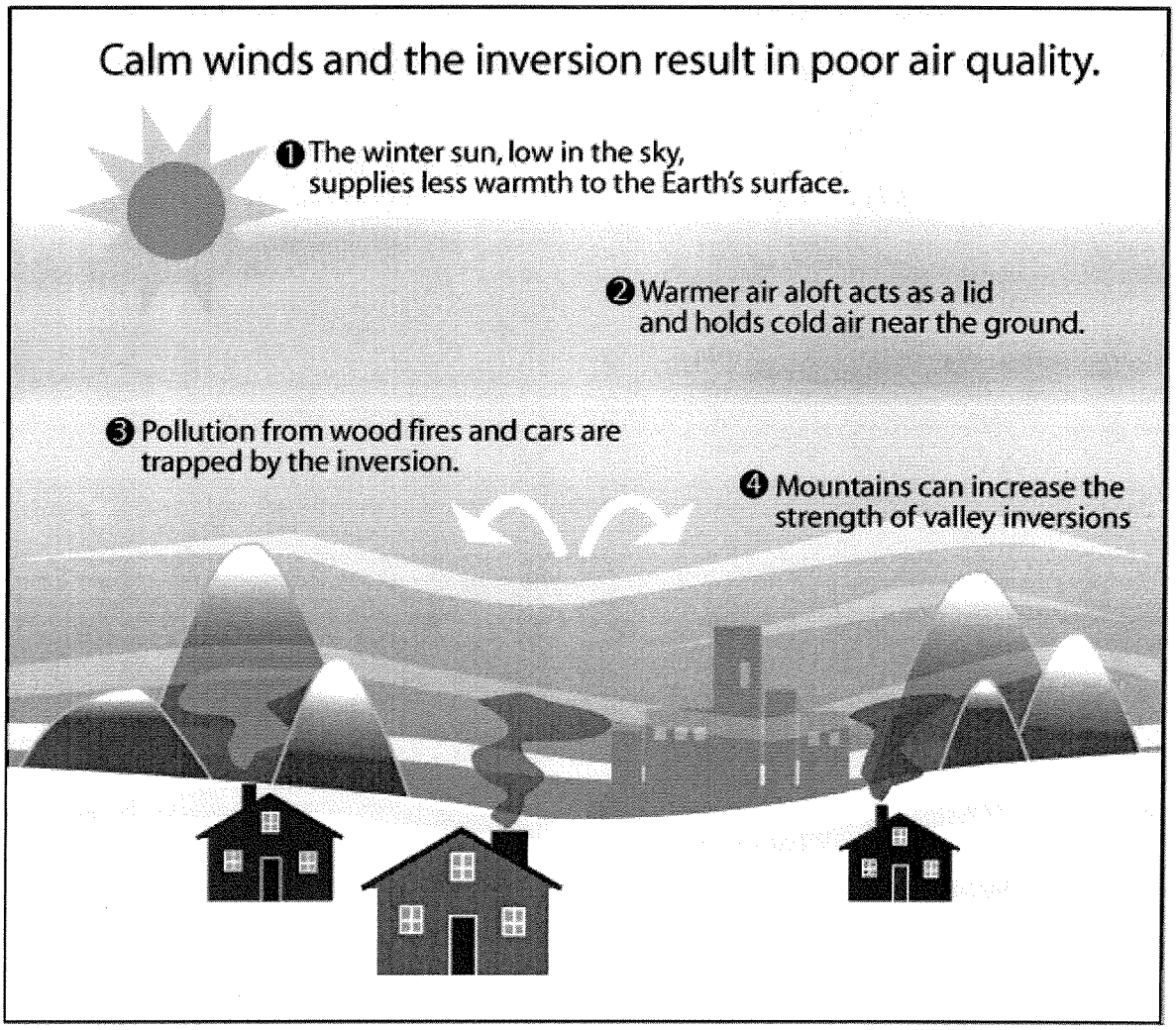
SOURCE: SJVAPCD, 2002

Figure 3 – Local Wind Direction and Speed Distribution Data



SOURCE: Air Permitting Specialists, 2006

Figure 4 – Influence of Temperature Inversions on Air Quality



SOURCE: US EPA, 2006

Table 2 – Health Effects of Key Criteria Air Pollutants and Hazardous Air Pollutants[1]

Pollutant		Health Effects	Examples Of Sources
Category			
Criteria Air Pollutants	Particulate Matter (inhalable: less than 10 microns in diameter, e.g., PM_{10}, $PM_{2.5}$)	• Increased Respiratory Disease • Lung Damage • Premature Death	• Cars and Trucks Especially Diesels • Fireplaces, Woodstoves • 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: 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
Hazardous Air Pollutants[1]		• Cancer • Chronic Eye, Lung or Skin Irritation • Neurological and Reproductive Disorders • Birth Defects	• Cars and Trucks Especially Diesels • Industrial Sources Such as Chrome Platers • Neighborhood Businesses, Such as Dry Cleaners and Service Stations • Building Materials and Products

[1] The corresponding term for "Hazardous Air Pollutants" applied by the ARB is "Toxic Air Contaminants"

SOURCE: ARB, 2001; U.S. EPA, 2006

2.2.1.1 Ozone

Ozone is a colorless gas with a pungent odor. Ozone causes eye irritation and respiratory function impairment. Most ozone in the atmosphere is formed as a result of the interaction of ultraviolet light, reactive organic gases (ROG), and oxides of nitrogen (NO_x). ROG is composed of nonmethane hydrocarbons, and NO_x is made of different chemical combinations of nitrogen and oxygen, mainly NO and NO_2. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NO_x levels are present to sustain the

ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional scale, ozone is considered a regional pollutant.

2.2.1.2 Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless, gas. CO causes a number of health problems including fatigue, headache, confusion, and dizziness (see Table 2). The incomplete combustion of petroleum fuels in on-road vehicles is a major cause of CO. In urban areas, roadways with significant traffic congestion and associated vehicle idling are CO management concerns. CO is also produced during the winter from wood stoves and fireplaces. CO tends to dissipate rapidly into the atmosphere; consequently, violations of the State CO standard (where they occur at all) are generally limited to major intersections during peak hour traffic conditions.

2.2.1.3 Suspended Particulate Matter

Suspended particulate matter (airborne dust) consists of particles small enough to remain suspended in the air for long periods. Fine particulate matter includes particles small enough to be inhaled, pass through the respiratory system, and lodge in the lungs, with resultant health effects. Particulates can include materials such as sulfates and nitrates which are particularly damaging to the lungs. Health effects studies resulted in revision of the Total Suspended Particulate (TSP) standard in 1987 to focus on particulates that are small enough to be considered "inhalable", i.e., 10 microns or less in size (PM_{10}). In July of 1997 a further revision of the federal standard added criteria for $PM_{2.5}$, reflecting recent studies that suggested that particulates less than 2.5 microns in diameter are of particular concern. (The status of implementation of this standard is discussed under the Regulatory Context heading, below.)

2.2.2 Hazardous Air Pollutants / Toxic Air Contaminants

Hazardous air pollutants (HAPs), also known as toxic air contaminants (TACs), are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. EPA is working with state, local, and tribal governments to reduce air toxics releases of 188 pollutants to the environment. Examples of toxic air pollutants include benzene, which is found in gasoline; perchlorethlyene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. Examples of other listed air toxics include dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.[3] The potential health effects of HAPs are summarized in Table 2.

One pollutant formally identified by California as a TAC is particulate matter generated from the exhaust of diesel-fueled engines. It is of particular concern because, in addition to its being recognized over the past couple of decades as a potential source of both cancer and non-cancer health effects, it is nearly ubiquitous at some concentration level throughout developed areas[4]. Diesel particulate emissions are discussed in the context of state regulatory activities under Heading 2.3.2.2 later in this report.

Diesel PM is generated by on-road vehicles such as trucks and buses, which in 2000 accounted for approximately 27% of diesel PM emissions in California. Emissions are also generated by off-road mobile sources, which include agricultural equipment, construction equipment, industrial equipment, railroads and marine vehicles, among others.

2.2.3 Odors

Ray Kapahi of Air Permitting Specialists has addressed odor issues in the project area and project-related odor impacts in a separate report[5].

2.3 Regulatory Context

2.3.1 Federal

The Federal Clean Air Act (FCAA) of 1970, as amended (FCAAA), establishes air quality standards for several pollutants. These national ambient air quality standards (NAAQS) are divided into primary standards and secondary standards. Primary standards are designed to protect the public health, and secondary standards are intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. Federal primary standards for the pollutants of greatest concern in the SJVAB are presented in Table 3. Regions of the country are classified with respect to their attainment -- or the extent of their "nonattainment" – of these standards. The corresponding designations for the SJVAB are presented in Table 4.

2.3.1.1 Criteria Air Pollutants

2.3.1.1.1 Ozone

As shown in Table 4, the SJVAB is designated as nonattainment/serious with respect to the federal eight-hour ozone standard. The U.S. EPA issued formal attainment status designations for this standard in April 2004, and revoked the previous one-hour ozone standard on June 15, 2005.

Table 3 – Ambient Air Quality 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/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 (PM10)	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 (PM2.5)	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 (10mg/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]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
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 Chloride[9]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

*This concentration was approved by the Air Resources Board on April 28, 2005 and is expected to become effective in early 2006.

See footnotes on next page ...

California Air Resources Board (11/29/05)

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 calender year with a 24-hour average concentration above 150 $\mu g/m^3$ 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. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18,1997. Contact U.S. 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.

California Air Resources Board (11/29/05)

Table 4 – Ambient Air Quality Standards & Valley Attainment Status

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone - One hour	No Federal Standard (See note below)	Nonattainment/Severe
Ozone - Eight hour	Nonattainment/Serious	*No State Standard
PM-10	Nonattainment/Serious	Nonattainment
PM-2.5	Nonattainment	Nonattainment
CO - Merced, Madera and Kings Counties	Unclassified/Attainment[1]	Unclassified
CO - San Joaquin, Fresno, Kern (SJVAB portion), Tulare, Stanislaus	Unclassified/Attainment[1]	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide - Kern County (SJVAB portion)	Attainment	Attainment
Sulfur Dioxide - All Other Counties	Unclassified	Attainment
Lead (Particulate)	*No Designation*	Attainment
Hydrogen Sulfide	*No Federal Standard*	Unclassified
Sulfates	*No Federal Standard*	Attainment
Visibility Reducing Particles	*No Federal Standard*	Unclassified

Maps & Tables of the Area Designations for the State and National Ambient Air Quality Standards and Expected Peak Day Concentrations and Designation Values, Air Resources Board, January 1998; Classification letter, ARB Staff, March 16, 1993; ARB Action, November 9, 1994; ARB Action, November 21, 1996;
CO: (1) 40 CFR Parts 52 and 81 -- Fresno Urbanized Area, Bakersfield Metropolitan Area, Stockton Urbanized Area and Modesto Urbanized Area redesignated as attainment on March 31, 1998, effective June 1, 1998 (2) Area has reached attainment status. The request for redesignation was approved by the Air Resources Board on September 24, 1998. The re-designation became final upon action by the California Office of Administrative Law on August 26, 1999.

Note: The Federal One Hour Ozone National Ambient Air Quality Standard was revoked on June 15, 2005

SOURCE: SJVAPCD, 2006; ARB Emission Inventory Branch, 2004.

2.3.1.1.2 Carbon Monoxide

As shown in Table 4, the portion of the SJVAB containing San Joaquin County is designated Unclassified/Attainment with respect to the NAAQS for CO. All other areas of the SJVAB are either formally designated or recognized as

Unclassified/Attainment or Attainment with respect to the NAAQS for CO..

2.3.1.1.3 Suspended Particulate Matter

NAAQS's for particulate matter are expressed in terms of both PM_{10} and $PM_{2.5}$, and with respect to both 24-hour and annual-average concentrations. For the former pollutant, the U.S. EPA proposed on July 6, 2006 to change the SJVAB's designation from Nonattainment/Serious to Attainment[6]. For the latter pollutant, the U.S. EPA issued initial formal attainment status designations on December 17, 2004. The SJVAB is currently designated as Nonattainment for $PM_{2.5}$.

2.3.1.2 Hazardous Air Pollutants

One means by which the U.S. EPA addresses HAP exposure is through the National Emission Standards for Hazardous Air Pollutants (NESHAPS), also known as maximum achievable control technology (MACT) standards. These NESHAPS are promulgated under Title 40 of the Code of Federal Regulations (CFR), Parts 61 & 63.

2.3.2 State

The State of California has established its own set of ambient air quality standards (CAAQS) that are generally more stringent than the corresponding NAAQS. The California Clean Air Act (CCAA), which became effective on January 1, 1989, provides a planning framework for attaining the CAAQS. Non-attainment areas in the State were required to prepare plans for attaining these standards. The CCAA provided for the classification of regions within the State into three classes depending upon the findings of the attainment plans: moderate, if CAAQS attainment could not be demonstrated before December 31, 1994; serious, if CAAQS attainment could not be demonstrated before December 31, 1997; and severe, if CAAQS attainment could not be demonstrated at all. For each class, the CCAA specifies attainment strategies that must be adopted. For all classes, attainment plans are required to demonstrate a five percent per year reduction in the emissions of non attainment pollutants or their precursors, unless all feasible measures are being employed.

At the state level, planning related to the achievement or maintenance of standard attainment and regulation of air pollution in the context of both the CCAA and the FCAAA (as a state implementing agency) is conducted or managed by the ARB. The status of the SJVAB with respect to the CCAA is discussed below, followed by a discussion of key issues relating to the ARB's planning and regulatory activities in connection with Toxic Air Contaminants and then general land use guidance promulgated by the ARB.

2.3.2.1 Criteria Air Pollutants

2.3.2.1.1 Ozone

Table 4 shows that the SJVAB is designated as nonattainment/severe with respect to the one-hour ozone CAAQS. This designation triggers the planning requirements satisfied by the regional ozone attainment plan described below.

2.3.2.1.2 Carbon Monoxide

Table 4 shows that the portion of the SJVAB containing San Joaquin County is designated as Attainment with respect to the State standard for CO. All other areas of the SJVAB are either formally designated or recognized as Unclassified or Attainment with respect to the CAAQS for CO.

2.3.2.1.3 Suspended Particulate Matter

The ARB has no separate classification scheme other than nonattainment or attainment for PM_{10}[7]. The SJVAB is designated as Nonattainment with respect to the CAAQS's for both PM_{10} and $PM_{2.5}$.

2.3.2.2 Toxic Air Contaminants

The State regulates 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 Air Toxics Act institutes a formal procedure for designating substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. The ARB then adopts an Airborne Toxics Control Measure for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below the threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology to minimize emissions. Air districts adopt and enforce the control measure locally.

In August 1998 the ARB listed "Particulate Matter Emissions from Diesel-Fueled Vehicles" as a TAC[8]. In 2000, the ARB developed a *Risk Reduction Plan (RRP)*[3] to address this source of TACs. The ARB is in the process of implementing the *RRP*.

Based on statistics for the year 2000, the *RRP* found that diesel PM is a major contributor to overall ambient risk levels, accounting for more than 70% of the cancer risk associated with outdoor ambient levels of TACs. The RRP identified the cancer risk levels from diesel PM emissions associated with various source categories, including freeways, stationary engines, distribution (trucking) centers, truck stops and locations with

concentrations of school bus idling. Potential cancer risks were assessed at worst-case locations and under the emissions conditions that prevailed at the time the *RRP* was prepared. Potential excess cancer risk levels ranged from zero in some locations to nearly 1,700 excess cancers per million population at worst-case locations in the vicinity of high-volume freeways. The *RRP* noted, however, that sustained exposure of sensitive receivers to risk levels approaching these point-of-maximum-off-site-impact (PMI) levels would be extremely rare, and exposures approaching anywhere near the continuous 70-year reference durations would be virtually unheard of, at least under non-occupational circumstances. However, these risk ranges were said to provide a basis for assessing the relative risk "footprint" of these basic source types.

Figure 5 shows projected percent reductions in cancer risk from (top) and projected emissions of (bottom) diesel PM with and without implementation of the ARB's *RRP*. It demonstrates the potential value of the *RRP*, if fully implemented, in reducing diesel-engine-generated PM emissions and associated cancer risks.

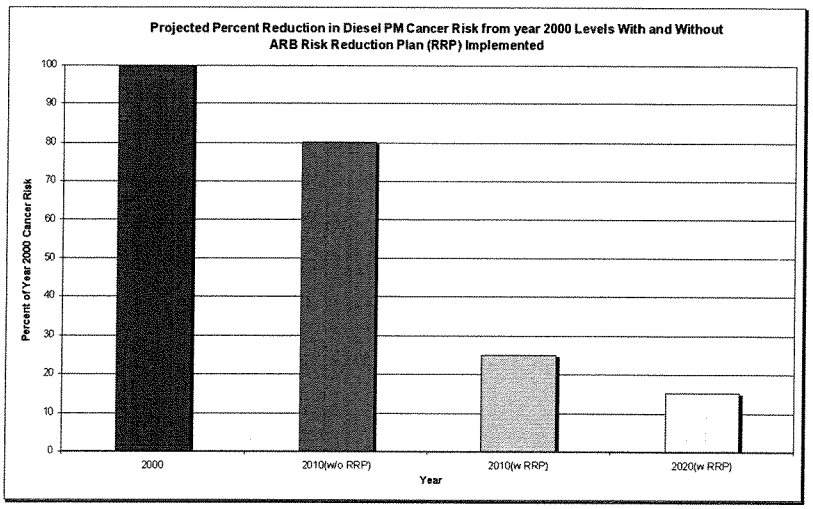
The *RRP* contains the following three components[9]:

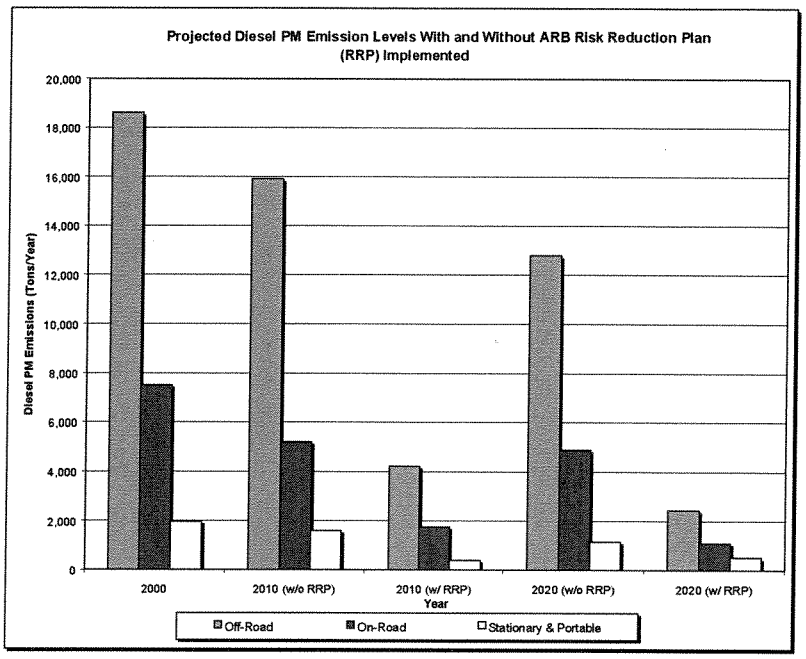
1. New regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce diesel PM emissions by about 90 percent overall from current levels;
2. New retrofit requirements for existing on-road, off-road, and stationary diesel-fueled engines and vehicles where determined to be technically feasible and cost-effective; and
3. New Phase 2 diesel fuel regulations to reduce the sulfur content levels of diesel fuel to no more than 15 ppm to provide the quality of diesel fuel needed by the advanced diesel PM emission controls.

Overall, the program is expected to generate a 75% reduction in diesel PM emission rates by 2010 and 85% by 2020.

Since adoption of the *RRP*, the ARB has conducted regulatory activities to implement all three plan components. The third component is reflected in the latest the California Diesel Fuel Regulations[10], which specify that, based on a rapid phase-in schedule starting in June 2006, "...no person shall sell, offer for sale, supply or offer for supply any vehicular diesel fuel having a sulfur content exceeding 15 parts per million by weight." By comparison, the previous sulfur content limit, effective October 1, 1993, was 500 parts per million. The regional air districts are directed to also apply the new limit to non-vehicular diesel fuel "... other than diesel fuel offered, sold or supplied solely for use in locomotives or marine vessels..."

Figure 5 – Projected Percent Reductions in Cancer Risk From (top) and Estimated Emissions of (bottom) Diesel PM With and Without Implementation of the ARB's Risk Reduction Plan





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SOURCE: ARB, 2000

The ARB has also taken action to evaluate and control exposure to diesel PM in the context of their facility-oriented TAC regulatory activities. As part of their Rail Yard Emission Reduction Program[11], the ARB has entered into an agreement with Union Pacific (UP) and BNSF Railways to reduce locomotive emissions near rail yards to supplement the development of new regulations addressing on- and off-road vehicles at rail yards consistent with Components 1 and 2 of the *RRP*. As part of this agreement, the ARB will generate Health Risk Assessments (HRAs) at 17 rail yards in the state of California. One HRA – for the Union Pacific J.R. Davis Yard in Roseville[12] -- has already been completed. That HRA estimates that annual average locomotive traffic at the J.R. Davis Yard included 31,000 locomotives stopping for fueling and service and 15,000 passing through along dedicated through tracks. The J.R. Davis Yard HRA found the potential for significant contributions to health risk at substantial distances from the facility.

2.3.2.3 Land Use Guidance

The ARB has published an *Air Quality and Land Use Handbook*[13] (referred to hereafter as the *Handbook*) that focuses on siting recommendations for air-pollutant-sensitive land uses. The scope of the *Handbook* includes a range of TAC sources such as freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, certain dry cleaners and gas stations. The key facility addressed by the *Handbook* siting criteria and influencing the project site is the BNSF Intermodal Facility, a rail yard source discussed in Section 2.5.2.1 later in this report.

Based largely on the Roseville HRA, the *Handbook* provides the following siting recommendations for sensitive land uses in the vicinity of existing rail yards:

- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.
- Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.

The *Handbook* implies that "major", in this context, refers to a facility at a scale generally similar to the Roseville rail yard. It should be noted that the diesel PM health risks upon which the Handbook is based do not consider the projected risk reductions that would be achieved by the ARB's *RRP* described in Section 2.4.2.2.

2.3.3 Regional

Within the SJVAB, the SJVAPCD (referred to hereafter as the APCD) is responsible for AAQS attainment planning and regulation of emissions from non-transportation sources and from on-road source emissions generated indirectly by certain proposed land development activities.

2.3.3.1 Planning

The APCD has adopted several attainment plans to achieve state and federal air quality standards to comply with CCAA and FCAAA requirements. The APCD 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.

2.3.3.1.1 Ozone

The APCD adopted its most recent ozone planning document – the *1-hour Extreme Ozone Attainment Demonstration Plan*[14] (OADP) – in October 2004. It is currently amended through October 2005. The intent of that plan was to set "... forth the emission reductions and timeline for attaining the federal 1-hour ozone ambient air quality standards in the San Joaquin Valley Air Basin (SJVAB) by November 15, 2010..."[15] It included a District Control Measure Schedule for 2004-2007 addressing a variety of categories of ozone precursor emissions sources. The required rate of progress toward ozone standard attainment is demonstrated relative to targeted reductions in the emissions of ozone precursors. To make that demonstration, the APCD used an excess of available projected future NO_x emission reductions to compensate for a shortfall in targeted ROG reductions.

As previously discussed, the U.S. EPA has promulgated an eight-hour ozone NAAQS and has subsequently revoked the one-hour ozone NAAQS. Therefore, current APCD federal ozone attainment planning activities are directed towards developing an eight-hour ozone attainment demonstration plan, due to the U.S. EPA by June 15, 2007.

2.3.3.1.2 Carbon Monoxide

As discussed earlier in this report, the SJVAB is designated as unclassified/attainment of the federal does not need to perform attainment planning activities for this pollutant.

2.3.3.1.3 Suspended Particulate Matter

The APCD's most recent general attainment planning document for particulate matter is the *2006 PM_{10} Plan*[16], adopted in February 2006 and focused on continued efforts to achieve the PM_{10} NAAQS. It identified a series of control measures, established at the federal (U.S. EPA), State (ARB) and regional (Regional Transportation Planning Agencies and APCD) levels. Together, these measures were expected to satisfy the Best Available Control Measures/Technology (BACM/BACT) and annual

emission reduction targets for the plan based on CAA requirements. Modeling predicts that – with implementation of those measures – the 24-hour PM_{10} NAAQS will be attained at each of several modeling sites within the SJVAB by or before 2010. The APCD's first attainment plan of the recently adopted federal standards for $PM_{2.5}$ is due in April 2008[17].

The Natural Events Action Plan (NEAP) satisfies federal requirements triggered by U.S. EPA approval of a data flag for an exceedance of the particulate matter standard that is shown to be caused by a natural event. It also describes the meteorological forecasting criteria and public notification procedure that the District will use to protect public health if similar events occur in the future[18].

2.3.3.2 Regulation

The APCD has adopted a range of specific regulations that are applicable to new and modified sources within the SJVAB. Rules and regulations of particular relevance to this analysis are described below. The following discussion has been adapted from that provided by the APCD in their letter to the City of Stockton responding to the Notice of Preparation (NOP) for the EIR on the MLSP project[19] (referred to hereafter as the "NOP Response Letter").

2.3.3.2.1 Regulation VIII (Fugitive Dust PM_{10} Prohibitions)[20]

The APCD's Regulation VIII comprises several rules (Rules 8011-8081) that 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. It accomplishes this primarily through limits on visible dust emission (VDE) opacity and establishing procedures for determining that opacity to assess compliance with the rule.

If a non-residential project is 5.0 or more acres in area, or a residential project is 10.0 or more acres in area, or the project will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days, a Dust Control Plan must be submitted as specified in Section 6.3.1of Rule 8021. Construction activities shall not commence until the APCD has approved the Dust Control Plan[21].

If a non-residential project is 1.0 to less than 5.0 acres, or a residential project is 1.0 to less than 10.0 acres, an owner/operator must provide written notification to the District at least 48 hours prior to his/her intent to begin any earthmoving activities as specified in Section 6.4.2 of Rule 8021[22].

2.3.3.2.2 Rule 2201 (New and Modified Stationary Source Review Rule)[23]

This rule applies to all new stationary sources and all modifications of existing stationary sources which are subject to the APCD permit requirements and after construction emit or may emit one or more affected pollutant. Under this rule, new stationary sources must obtain an Authority to Construct and Permit to Operate the proposed facility. Emissions that exceed defined thresholds must include emission controls and may be required to provide additional mitigation.

2.3.3.2.3 Rule 3135 (Dust Control Plan Fee)[24]

This rule requires the applicant to submit a fee in addition to a Dust Control Plan. The purpose of this fee is to recover the APCD's cost for reviewing such plans and conducting compliance inspections.

2.3.3.2.4 Rule 4101 (Visible Emissions)[25]

This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.

2.3.3.2.5 Rule 4102 (Nuisance)[26]

This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that such emissions create a public nuisance, the owner/operator could be in violation and be subject to APCD enforcement action.

2.3.3.2.6 Rule 4103 (Open Burning)[27]

This rule regulates the use of open burning and specifies the types of materials that may be open burned. Agricultural material shall not be burned down when the land use is converting from agriculture to non-agricultural purposes (e.g., commercial, industrial, institutional, or residential uses). Section 5.1 of this rule prohibits the burning of trees and other vegetative (non-agricultural) material whenever the land is being developed for non-agricultural purposes.

2.3.3.2.7 Rule 4601 (Architectural Coatings)[28]

This rule limits the emissions of volatile organic compounds from architectural coatings by specifying architectural coatings storage, clean up and labeling requirements.

2.3.3.2.8 Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations)[29]

This rule applies to the manufacture and use of the aforementioned asphalt types for paving and maintenance operations.

2.3.3.2.9 Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters)[30]

This rule limits residential fuel combustion and associated PM emissions as follows:

- No person shall install a wood burning fireplace in a new residential development with a density greater than two (2) dwelling units per acre.
- No person shall install more than two (2) EPA Phase II Certified wood burning heaters per acre in any new residential development with a density equal to or greater than three (3) dwelling units per acre.
- No person shall install more than one (1) wood burning fireplace or wood burning heater per dwelling unit in any new residential development with a density of equal to or less than two (2) dwelling units per acre.

2.3.3.2.10 Rule 4902 (Residential Water Heaters)[31]

This rule establishes a maximum NO_x emission rate of 40 nanograms per Joule of heat output for natural-gas-fired water heaters with a rated heat input less than or equal to 75,000 Btu/hr.

2.3.3.2.11 Rule 9120 (Transportation Conformity)[32]

This rule adopts, at the Air District level, requirements associated with the transportation conformity determination process. It addresses consultation requirements, criteria, procedures, et cetera. The rule applies to projects sponsored by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) as well as Transportation Improvement Programs (TIPs) developed pursuant to 23 CFR part 450 or 49 CFR part 613 and other transportation plans developed pursuant to 23 CFR part 450 or 49 CFR part 613

2.3.3.2.12 Rule 9510 (Indirect Source Review)[33]

The Indirect Source Review (ISR) rule became effective March 1, 2006. This rule requires the applicants for certain development projects to submit an ISR application to the APCD at or before the time of application for the development's final discretionary approval. It requires development projects to meet specific

percentage reductions in the estimated project emissions of NO_x and PM_{10} (excluding fugitive dust emissions), for both construction and operation.

In the case of construction, emissions must be reduced by specified percentages relative to those that would occur based on statewide average emission rates per the ARB. Operational emissions must be reduced to below the indicated percentages of the project baseline emissions, as estimated by APCD-specified methods based on an ARB prediction model described later in this report under the "Method of Analysis" heading. The applicable total emission reduction percentages are summarized in Table 5.

Developers are encouraged to mitigate emissions at the project site to the extent feasible, and must pay a mitigation fee to the APCD for any remaining difference between the estimated project's mitigated on-site emissions and the mitigated emission level targeted by the ISR.

Table 5 – ISR-Required Emission Reductions

Source Category	Required Reduction, as Proportion of Baseline[1] Emissions	
	NO_x	PM_{10}
Construction Equipment Exhaust	20%	45%
Operations	33% over 10 years[2]	50% over 10 years[2]

[1] This baseline is discussed under Heading 3.1.1.1.3, below.

[2] The emission reduction requirement is based on an estimate of baseline operational emissions over a 10-year period.

SOURCE: SJVAPCD, 2006

The ISR application must contain several components including the following:

- Detailed project description
- On-site Emission Reduction Checklist
- Monitoring and Reporting Schedule
- Off-Site Fee Deferral Schedule (if the applicant seeks and qualifies for fee deferral)
- Air Impact Assessment (AIA):

The currently adopted off-site mitigation fee schedule is summarized in Table 6. Mitigation fees are likely to be adjusted upward in the future to account for the increasing costs to achieve a given annual reduction in emissions off-site as the cheapest

mitigation options are implemented and the stock of the less-expensive, viable unmitigated emission sources is depleted.

Table 6 – Current Off-site Mitigation Fees Under the ISR

Year	Fee Schedule (cost per ton of required emission reduction)	
	NOx	PM_{10}
2006	$4,650	$2,907
2007	$7,100	$5,594
2008	$9,350	$9,011
SOURCE: SJVAPCD, 2006		

2.4 Existing Air Quality

2.4.1 Regional

2.4.1.1 Criteria Air Pollutants

2.4.1.1.1 Emissions

Table 7 summarizes emissions of criteria air pollutants within San Joaquin County ("Co.") and the SJVAB ("AB") for various source categories. Figures 7 and 8 graphically depict the relative contributions of the major source categories to overall SJVAB emissions of four of the five pollutants included in Table 6.

Table 7 and Figure 6 show that stationary and area-wide sources represent the most important categories for ROG emissions in the SJVAB, whereas mobile sources produce the majority of Basin-wide emissions of NO_x. For CO, Table 7 and Figure 7 show that mobile source emissions also predominate, whereas Area-Wide sources are estimated to produce over 80% of Basin-wide PM_{10} emissions. The majority of the PM_{10} emissions, noted in the table as "Miscellaneous Processes" are the result of dust emissions from agricultural activities and unpaved roads.

2.4.1.1.2 Concentrations

Table 8 summarizes air pollutant concentrations at the Stockton-Hazelton monitoring station and for all SJVAB monitoring stations, as well as corresponding AAQS exceedances.

Table 7 – 2005 Estimated Annual Average Emissions for San Joaquin County and the SJVAB

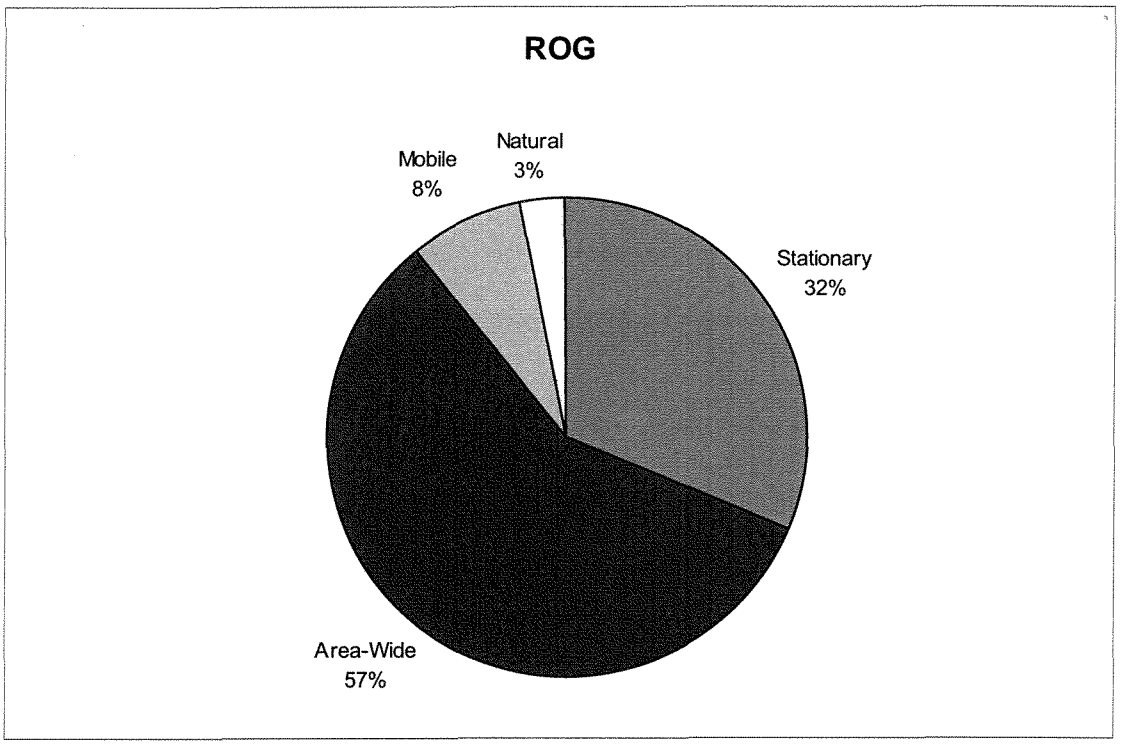
Source Category	Emissions (tons/day)									
	ROG		NO_x		CO		PM_{10}		$PM_{2.5}$	
	SJC[1]	AB[2]	SJC	AB	SJC	AB	SJC	AB	SJC	AB
Fuel Combustion	0.32	10	14	118	4.2	51	0.48	6.6	0.47	6.6
Waste Disposal	0.086	3.7	0	0.05	0	0.05	0.042	0.045	0.029	0.032
Cleaning and Surface Coatings	2.9	19	0	0	0	0	0.048	0.055	0.046	0.053
Petroleum Production and Marketing	1.9	41	0.004	0.36	0.002	0.27	0	0.018	0	0.017
Industrial Processes	3.1	14	3.4	21	0.36	3.0	2.1	17	1.3	10
Total Stationary Sources	***8.4***	***88***	***18***	***139***	***4.6***	***54***	***2.7***	***24***	***1.9***	***17***
Solvent Evaporation	8.4	63	0	0	0	0	0	0	0	0
Miscellaneous Processes	7.5	99	1.7	11	25	392	31	319	10.3	119
Total Area-Wide Sources	***16***	***161***	***1.7***	***11***	***25***	***392***	***31***	***319***	***10.3***	***119***
On-Road Vehicles	13	84	31	196	135	874	1.1	6.2	0.7	4
Other Mobile	8.8	52	25	133	72	349	1.7	8.9	1.5	8
Total Mobile Sources	***22***	***137***	***56***	***328***	***207***	***1224***	***2.8***	***15***	***2.2***	***12***
Subtotal w/o Natural Sources	**46**	**384**	**75**	**479**	**237**	**1670**	**37**	**358**	**14**	**149**
Natural Sources	***8.2***	***235***	***0.007***	***11***	***0.20***	***348***	***0.021***	***35***	***0.018***	***30***

[1] San Joaquin County

[2] Air Basin

SOURCE: ARB (Almanac Emission Projection Data), 2006

Figure 6 – 2005 SJVAB Emissions by Source Category: Ozone Precursors
(SOURCE: ARB, 2006)



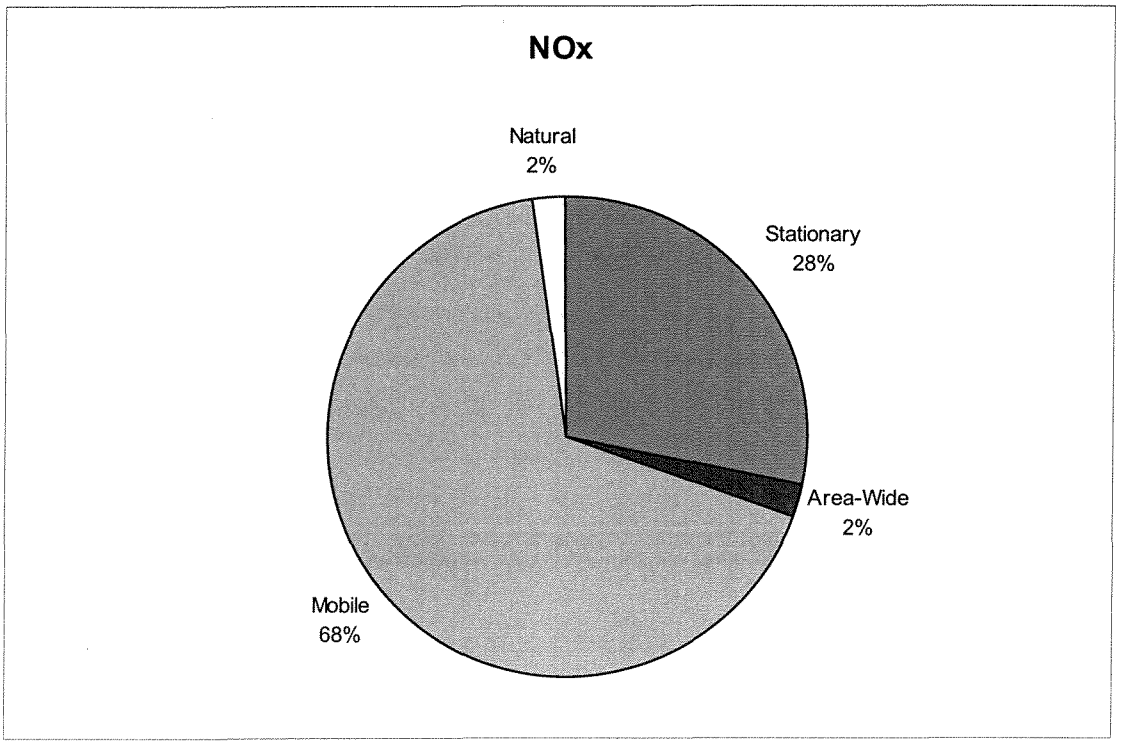
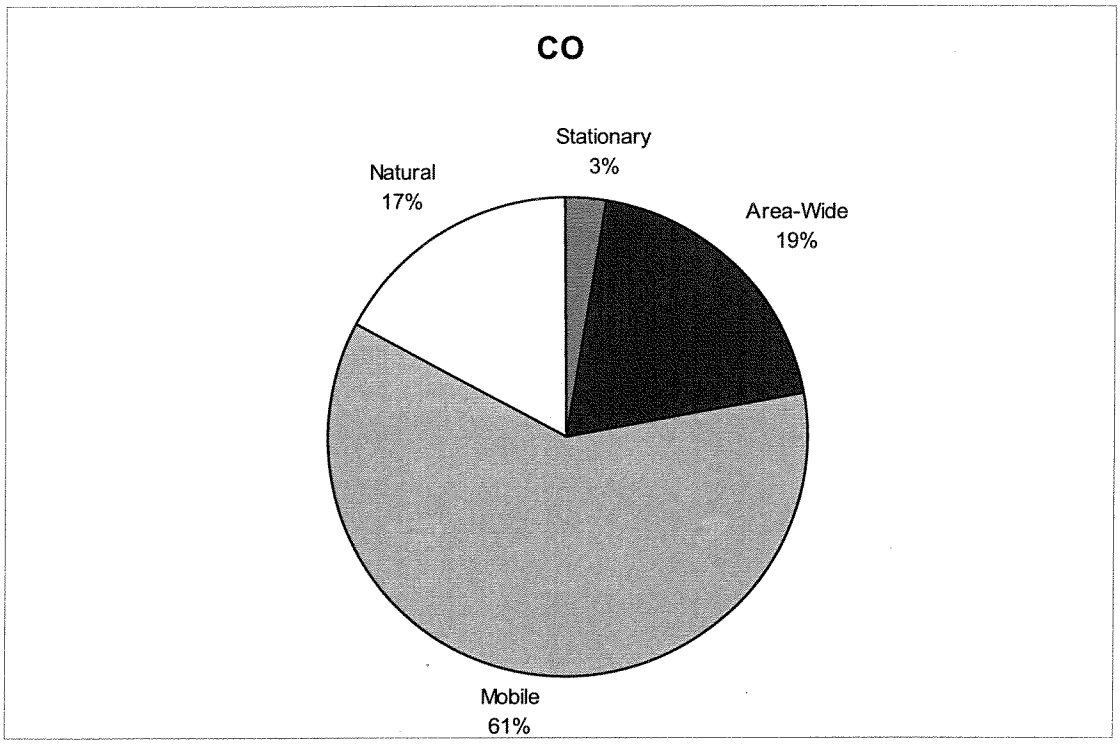


Figure 7 – 2005 SJVAB Emissions by Source Category: CO and PM_{10} (SOURCE: ARB, 2006)



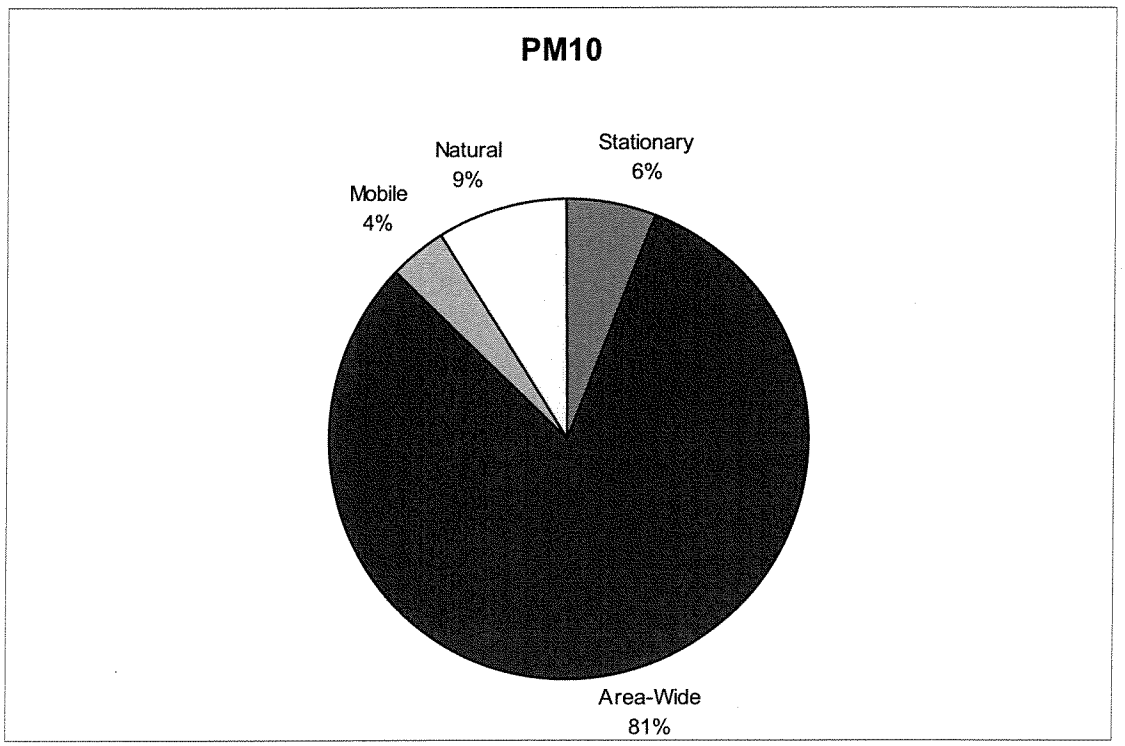


Table 8 shows that exceedances of the one-hour ozone CAAQS have been measured at the Hazelton station between one and three days per year during each of the preceding years. Measured Basin-wide maximum one-hour ozone concentrations have been considerably higher than those measured at the Hazelton station, and corresponding CAAQS exceedances have been recorded anywhere from 8 to 37 days per year. The annual maximum eight-hour-average ozone concentrations measured at the Hazelton station are lower than the corresponding one-hour concentrations; corresponding exceedances of the eight-hour NAAQS were recorded from zero to one day per year. Across the SJVAB, exceedances of that NAAQS were recorded anywhere from 72 to 134 days per year.

Table 8 - Summary of Air Pollutant Data Compared to Ambient Air Quality Standards, 2003-2005

POLLUTANT	2005		2004		2003	
	StkH	SJVAB	StkH	SJVAB	StkH	SJVAB
OZONE						
Highest 1-hour	.099	.134	.096	.155	.104	.156
Days>0.09 ppm (Cal)	3	8	1	9	3	37
Highest 8-hour	.086	.113	.080	.126	.088	.127
Days>0.08 ppm (Fed)	1	72	0	109	1	134
CO						
Highest 8-hour (Fed)	2.86	2.95	2.51	2.98	3.14	4.14
Days>=9.5 ppm (Fed)	0	0	0	0	0	0
Days>=9.1 ppm (Cal)	0	0	0	0	0	0
PM_{10}						
Daily Average						
Highest Value (Fed)*	79	131	60	217	88	150
Days>150 ug/m^3 (Fed)*	0	0	0	1	0	0
Highest Value (Cal)*	84	137	61	219	90	150
Days>50 ug/m^3 (Cal)*	8	24	3	22	3	30
3-Year Average						
Fed	29	46	31	51	33	55
>50 ug/m^3? (Fed)	No	No	No	Yes	No	Yes
Cal	30	52	36	60	37	60
>20 ug/m^3? (Cal)	Yes	Yes	Yes	Yes	Yes	Yes
$PM_{2.5}$						
Daily Average						
Highest Value (Fed)*	44	NA	41	NA	45	NA
Days>65 ug/m^3 (Fed)	0	NA	0	NA	0	NA
Annual Average						
Fed	14	NA	14	NA	NM	NA
>15 ug/m^3? (Fed)	No	NA	No	NA	NM	NA
Cal	17	NA	17	NA	13	NA
>12 ug/m^3? (Cal)	Yes	NA	Yes	NA	NM	NA

LEGEND: StkH = Stockton-Hazelton
SCCAB = San Joaquin Valley Air Basin; NA = Not (readily) Available, NM = Not Measured, or insufficient measurement data
SOURCES: CARB (Aerometric Data Analysis and Management System, ADAM;

California Almanac of Emissions and Air Quality) – 2006

Consistent with recent CO monitoring data throughout much of California, CO monitoring in Stockton and across the SJVAB between 2003 and 2005 show maximum annual concentrations well below corresponding NAAQS and CAAQS.

The SJVAB regularly violates PM_{10} AAQS as well as ozone AAQS. Table 8 shows that exceedances of the daily average PM_{10} NAAQS are relatively rare, but exceedances of the much lower PM_{10} CAAQS occur regularly throughout the year. Similarly, the annual PM10 NAAQS is exceeded rarely, but the lower annual PM_{10} CAAQS is exceeded consistently.

Recent $PM_{2.5}$ monitoring at the Hazelton station shows daily averages below the applicable NAAQS, and annual averages that fall just below the corresponding NAAQS but exceed the lower CAAQS.

2.4.1.2 Hazardous Air Pollutants

As discussed previously, there are a wide variety of air pollutants identified as HAPs by the U.S. EPA and TACs by the ARB. However, among all of these, the one expected to be of greatest concern in the context of this proposed project is diesel particulate matter. Table 9 summarizes estimated current emissions of diesel PM by source type within the SJVAB.

Note that these emissions values are presented in units of tons per *year*, whereas those presented in Table 7 are presented in units of tons per *day*. Table 9 shows that "Other Mobile" sources are estimated to produce about two-thirds of total emissions of diesel PM. Such sources include mobile off-road agricultural, industrial and construction-related equipment; diesel locomotives; ships, boats and other watercraft; et cetera.

2.4.2 Local

2.4.2.1 Pollutant Sources and Levels

2.4.2.1.1 Criteria Air Pollutants

For regional pollutants such as ozone, worst-case annual concentrations of pollutants measured in recent years at the Stockton-Hazelton station (presented under the "StkH" columns in Table 8) are probably reasonably representative of those experienced within the project site during those same years. Particulate matter concentrations can be influenced both by localized sources and area-wide or regional sources. One local

source of PM emissions is the BNSF Stockton Intermodal Yard located at 6540 Austin Road just south of Mariposa Road.

Table 9 – Current Estimated Annual Emissions of Diesel Particulate Matter in the SJVAB

Emissions Source		Emissions (tons/year)	As a Proportion of...	
General	**Specific**		**Air Basin Totals**	**State Totals**
Stationary Sources		481	12%	2%
Area-wide Sources		0	0%	0%
On-Road Mobile	*Gasoline Vehicles*	*0*	*0%*	*0%*
	Diesel Vehicles	*935*	*23%*	*4%*
	Subtotals	935	23%	4%
Other Mobile	*Gasoline Fuel*	*0*	*0%*	*0%*
	Diesel Fuel	*2708*	*66%*	*11%*
	Other Fuel	*0*	*0%*	*0%*
	Subtotals	0	66%	11%
Natural Sources		0	0%	0%
Total		4124	100%	17%
Statewide Total		24497		
SOURCE: ARB, 2005				

Major existing sources of CO emissions in the area with the potential for highly localized CO concentration impacts include SR 99 – about 4000 feet west of the westernmost point on the MLSP site – and major arterial intersections within the City of Stockton to the northwest.

2.4.2.1.2 Hazardous Air Pollutants / Toxic Air Contaminants

The BNSF Stockton Intermodal Yard is one of the 17 rail yards for which the ARB will be developing HRAs as described under Heading 2.3.2.2, above. However, the ARB has not yet scheduled its preparation of the HRA for this facility. This facility is located immediately south of the BNSF line, south of the intersection of Mariposa Road and Kaiser Road. The active portion of this facility is approximately 2,000 feet south of the MLSP site boundary at Mariposa Road; the central portion of the facility is located approximately 3,000 feet from the nearest portion of the site. A preliminary assessment of potential cancer risk associated with

this facility, which involves substantially lower locomotive traffic than the Roseville yard, has been prepared in a separate report (referred to in this report as *BNSF Intermodal Health Risk Estimate*) by Air Permitting Specialists[34].

The APCD was contacted regarding permitted facilities as well as facilities that represent potential TAC emitters[35]. APCD-permitted facilities within 1/4 mile of the MLSP site included two concrete batch plants, a truck coating (i.e. painting) facility, a rice processing facility, two standby generators and California Spray Dry, a protein product processing facility. The APCD indicates that the latter facility is permitted for four boilers, two scrubbers and an internal combustion engine. It was not required to submit a full air toxics report, but preliminary assessment indicates that TAC impacts from this facility are predicted to be below APCD screening thresholds at a distance of about 150 meters from the center of the pollutant sources on the California Spray Dry site[36] All of these facilities are subject to APCD emission controls and do not represent major sources of criteria pollutants or TAC emissions.

Other local TAC emissions would include diesel PM emissions from transportation routes in the project vicinity, including SR 99, which is located approximately 4,000+ feet west of the site, the BNSF railroad, SR 4 and Mariposa Road. With the exception of SR 99 freeway, none of these facilities have been identified by ARB as major sources of diesel PM emissions.

2.4.2.2 Air-pollution-sensitive Receptors

Existing air-pollution-sensitive receptors in the MLSP vicinity include the existing residential areas near the western (Carpenter Road area) and northern boundaries of the site and other residences beyond site boundaries near the northwest (the Burkett Garden Acres neighborhood), northeast and southeast corners of the MLSP.

3 ENVIRONMENTAL IMPACTS

3.1 Method of Analysis

The method of analysis is summarized below and documented in greater detail in the appendix to this report.

3.1.1 Criteria Air Pollutants

3.1.1.1 Emissions

Consistent with the *GAMAQI*, MSW used URBEMIS 2002 v8.7 to estimate emission impacts related to construction and operation of the

proposed project. MSW incorporated land use and trip generation data from the *Traffic Study*[37] prepared for this project and from the most current data available from the applicant[38] at the time this analysis was prepared – such as those shown in Table 1 of this report – as appropriate.

3.1.1.1.1 Scenarios

MSW considered two scenarios – Completion of Phase 1 (approximately 2015) and 1st Year After Build-out (approximately 2028).

For the Completion of Phase 1 scenario, MSW included the most conservative reasonable assumptions regarding ongoing construction activities based upon assumed absorption rates and off-site mitigation triggers. Specifically, MSW assumed construction associated with the relatively substantial and broad mix of land uses shown for year 2017 in the Absorption Schedule[39] and with off-site improvements numbers 7 and 8 (triggered by 5000 units of residential development) as shown in Table 3-7 of the EIR Project Description. The prospective scheduling of these proposed construction activities was deemed to be close enough to the reference point for the operational emissions analysis – completion of Phase 1 – to warrant incorporation into this scenario consistent with a conservative analysis of total annual project-related emissions for an intermediate development year. Year 2015 emission factors were applied for this scenario.

The 1st Year After Build-out scenario considers emissions impacts for the first year after construction of the project has been completed. Consistent with a conservative analysis, year 2025 emission factors were applied.

3.1.1.1.2 Approach for Each Basic Source Category

Consistent with APCD guidance[40], MSW applied their Recommended Construction Fleet[41] spreadsheet to modify URBEMIS's default construction equipment use assumptions. MSW also applied other applicable recommended changes to default URBEMIS values[42]. For construction emissions before recommended mitigation, a relatively modest level of fugitive dust control has been assumed as a representation of likely minimum requirements for compliance with APCD Regulation VIII. (Since compliance with that regulation is based upon VDE opacity thresholds as discussed earlier in this report, the actual amount of fugitive dust control measure implementation required to comply would depend on various construction-activity-, soil- and weather-related circumstances.)

For operational emissions considered within URBEMIS, MSW applied the APCD-recommended on-road vehicle fleet mix[43]. MSW applied URBEMIS default trip length assumptions for urban SJVAB projects as a baseline for all but two categories. Those two categories are "Home-based work" and "Commercial-based [commute]". For those two categories, MSW developed baseline trip lengths from an extrapolation of past commute survey data for San Joaquin County included in the U.S. Census database[44], with corresponding trip distances for representative county origins or destinations estimated using a computer mapping program. For both scenarios, these baseline trip lengths were adjusted (on a weighted-average basis) by considering the proportion of total project-generated trips assumed in the *Traffic Study* [45] to be internal trips. The average internal trip length was assumed to be two miles.

URBEMIS does not address emissions from train locomotives, a source that is not directly associated with most land development projects. The MLSP includes a substantial quantity of industrial use and its southeastern border is either bounded by or straddles a BNSF Railway Company mainline. As described in Section 3.5.3 of the EIR Project Description, the MLSP anticipates the potential for construction of lead/spur tracks to serve on-site industrial uses, but no specific track construction plan has been established at this time, nor can the potential level of rail service demand be precisely predicted. MSW obtained applicable fleet-year-specific emission factors published by the U.S. EPA[46]. MSW consulted several BNSF representatives to obtain reasonable assumptions regarding the frequency and duration of future locomotive activities associated with serving the MLSP[47]. MSW applied the most conservative of these assumptions to the Year 2028 (build-out) scenario, then scaled the activity durations down for the interim scenarios based on the lesser amounts of industrial land use that would be operating in those intermediate years. MSW applied time-weighted-average load factors for a locomotive with representative horsepower characteristics[48] based on the EPA Switch duty cycle[49].

For area-source emissions before the implications of compliance with the ISR Rule are considered, MSW assumed the maximum extent of residential wood-burning appliances allowable under APCD Rule 4901 based on applicable residential densities.

3.1.1.1.3 Approach to Considering Implications of ISR Rule in Impact Assessment

Some project features are incorporated into the EIR Project Description that tend to reduce air pollutant emission impacts and that are explicitly addressed as mitigation in URBEMIS. For those

features, the associated emission reduction benefits computed by URBEMIS were considered in the context of on-site mitigation that would be one component of the compliance of proposed project development with the ISR rule. MSW assumed that the remainder of the total emission reduction requirements under ISR would be achieved through off-site mitigation fees. Consistent with APCD guidance, off-site mitigation was treated as physical mitigation to the air quality environment just as on-site mitigation is.

For development subject to the ISR Rule, the rule requires reduction of the development's unmitigated baseline operational emissions calculated over a period of ten years. For that component of the required reduction achieved through off-site mitigation fees, the effective duration of corresponding emissions reductions would tend to be finite. For instance, where off-site mitigation is effected through replacement or retrofit of stationary or mobile diesel-powered equipment, such replacement or retrofitting might have occurred eventually anyway due to future regulatory requirements, economic incentives or ultimate failure of the equipment. In such cases, ISR-Rule-funded mitigation simply accelerates the associated mitigation reductions that would have occurred eventually. While this provides an important emissions benefit, the effective duration of that benefit is limited.

For the purposes of this analysis, the entire intended average annual benefit from the off-site mitigation associated with Phase 1 development is assumed to persist through the year associated with completion of that phase (approximately 2015). However, for the 1st Year After Build-out Scenario, assumed benefit from off-site mitigation has been limited to that which would have been required for development subsequent to Phase 1 – that is, for Phases 2-5. The actual emission reduction benefits associated with off-site mitigation fees collected in connection with development applications under Phase 1 have been assumed to have expired by the time of the 1st Year After Build-out Scenario. By contrast, all emission reduction benefits associated with on-site mitigation measures for the entire project are considered in the 1st Year After Build-out Scenario, since their benefit (in general) would not be expected to dissipate over time.

3.1.1.1.4 Approach to Considering Air Quality Mitigation Program

An *Air Quality Mitigation Program* (referred to hereafter as the *Mitigation Program*) has been prepared for this project. Portions of the *Mitigation Program* address features of the EIR Project Description, features considered in this analysis as on-site measures within the context of ISR Rule compliance in the impact assessment. The *Mitigation Program* also includes numerous measures not currently incorporated into the EIR Project

Description. In the mitigation discussion of this analysis, MSW has incorporated those additional *Mitigation Program* features into the on-site measures considered in the context of ISR Rule compliance. This increases the proportion of ISR-mandated reductions assumed to be achieved through on-site measures. The associated residual reduction requirements attributed to off-site measures has been assumed to decrease accordingly.

3.1.1.2 Concentrations

Consistent with Section 5.6.3 of the *GAMAQI*, MSW determined whether any of the intersections analyzed in the *Traffic Study* exceeded the Preliminary Screening thresholds it establishes. After confirming that those screening thresholds would be exceeded for numerous analyzed intersections (before *Traffic-Study*-recommended mitigation), MSW conducted a CALINE4[50,51] modeling analysis. This analysis was performed in a manner consistent with guidance provided in Appendix B of the *CO Protocol*[52] document prepared for the California Department of Transportation (Caltrans). MSW adapted the *CO Protocol* methodology as appropriate to address stop-sign-controlled intersections.

This analysis was performed at two of the intersections…

- …that exceeded the aforementioned screening criteria,…
- …that showed particularly high total and per-lane intersection volumes for both cumulative traffic and incremental project traffic under at least one set of analysis scenarios,…
- …that were located on different sides of the traffic study area,…
- …that operated under different types of (pre-mitigation) intersection controls, and…
- …for which there appeared to be some reasonable possibility of near-intersection sustained exposure for sensitive receivers under existing and/or near future conditions.

Those intersections were as follows:

- #5: E. Mariposa Way / E. 8th Street
- #21: Austin Road/Arch Road

At each of these intersections, CO concentrations were estimated under the following scenarios:

- Existing
- Existing plus Approved Projects (EPAP)
- EPAP + MLSP Project Phase 1
- 2035 General Plan

- 2035 General Plan + Project

Background CO concentrations were derived from an average of highest annual one- and eight-hour-average CO concentrations reported for 2002-2004 at the Stockton-Hazelton Street monitoring station.

3.1.2 Hazardous Air Pollutants

3.1.2.1 Construction

HAPs are generally considered in the context of 70-year (lifetime) exposure durations. The durations of HAP emissions associated with specific construction activities – and especially potentially elevated exposures to HAPs at a given location that such construction activities temporarily approach – would tend to be orders of magnitude shorter than this. Accordingly, this analysis does not address construction-related HAP impacts in detail.

3.1.2.2 Operations

3.1.2.2.1 Impacts Generated by MLSP

Consistent with guidance from APCD staff[53], MSW considered the potential for HAP impacts associated with future industrial uses in the MLSP in the context of regulatory constraints on such impacts.

3.1.2.2.2 Impacts Experienced by MLSP Occupants

MSW considered the potential for significant HAP impacts to MLSP occupants (in particular, MLSP residents) from nearby off-site stationary HAP sources by reviewing applicable HAP source databases and obtaining additional guidance from APCD staff[54].

To evaluate the potential impacts on MLSP occupants from possible future rail service to MLSP industrial uses, MSW performed a simple screening analysis using the U.S EPA's SCREEN3[55] model. MSW applied a baseline 2005 locomotive PM emission factor derived from the same U.S. EPA source that was referenced in performing the corresponding on-site locomotive emissions analysis, discussed under Heading 3.1.1.1.2, above. The approach used in that emissions analysis to estimate time-averaged locomotive power output was applied for this concentration analysis as well.

The future emission rate reduction profile shown in the *BNSF Intermodal Health Risk Estimate* was applied to the baseline emission rate. MSW considered the potential for locomotive activity to persist in a single condensed area (perhaps associated with loading/unloading/switching) approximately 200 by 20 feet for a short period during each weekday. An emissions release height

of about 16 feet was assumed. Annual average conditions were estimated by multiplying predicted concentrations under worst-case conditions by 0.08, consistent with U.S. EPA Guidance[56].

3.1.3 Odors

As previously mentioned, odors issues associated with the project have been addressed in a separate report prepared by Air Permitting Specialists.

3.2 Standards of Significance

3.2.1 Criteria Air Pollutant Emissions

Consistent with Table 4-1 of the *GAMAQI* (for ROG and NO_x) and the APCD's suggestion of the New Source Review thresholds as a source for a PM_{10} emissions threshold, MSW applied significance thresholds to project-generated criteria air pollutant emissions as shown in Table 10.

Table 10 – Significance Thresholds for Criteria Air Pollutant Emissions

Pollutant	Significance Threshold (tons/yr)
ROG	10
NO_x	10
PM_{10}	15
SOURCE: SJVAPCD, 2002-06	

3.2.2 Criteria Air Pollutant Concentrations

Consistent with Section 4.3.2 of the *GAMAQI* (as modified based on the Sacramento Metropolitan Air Quality Management District's substantial contribution threshold[57]), a project's contribution to cumulative criteria air pollutant concentrations of CO or PM_{10} will be considered significant if it contributes five percent or more to concentrations that exceed any AAQS.

3.2.3 Hazardous Air Pollutants

Pursuant to Table 4-3 of the *GAMAQI*, this analysis considers HAP impacts in the context of the following significance criteria:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million.
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the MEI.

3.3 Impacts and Mitigation Measures

3.3.1 IMPACT 1: Criteria Air Pollutant Emissions

The MLSP's criteria air pollutant emissions impacts would be ***significant***.

The implications of the ISR Rule (a critical part of the regulatory context for this analysis) will be considered within the impact discussion, before any additional mitigation is recommended as part of this analysis. For illustrative purposes, MSW will first consider criteria air pollutant emissions consistent with the ISR Rule's unmitigated baseline. MSW will then show approximately how the ISR Rule would enforce reductions in those baseline values, and will show corresponding estimated emissions with ISR Rule compliance. The specifics of ISR compliance would be established at a later time.

3.3.1.1 Criteria Air Pollutant Impacts Before Project-incorporated Mitigation and ISR Compliance Are Considered

Table 11 summarizes estimated emissions for both analysis scenarios before project-incorporated mitigation and ISR compliance are considered. For each year, emissions for three criteria air pollutants of concern are considered: ROG, NO_x and PM_{10}. For PM_{10}, construction emissions are segregated into those from fugitive dust ("Dust") and internal combustion engine exhaust ("Exhaust") source components. This segregation of PM_{10} emissions estimates by source component is relevant both to mitigation strategies (which differ for these two categories) and applicability of APCD regulations.

Project construction was assumed to be complete at the time of the second scenario ("1st Year After Build-out"); accordingly, no construction-related emissions are considered for that scenario.

The first several rows of data in Table 11, below the column headings, present estimated construction-related emissions for each of the aforementioned scenarios and pollutants. The first two of these rows consider construction activities directly related to on-site development. The first data row considers the site preparation phase (including grading), while the second considers the building phase. The third row of data considers construction emissions from improvement or rerouting of off-site roadways. The fourth and fifth rows subtotal the results from the first three. For PM_{10}, two levels of subtotals are shown. First, subtotals specific to each identified source component (Dust and Exhaust) are displayed. Directly below that, the sum of estimated emissions for each source category is displayed.

Table 11 – Estimated Project-related Criteria Air Pollutant Emissions: Before ISR Compliance [a]

Source Category			Estimated Emissions (tons per year)						
			At Completion of Phase 1 (Approx. 2015)				1st Year After Build-out (Approx. 2028)		
					PM_{10}				
General	Component	Category	ROG	NO_x	Dust	Exhaust	ROG	NO_x	PM_{10}
Construc-tion	Internal Development	Site Prep.	2.4	14.8	5.0 [b]	0.5			
		Building	12.1	10.9	0.1	0.4			
	Roadways: Rerouted SR4/ Off-site Improvements		2.5	12.0	0.5	0.7			
	Subtotals				***5.6***	***1.6***			
			17.0	***37.7***	***7.2***				
Opera-tions	Mobile	Traffic	51.6	58.9	50.8		70.9	60.4	137.9
		Rail[3]	0.0	0.1	0.0		0.2	3.9	0.1
	Area		58.0	11.4	11.6		149.5	26.7	30.6
	Subtotals		***109.6***	***70.3***	***62.4***		***220.6***	***91.0***	***168.6***
Totals			**126.6**	**108.0**	**69.6**		**220.6**	**91.0**	**168.6**

[a] Accounts for emissions reductions associated with compliance with applicable APCD regulations other than Rule 9510 (ISR).

[b] This estimate assumes a relatively low level of dust abatement assumed to be required – under typical conditions in the project vicinity during seasons when construction activities tend to be heaviest – to comply with Regulation VIII.

SOURCE: MSW Consulting, 2006

The next four rows of data address operational emissions. Within this "Operations" section of the table, the first ("Traffic") and third ("Area") rows provide emissions estimates for the corresponding URBEMIS emissions source categories. The intervening row ("Rail") shows emissions estimates derived through a separate consideration of potential impacts from on-site freight rail service. The final row of data sums the subtotals from the construction and operational sources.

Table 11 reflects emissions reductions associated with minimum compliance with applicable APCD regulations other than Rule 9510 (ISR). The two rules that meaningfully influence the results from this table are Regulation VIII (Fugitive PM_{10}) and Rule 4901 (Residential Wood Burning). The discussion under Heading 3.1.1.1 addresses how this influence was accounted for.

Table 12 – Assumed Degree of Implementation of ISR-Eligible On-Site Measures (Project Description)

ISR					Corresponding URBEMIS Assumptions			
Form			Measure		Description		Applied? (Degree of Implementation)[a]	Note
File Name	Description: General	Description: Specific	General	Specific	General	Specific		
M004	Mixed Use	Construction	Reduce on-site construction vehicle exhaust emissions	Re: Statewide average	Construction	Exhaust control	No	Unmitigated URBEMIS results are assumed under ISR to be based on statewide average emission rates
M005	Mixed Use	Mixed Use/ Affordable Housing	Local Serving Retail	Project Contains Residential	Operations	Local Serving Retail	Yes	Incorporated into Land Use Plan.
				Project Contains Retail/Commercial				
			Jobs to Housing Ratio		Operations	Mix of Uses	Yes (10819 rsd. units, 14198 employment)	Based on proposed land use and estimated employment from Land Use By Neighborhood assumptions
			Affordable Housing		Operations	Affrdbl. Housing	No	
M006	Mixed Use	Building/ Site Design	Energy Efficiency	Residential	Area	Increase Energy Efficiency Beyond Title 24 Requirements	No	It is reasonable to expect that version of Title 24 in affect at time of construction will be more stringent than version upon which default URBEMIS results based.
				Non-residential				
			Electrical Landscape Equipment	Residential	Area	% equipment electrically-powered	No (0%)	URBEMIS measure also requires provision of outdoor electrical outlets to facilitate use of such equipment.
				Non-residential				
			Wood Burning Appliances	Fireplaces	Area	Reduce wood-burning appliances beyond Rule 4901 requirements?	No (assumed max. allowable under Rule 4901: 31%)	Wood-burning appliances assumed to be limited to Estate and Low Density Residential.
				Wood Stoves				
			Shower/Locker Facilities		Operational	TDM[b]	No	
			Parking	Preferential Parking Spaces	Operational	TDM	No	
				Parking Reduction		Parking Supply	No	

Table 12 – Assumed Degree of Implementation of ISR-Eligible On-Site Measures (Project Description)

ISR					Corresponding URBEMIS Assumptions			
Form			Measure		Description		Applied? (Degree of Implementation)[a]	Note
File Name	Description: General	Description: Specific	General	Specific	General	Specific		
M007	Mixed Use	Bicycle/ Pedestrian	Existing and Planned Bicycle Infrastructure		Operational	Bike & Pedestrian	% Arterials/ collectors w/ bike lanes: 100	Project Description Section 3.6.3.
			Bicycle Storage		Operational	TDM	No	
			Pedestrian Infrastructure		Operational	Bike & Pedestrian	% streets w/ sidewalks on both sides: 100	Project Description Section 3.6.3.
			Streets Design		Operational	Bike & Pedestrian	Intersections / mi^2: 9.7	Incorporated into Land Use Plan.
M008	Mixed Use	Transpor-tation/ Transit	Signage (Kiosk)		Operational	TDM	No	
			Mass Transit	Transit Passes	Operational	TDM	No	
				Bus Service	Operational	Transit	Yes (7/dy)	Assumes SJRTD service along Austin @ low end of typical service frequency.
				Rail or Rapid Transit Bus Service	Operational	Transit	Yes (3/dy)	Based on proposed Amtrak station & current Caltrans/Amtrak schedules
				Shuttle Service	Operational	Transit	No	
M009	Mixed Use	Operational	Parking Charges		Operational	TDM	No	
			Telework					
			Guaranteed Ride Home					
			Carpool Matching Assistance					
			Car Sharing Services					
			Transportation Coordinator					
			Alternative Work Schedules					
			On-Road Fleet		Operational	On-road Trucks	No	

[a] For non-construction measures, values represent build-out conditions. [b] Transportation demand management. SOURCES: SJVAPCD, 2006; MSW, 2006

3.3.1.2 Criteria Air Pollutant Impacts With Consideration of Project-incorporated Mitigation and ISR Compliance

Project-incorporated mitigation measures are summarized in Table 12.

The steps in the process of deriving the net emissions impacts, as listed in Table 13, are briefly discussed below.

3.3.1.2.1 Emissions Before Project-incorporated Mitigation and Compliance with ISR

These emission quantities are taken directly from the Construction and Operations subtotals in Table 11.

3.3.1.2.2 Reductions from Project-incorporated (On-site) Mitigation

The EIR Project Description does not include any project features that explicitly indicate a reduction in unmitigated baseline exhaust emissions from construction-related equipment. Therefore, as shown in the second data row of Table 13, no "On-site" reductions in such emissions have been assumed.

The EIR Project Description does include some features that would qualify as on-site operational measures. These are summarized in Table 12. Table 13 shows that the estimated net effect of these measures are reductions in emissions of the key criteria air pollutants of between 4.4 and 5.7 tons per year under the Completion of Phase 1 scenario, and between 9.0 and 22.5 tons per year under the 1st Year After Build-out scenario.

3.3.1.2.3 Additional Reductions From Off-site Mitigation

The ISR Rule focuses on NO_x and PM_{10}. On-site mitigation measures eligible for credit under the ISR Rule also tend to reduce ROG emissions, and those reductions are shown in Table 13. Consistent with the ISR Rule's emphasis, Table 13 only shows additional reductions in emissions from Off-site measures for NO_x and PM_{10}. (As a matter of practice, in implementing off-site mitigation, the APCD reserves the right to substitute reductions in ROG emissions for reductions in NO_x emissions on a one-to-one basis.)

For the Completion of Phase 1 scenario, Table 13 shows quantities of off-site emission reductions required for each of the two ISR-related pollutants and each of the two source categories to bring total emission reductions up to the percentages required under the ISR Rule.

Table 13 – Estimated Project-related Criteria Air Pollutant Emissions: After ISR Compliance [a]

Source Category	Emissions Category		Estimated Emissions (tons per year)						
			At Completion of Phase 1 (Approx. 2015)				1st Year After Build-out (Approx. 2028)		
	General	Specific	ROG	NO_x	PM_{10} Dust	PM_{10} Exhaust	ROG	NO_x	PM_{10}
Construc-tion	Unmitigated Baseline		17.0	37.7	5.6	1.6			
	Net Effect of Measures Related to ISR Compliance	On-site	0	0	NA	0			
		Off-site[c]	NA	-7.5		-0.7			
					5.6	0.9			
	With ISR Compliance		***17.0***	***30.2***	***6.5***				
Opera-tions	Unmitigated Baseline		109.6	70.3	62.4		220.6	91.0	168.6
	Net Effect of Measures Related to ISR Compliance	On-site	-4.4	-5.7	-4.9		-9.0	-9.8	-22.5
		Off-site [c]	NA	-17.5	-26.3		NA	-11.8[d]	-39.9[d]
	With ISR Compliance		***105.2***	***47.1***	***31.2***		***211.6***	***69.4***	***106.2***
Both	**Total Net Emissions**		**122.2**	**77.3**	**37.7**		**211.6**	**69.4**	**106.2**
	Significance Threshold		**10**	**10**	**15**		**10**	**10**	**15**
	Significant?		**Y**	**Y**	**Y**		**Y**	**Y**	**Y**

[a] Accounts for emissions reductions associated with compliance with other applicable APCD as well.

[b] This estimate assumes a relatively low level of dust abatement assumed to be required – under typical conditions in the project vicinity during seasons when construction activities tend to be heaviest – to comply with Regulation VIII.

[c] In practice, the APCD might substitute ROG emission reductions for NO_x reductions at a one-to-one ratio, so that the reduction in NO_x might be lower and in ROG might be higher than the values shown here. However, for the purposes of this analysis, based on the focus of the ISR rule on NO_x rather than ROG, and based on APCD guidance, all of the estimated ozone precursor reductions have been attributed to NO_x.

SOURCE: MSW Consulting, 2006

Required Off-site emission reductions for NO_x and PM_{10} are also shown for the 1st Year After Build-out scenario. Under this scenario, however, the total emission reductions required under the ISR Rule have been estimated based on unmitigated baseline emissions for development phases subsequent to Phase 1 – that is, Phases 2 through 5. The basis for this approach is discussed under Heading 3.1.1.1.1 earlier in this report.

The outcome of this approach is that – for the 1st Year After Build-out scenario -- total emission reductions related to ISR Rule compliance are lower than they would be if the benefit of off-site mitigation fees paid in connection with Phase 1 development were assumed to have persisted through the build-out year (approximately 2028). As a result, the remaining net emissions

impacts are higher. This effect would be assumed to be even greater further into the future, as more and more of the effective emissions benefit associated with off-site mitigation fees paid during or in advance of development applications dissipates.

3.3.1.2.4 Resulting Net Emissions Impacts Relative to Applicable Significance Criteria

The final three data rows in Table 13 summarize the predicted result of ISR compliance on net project emissions impacts. They show that those impacts are expected to exceed applicable significance criteria under both analysis scenarios even after ISR-Rule-related emission reductions are accounted for.

3.3.2 IMPACT 2: Criteria Air Pollutant Concentrations

Potential localized project-related contributions to cumulative concentrations of criteria air pollutants are deemed ***less-than-significant.***

Two project-generated concentration impacts will be considered under this heading: construction-related particulate matter impacts and off-site CO concentration impacts potentially exacerbated by project-generated traffic.

3.3.2.1 Construction-related PM Concentration Impacts

The project-related construction PM emissions as described under Heading 3.3.1 could result in temporary localized increases in PM_{10} and $PM_{2.5}$ concentrations. However, the control measures required under Regulation VIII are expected to reduce those temporary increases to less than significant levels. In fact, in some respects, the Visible Dust Emissions (VDE) criterion applied in Regulation VIII – while only directly indicative of particle sizes larger than those of greatest concern with respect to health – would be expected to correlate reasonably well with the potential for localized elevations in associated PM_{10} concentrations. Given the limits on fugitive dust emissions enforced under Regulation VIII and the temporally and spatially transient nature of construction activities that generate such emissions, the temporary PM concentration impacts caused by project-related construction are considered less than significant.

3.3.2.2 Exacerbation of Worst-case CO Concentration Impacts Near Roadway Intersections

Table 14 summarizes predicted ambient CO concentrations at near-curbside locations adjacent to the two intersections selected for analysis as described under Heading 3.1.1.2 earlier in this report.

Table 14 – Estimated Worst-case Near-Curbside CO Concentrations at Critical Intersection Locations

Aver-aging Period	Study Intersection #	Study Intersection Name	With Traffic Mitigation?	Intersection Control	Significance Threshold (ppm)	Assumed Background Concentration (ppm)[b]	Existing (2006[c]) Concentration (ppm)	EPAP (2015[c]) CO Concentrations (ppm) No Proj.	EPAP (2015[c]) CO Concentrations (ppm) With Phase I	EPAP (2015[c]) CO Concentrations (ppm) Δ	EPAP (2015[c]) Signif-icant Impact?	2035 General Plan (2028[c,d]) CO Concentrations (ppm) No Proj.	2035 General Plan (2028[c,d]) CO Concentrations (ppm) With Proj.	2035 General Plan (2028[c,d]) CO Concentrations (ppm) Δ	2035 General Plan (2028[c,d]) Signif-icant Impact?
1-hour[a]	5	E. Mariposa Way / E. 8th Street	No	SL	20	5.2	7.6	6.8	7.4	+0.6	No	6.8	6.4	-0.4[e]	No
	21	Austin Road/Arch Road	No	SS			5.7	5.6	7.0	+1.4	No	6.2	6.4	+0.2	No
			Yes	SL[f]					7.3		No	6.2	6.6	+0.4	No
8-hour[a]	5	E. Mariposa Way / E. 8th Street	No	SL	9	3.0	4.1	3.7	3.8	+0.1	No	3.7	3.5	-0.2[e]	No
	21	Austin Road/Arch Road	No	SS			3.2	3.1	3.7	+0.6	No	3.3	3.4	+0.1	No
			Yes	SL[f]					3.9		No	3.4	3.5	+0.1	No

[a] Consistent with *CO Protocol* guidance, 1-hour receivers were located 3 meters from the near edges of the nearest travel lanes and 8-hour receivers were located 7 meters from the edges of those lanes.

[b] Most likely, the previous downward trend in background CO concentrations over time (documented, for instance, in Figure 4.37 of the ARB's *Almanac 2006* document) would continue into the future. However, the SJVAPCD's *GAMAQI* does not include a specific recommendation for estimating such future reductions. Consistent with a conservative analysis, MSW assumed no change in these background concentration values derived from applicable 2002-2004 monitoring data.

[c] As the analysis year is increased, the average emission rate for the on-road vehicle fleet is assumed to decrease. Therefore, even where higher traffic volumes are expected in a later year relative to an earlier year, the corresponding predicted CO concentration might be lower than for that earlier year.

[d] This analysis assumes that project build-out would occur in 2028. Accordingly, results for this scenario are based on predicted year 2028 emission rates.

[e] In this case, assumed project-related changes to the roadway network are expected to lead to a redistribution of traffic movements at this intersection predicted to result in a slight reduction in worst-case CO concentration impacts.

[f] At Intersection #21 (unlike Intersection #5) the proposed traffic mitigation would include conversion of the intersection control from stop signs on two legs (and no controls on the other two legs) to a traffic signal. That mitigation would achieve traffic performance goals related to the worst-case intersection movements. However, for those uncontrolled intersection movements with minimal requirements to yield at the intersection in the unmitigated case, such mitigation would introduce red-light-related intermittent queuing. In this case, modeling predicts that slightly higher CO concentrations would result in some cases.

SOURCES: MSW Consulting, 2006; Sonoma Technology, Inc., 1999; University of California, Davis Institute of Transportation Studies, 1997; ARB, 2006.

The leftmost five columns provide the context for the concentration values that dominate the remainder of the table. The first column of this table identifies the averaging period that applies to the concentration values presented further to the right. The second and third columns identify the intersection to which those values apply. The fourth row indicates whether mitigation recommended in the Traffic Study has been assumed. (This is explained further under Table Footnote "f".) The fifth column indicates whether the intersection control is provided by a stop light ("SL") or by stop signs ("SS"). In its current configuration, Intersection 21 is controlled by stop signs at the western and eastern approaches.

The significance thresholds indicated in the sixth column of Table 14 are applied to the determinations of significance in the fifth-from-right and rightmost columns of the table. The ratio between the eight-hour- and one-hour-average background concentrations presented in the seventh column was applied as a "persistence factor" for adjustment of the one-hour CALINE results to derive eight-hour local CO concentration predictions. These background values were added to the relevant CALINE4-based results to derive total CO concentration predictions.

The rightmost nine columns of Table 14 present the total CO concentration predictions and conclusions derived from them. The first of these columns presents estimated existing concentrations. The next four columns to the right address results for EPAP (2015) conditions. The No Project CO concentrations are presented, followed by the corresponding results with completion of MLSP Phase I. For each row, the difference between these two concentration predictions is shown under the "Δ" heading. Finally, a conclusion is presented regarding the significance of the (project and cumulative) CO concentration impact. The rightmost four columns are organized in the same way, but address the 2035 General Plan condition.

Table 14 indicates that no predicted worst-case CO concentration value exceeds the applicable significance thresholds. In fact, none of the predicted values exceeds 50 percent of the applicable thresholds. Accordingly, this impact is considered less than significant.

3.3.3 *IMPACT 3: Hazardous Air Pollutant Impacts Generated Within the MLSP*

The potential impacts from HAPS generated on the project site are deemed potentially ***significant***.

This analysis will consider two potential categories of HAP impacts generated within the MLSP:

- HAPs emitted by future MLSP industrial land uses; and

3.3.3.1 HAPs Emitted by Future MLSP Industrial Land Uses

There are many dozens of compounds identified by the U.S. EPA as HAPs and/or by the ARB as TACs, and they very greatly in their potency

(in terms of minimum concentration required to produce a given level of risk). Emissions of many (though not all) of these HAPs are most commonly associated with one or more specific types of industrial and/or commercial processes. Examples of such processes and businesses that can generate substantial off-site HAP impacts if not properly controlled are those involving hexavalent chromium[58] (such as chrome-plating and custom-painting operations[59]) and perchloroethylene traditionally associated with dry cleaning, paints and other coatings, specialty chemical production, laboratory solvents, printing inks, et cetera[60]. Even where individual consumers might be the end users of products containing such compounds, the potential for sustained, elevated concentrations is generally greatest at locations where they are manufactured, packaged, and/or distributed.

It is reasonable to expect the majority of operations within the MLSP's future industrial areas would not represent potentially important sources of listed HAPs and/or TACs. In the event that a business with such potential sought to start or relocate operations within the MLSP area, it would be subject to APCD regulations that would prohibit it from operating unless or until it could reduce its HAP emissions such that the risk at the most vulnerable off-site sensitive receptors would remain below the levels established as significance criteria in this study[61]. This restriction would apply whether those receptors were located within or outside of the MLSP area. Accordingly, the existing APCD regulatory framework would maintain HAP impacts from such sources at less-than-significant levels.

3.3.3.2 HAPs Emitted by Locomotives Operating within MLSP Boundaries

If rail service is provided within the MLSP site, locomotives providing that service will emit diesel particulate matter within MLSP boundaries. Recent studies have found that diesel PM emissions associated with major rail yard operations have the potential to generate health hazards at substantial distances from those facilities. However, any rail service associated with the MLSP would likely involve only one locomotive at a time, operating anywhere from perhaps one to several days per week for a period of a couple of hours to perhaps 12 hours per day[62]. This contrasts with the tens of thousands of annual rail operations at major rail yards.

Nevertheless, the potential for such operations to substantially contribute to health risk at certain sensitive receptors cannot be ruled out if there are no constraints on the location, duration and intensity of those operations. Such receptors might include existing residential areas on the MLSP site adjacent to proposed industrial uses, or planned residential areas proposed adjacent to such industrial areas.

Using the conservative screening analysis approach summarized earlier in this report under Heading 3.1.2.2.2, MSW found that the 70-year cancer risk significance threshold could be exceeded at a worst-case

receiver if – for instance – a locomotive operated within the assumed 200 by 20 foot area for at least one half hour per day at least five days per week throughout each year. That worst-case receiver is positioned directly in line with the longitudinal axis of the source area. If that source area represented multiple side-by-side tracks, the worst-case position would be directly in line with those track segments – a highly unlikely position for a sensitive receiver for which application of the 70-year baseline for cancer risk assessment would be warranted. Nevertheless, in the absence of specific information on potential internal track locations, this impact will be deemed ***potentially significant***.

3.3.4 IMPACT 4: Hazardous Air Pollutant Impacts Experienced Within the MLSP Due to Off-site Sources

The potential impact from HAP exposure experienced within the project site due to offsite sources is deemed ***less-than-significant.***

This analysis will consider two potential categories of HAP impacts experienced within the MLSP:

- HAPs emitted by APCD-permitted stationary sources; and
- HAPs emitted by diesel locomotives and trucks associated with the operation of the BNSF Stockton Intermodal Yard.

3.3.4.1 HAPs Emitted By APCD-permitted Sources

As discussed under Heading **Error! Reference source not found.** of this report, MSW identified no existing nearby APCD-permitted sources of HAP emissions with the potential to significantly impact future sensitive receptor areas within the project site.

3.3.4.2 HAPs Emitted by Diesel Locomotives and Trucks Associated with the Operation of the BNSF Stockton Intermodal Yard

As discussed earlier in this report, potential future HAP impacts at project receivers due to operations at the BNSF Stockton Intermodal Yard have been addressed in a separate report by Air Permitting Specialists. That report concludes that impacts from this source would be less than significant.

3.4 Mitigation Measures

3.4.1 MITIGATION MEASURE 1: Criteria Air Pollutant Emissions

Emission levels considered under Impact 1 already reflect benefits achieved through required compliance with applicable APCD rules (including the ISR Rule) and project-incorporated mitigation measures.

However, additional on-site mitigation is potentially available, both within and outside of the context of ISR Rule compliance. Within that context, the

proposed *Mitigation Program* serves as the basis for recommendations in this analysis regarding on-site mitigation measures, and for associated assumptions leading to estimates of mitigation effectiveness.

Table 15 summarizes the degree and extent of mitigation measure implementation assumed in connection with the *Mitigation Program*. It is a modification of Table 12. Table 16 summarizes the recommended degree of implementation of construction-related fugitive dust control measures. This degree of implementation is compared to the lesser level of control measure implementation assumed to represent typical minimum requirements for compliance with the VDE control provisions of APCD Regulation VIII. Table 17 summarizes the estimated implications of these measures on mitigated project emissions within the context of ISR Rule compliance.

3.4.1.1 Construction-related

3.4.1.1.1 Exhaust Emissions

As in Table 13, Table 17 shows no emission reduction is associated with on-site measures for construction-related emissions impacts under the Completion of Phase 1 scenario. It is too early to reasonably specify a mitigation strategy for reducing exhaust emissions from equipment used in project construction. Emission reduction potential will depend on the specifics of the construction fleet – equipment types and ages, compatibility with various pollution control retrofit devices, et cetera. It will also depend on the specific control devices available at the time that a construction equipment exhaust emission control plan is developed in the context of ISR compliance.

However, the potential benefit from such control measures is substantial. As the construction phase for development of each tract within the MLSP approaches, MSW recommends that the Applicant/Developer consult with the APCD to determine the most cost-effective measures to minimize exhaust emissions from such equipment, then implement those measures. Such measures could include:

- Use of aqueous diesel fuel;
- Installation of diesel particulate filters;
- Implementation of exhaust gas recirculation;
- Installation of lean-NO_x catalyst; and/or
- Installation of diesel oxidation catalyst.

Table 15 – Assumed Degree of Implementation of ISR-Eligible On-Site Measures (with CEQA Mitigation)

ISR					Corresponding URBEMIS Assumptions			
Form			Measure		Description		Applied? (Degree of Implementation)[a]	Note
File Name	Description: General	Description: Specific	General	Specific	General	Specific		
M004	Mixed Use	Construc-tion	Reduce on-site construction vehicle exhaust emissions	Re: Statewide average	Construc-tion	Exhaust control	No. (AQM Program Section 9 includes some general statements relating to such controls; it is expected that substantive quantifiable reductions could be demonstrated before completion of the ISR application process.)	
M005	Mixed Use	Mixed Use/ Affordable Housing	Local Serving Retail	Project Contains Residential	Operations	Local Serving Retail	Yes	Incorporated into Land Use Plan.
				Project Contains Retail/Commercial				
			Jobs to Housing Ratio		Operations	Mix of Uses	Yes (10819 rsd. units, 14198 employment)	Based on proposed land use and estimated employment from Land Use By Neighborhood assumptions
			Affordable Housing		Operations	Affrdbl. Housing	No	
M006	Mixed Use	Building/ Site Design	Energy Efficiency	Residential	Area	Increase Energy Efficiency Beyond Title 24 Requirements	No	Reasonable to expect that version of Title 24 in affect at time of construction will be more stringent than that upon which default URB. results based.
				Non-residential				
			Electrical Landscape Equipment	Residential	Area	% equipment electrically-powered	Yes (20%)	AQM Program Sections 5,6, & 8 include provision of outdoor electrical outlets on project buildings; Section 5 includes provision of electrical mowers w/SFDs.
				Non-residential			Yes (10%)	
			Wood Burning Appliances	Fireplaces	Area	Reduce wood-burning appli-ances beyond Rule 4901 requirements?	Yes (no such appliances)	AQM Program Section 5 prohibits residential wood-burning appliances.
				Wood Stoves				

Table 15 – Assumed Degree of Implementation of ISR-Eligible On-Site Measures (with CEQA Mitigation)

ISR					Corresponding URBEMIS Assumptions			
Form			Measure		Description		Applied? (Degree of Implementation)[a]	Note
File Name	Description: General	Description: Specific	General	Specific	General	Specific		
			Shower/Locker Facilities		Operational	TDM[b]	Yes	AQM Program Sections 6&8.
M006	Mixed Use	Building/ Site Design	Parking	Preferential Parking Spaces	Operational	TDM	No	AQM Program Section 7.
				Parking Reduction		Parking Supply	No	
M007	Mixed Use	Bicycle/ Pedestrian	Existing and Planned Bicycle Infrastructure		Operational	Bike & Pedestrian	% Arterials/ collectors w/ bike lanes: 100	Project Description Section 3.6.3.
			Bicycle Storage		Operational	TDM	Yes	AQM Prog. Sections 5,6&8.
			Pedestrian Infrastructure		Operational	Bike & Pedestrian	% streets w/ sidewalks on both sides: 100	Project Description Section 3.6.3.
			Streets Design		Operational	Bike & Pedestrian	Intersections / mi^2: 9.7	Incorporated into Land Use Plan.
M008	Mixed Use	Transpor-tation/ Transit	Signage (Kiosk)		Operational	TDM	Yes	AQM Program Section 7.
			Mass Transit	Transit Passes	Operational	TDM	Yes	AQM Program Section 7.
				Bus Service	Operational	Transit	Yes (7/dy)	Assumes SJRTD service along Austin @ low end of typical service frequency.
				Rail or Rapid Transit Bus Service	Operational	Transit	Yes (3/dy)	Based on proposed Amtrak station & current Caltrans/Amtrak schedules
				Shuttle Service	Operational	Transit	No	
M009	Mixed Use	Operational	Parking Charges		Operational	TDM	No	
			Telework				10% telecommute	AQM Program Section 7.
			Guaranteed Ride Home				Yes	AQM Program Section 7.
			Carpool Matching Assistance				Yes	AQM Program Section 7.
			Car Sharing Services				No	
			Transportation Coordinator				Yes	AQM Program Section 7.
			Alternative Work Schedules				10% on 9/80 schedule	AQM Program Section 7.
			On-Road Fleet		Operational	On-road Trucks	No	

[a] For non-construction measures, values represent build-out conditions. [b] Transportation demand management. SOURCES: SJVAPCD, 2006; MSW, 2006

Table 16 – Comparison of Degree of Fugitive Dust Emission Assumed to Approximate Minimum Compliance with Regulation VIII and that Recommended Here

	Assumed to be Required for Minimum Compliance With Regulation VIII		Recommended in This Study	
Source Category	**Measure**	**Frequency**	**Measure**	**Frequency**
Soil Disturbance	NA		Apply soil stabilizers to inactive areas of exposed dirt	As needed
	Replace ground cover in disturbed areas quickly	As needed	Replace ground cover in disturbed areas quickly	As needed
	Water exposed surfaces	Twice per day	Water exposed surfaces	Three times per day
Stockpiles	Cover all stockpiles with tarps	As needed	Cover all stockpiles with tarps	As needed
Unpaved Roads	Water all haul roads	Twice per day	Pave all haul roads	
	Reduce speed on unpaved roads to <15 mph	At all times	Reduce speed on unpaved roads to <15 mph	At all times
SOURCE: ARB, 2005; MSW, 2006				

3.4.1.1.2 Fugitive Dust Emissions

URBEMIS modeling suggests that enhancing the degree and breadth of implementation of fugitive dust control measures – as shown in Table 16 – could substantially reduce fugitive dust emissions. Table 17 reflects that reduction in the context of overall construction-related PM emissions. It shows that these enhanced measures would be expected to reduce those emissions from 6.5 to 1.3 tons per year under the Completion of Phase 1 scenario.

3.4.1.2 Operational

Table 16 shows that the estimated on-site emission reductions associated with the measures summarized in Table 14 are expected to substantially exceed the corresponding reductions shown in Table 13 for the project-incorporated measures summarized in Table 12. This is particularly true for the 1st Year After Build-out scenario.

Table 17 – Estimated Project-related Criteria Air Pollutant Emissions: After Implementation of Air Quality Mitigation Program, in Context of ISR Compliance [a]

			Estimated Emissions (tons per year)						
	Emissions Category		At Completion of Phase 1 (Approx. 2015)				1st Year After Build-out (Approx. 2028)		
					PM_{10}				
Source Category	General	Specific	ROG	NO_x	Dust	Exhaust	ROG	NO_x	PM_{10}
Construction	Unmitigated Baseline		17.0	37.7	5.6	1.6			
	Net Effect of Measures Related to ISR Compliance	On-site	0	0	NA	0			
		Off-site[c]	NA	-7.5		-0.7			
					5.6	0.9			
	With ISR Compliance		***17.0***	***30.2***	***6.5***				
	With Additional Mitigation		***17.0***	***30.2***	***1.3***				
Operations	Unmitigated Baseline		109.6	70.3	62.4		220.6	91.0	168.6
	Net Effect of Measures Related to ISR Compliance	On-site	-13.4	-7.3	-16.6		-33.2	-14.2	-54.5
		Off-site[c]	NA	-15.9	-14.6		NA	-9.0[d]	-19.7[d]
	With ISR Compliance		***96.2***	***47.1***	***31.2***		***187.4***	***67.8***	***94.4***
Both	**Total Net Emissions**		**113.2**	**77.3**	**32.5**		**187.4**	**67.8**	**94.4**
	Significance Threshold		**10**	**10**	**15**		**10**	**10**	**15**
	Significant?		**Y**	**Y**	**Y**		**Y**	**Y**	**Y**

[a] Accounts for emissions reductions associated with compliance with other applicable APCD as well.

[b] This estimate assumes a relatively low level of dust abatement assumed to be required – under typical conditions in the project vicinity during seasons when construction activities tend to be heaviest – to comply with Regulation VIII.

[c] In practice, the APCD might substitute ROG emission reductions for NO_x reductions at a one-to-one ratio, so that the reduction in NO_x might be lower and in ROG might be higher than the values shown here. However, for the purposes of this analysis, based on the focus of the ISR rule on NO_x rather than ROG, and based on APCD guidance, all of the estimated ozone precursor reductions have been attributed to NO_x.

[d]

SOURCE: MSW Consulting, 2006

One outcome of greater emissions reduction benefit from operational on-site measures is lower predicted residual emissions for ROG -- not explicitly addressed under the ISR Rule – compared with the results in Table 13. Another outcome is lower predicted residual emissions for NO_x and PM_{10} under the 1st Year After Build-out scenario, notwithstanding the fact that total emission reduction percentage requirements under the ISR Rule would not be any different with changes in the amount of on-site emission reductions. The reason for this is that the greater reliance on persistent on-site mitigation measures means a lower reliance on off-site

measures. As discussed earlier in this report, the effective benefit of those off-site measures can dissipate over time, depending on the specific way in which (and specific off-site sources for which) those measures are implemented. In this case, some of the off-site mitigation associated with Phase 1 development – whose effective emission reduction benefits have been assumed to have expired by the time of the 1st Year After Build-out scenario – are substituted with on-site measures whose benefit has been assumed to have persisted.

3.4.1.3 Both

Even with implementation of the additional mitigation measures recommended above, residual project air pollutant impacts would remain well above applicable significance criteria for all analyzed pollutants and analysis years. Therefore, this impact would remain **significant after mitigation.**

3.4.2 MITIGATION MEASURE 2: Criteria Air Pollutant Concentrations

No mitigation required.

3.4.3 MITIGATION MEASURE 3: Hazardous Air Pollutant Impacts Generated Within the MLSP

The following measures shall be implemented before approvals are sought for any tentative tracts including components of MLSP development that are proposed to include internal train service.

The Applicant shall determine if the sorts of geometric and temporal concentrations of train activities described under Impact 3 can reasonably be expected to occur within about 200 to 400 feet of the nearest existing or proposed air-pollutant sensitive land uses. If so, the Applicant shall perform PM dispersion modeling using more specific information available at that time regarding the locations and other relevant characteristics of the locomotive activities. Such modeling shall also consider more specific receiver information that might be available at that time. The modeling results shall be converted to cancer risk values to assess whether any mitigation is warranted.

This study's preliminary impact results -- using relatively conservative analysis techniques – suggest that such mitigation requirements are unlikely, but possible. If mitigation is called for, some combination of the following is expected to be adequate:

A) Repositioning and/or reorientation of the concentrated area of locomotive activity.

B) Constraints on the annual average hours during which locomotives are active in that area.

C) Requirement for the use of locomotives and/or locomotive fuels that reduce emission rates beyond what has already been assumed in the cancer risk modeling.

D) Implementation of equipment systems and/or operator protocols to minimize on-site locomotive idling.

Modeling can be used to verify the adequacy of the selected measures.

These measures are expected to mitigate this impact to a **level below significance**.

3.4.4 MITIGATION MEASURE 4: Hazardous Air Pollutant Impacts Experienced Within the MLSP Due to Off-site Sources

No mitigation required.

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[56] U.S. EPA, Office of Air and Radiation, *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised*, October 1992. (http://www.epa.gov/scram001/guidance/guide/scrng.wpd)

[57] SMAQMD, *Guide to Air Quality Assessment in Sacramento County*, Section 2.62 (http://www.airquality.org/ceqa/2004AQMDCEQAGuidelines.pdf)

[58] ARB, *Initial Statement Of Reasons for Rulemaking: Public Hearing to Consider the Adoption of a Regulatory Amendment Identifying Hexavalent Chromium as a Toxic Air Contaminant* (Staff Report), December 9, 1985. (http://www.arb.ca.gov/toxics/id/summary/hex.pdf)

[59] Villalvazo, Leland, op. cit.

[60] ARB, *Initial Statement Of Reasons for Rulemaking: Proposed Identification of Perchloroethylene as a Toxic Air Contaminant* (Staff Report), August 1991. (http://www.arb.ca.gov/toxics/id/summary/perchlor.pdf)

[61] Villalvazo, Leland, op. cit.

[62] Palmer, Kevin, et al, op. cit.

MARIPOSA LAKES SPECIFIC PLAN:

AIR QUALITY REPORT – VERSION 3: APPENDICES

Prepared for:

InSite Environmental
Stockton, CA

MARIPOSA LAKES SPECIFIC PLAN: AIR QUALITY REPORT – VERSION 3: APPENDICES

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November 2006

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A. URBEMIS OUTPUT

This appendix presents output for the following files:

1) "0517_Phase1-Yr2015_Cns_RegVIII@Min-FD-Mit.urb". Construction-related emissions for a reasonably-conservative construction-year scenario, using an applicable (2015) model (emission factor) year. Mitigated scenario assumes a relatively low level of fugitive dust emissions control assumed to conservatively represent emissions with minimal compliance with APCD Regulation VIII.
2) "0517_Phase1-Yr2015_Ops_Mit=BasePD.urb". Phase 1 operational emissions for a model (emission factor) year of 2015. Mitigated scenario assumes only those measures incorporated with reasonable specificity into the EIR Project Description. This file includes estimated emissions from the assumed maximum number of residential wood-burning appliances that would be allowed under APCD Rule 4901.
3) "0517_Buildout-Yr2025_Ops_Mit=BasePD.urb". Total project operational emissions for a model (emission factor) year of 2025. Mitigated scenario assumes only those measures incorporated with reasonable specificity into the EIR Project Description. This file includes estimated emissions from the assumed maximum number of residential wood-burning appliances that would be allowed under APCD Rule 4901.
4) "0517_Phases_2-5-Yr2025_Ops_Mit=BasePD.urb". That portion of total project operational emissions *not* attributed to Phase 1 development, for a model (emission factor) year of 2025. Mitigated scenario assumes only those measures incorporated with reasonable specificity into the EIR Project Description. This file includes estimated emissions from the assumed maximum number of residential wood-burning appliances that would be allowed under APCD Rule 4901.
5) "0517_Phase1-Yr2015_Cns_Mit=Max-FD.urb". Construction-related emissions for a reasonably-conservative construction-year scenario, using an applicable (2015) model (emission factor) year. Mitigated scenario assumes the maximum level of non-redundant fugitive dust emissions control accommodated in URBEMIS.
6) "0517_Phase1-Yr2015_Ops_Mit=AQ-MitPlan.urb". Phase 1 operational emissions for a model (emission factor) year of 2015. Mitigated scenario assumes only those measures incorporated with reasonable specificity into the EIR Project Description and/or Air Quality Mitigation Program. This file assumes the exclusion of residential wood-burning appliances that would be allowed under APCD Rule 4901.
7) "0517_Buildout-Yr2025_Ops_Mit=AQ-MitPlan.urb". Total project operational emissions for a model (emission factor) year of 2025. Mitigated scenario assumes only those measures incorporated with reasonable specificity into the EIR Project Description and/or Air Quality Mitigation Program. This file assumes the exclusion of residential wood-burning appliances that would be allowed under APCD Rule 4901.
8) "0517_Phases_2-5-Yr2025_Ops_Mit=AQ-MitPlan.urb". That portion of total project operational emissions *not* attributed to Phase 1 development, for a model (emission factor) year of 2025. Mitigated scenario assumes only those measures incorporated with reasonable specificity into the EIR Project Description and/or Air Quality Mitigation Program. This file assumes the exclusion of residential wood-burning appliances that would be allowed under APCD Rule 4901.

A.1 "0517_PHASE1-YR2015_CNS_REGVIII@MIN-FD-MIT.URB"

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Cns_RegVIII@M
roject Name: 0517_Phase1-Yr2015_Cns_RegVIII@Min-FD-Mit
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

ONSTRUCTION EMISSION ESTIMATES

*** 2015 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (tpy, unmitigated)	14.50	25.73	35.85	0.00	24.60	0.90	23.70
TOTALS (tpy, mitigated)	14.50	25.73	35.85	0.00	6.04	0.90	5.14

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Cns_RegVIII@M
roject Name: 0517_Phase1-Yr2015_Cns_RegVIII@Min-FD-Mit
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

onstruction Start Month and Year: January, 2015
onstruction Duration: 12
otal Land Use Area to be Developed: 104.46 acres
aximum Acreage Disturbed Per Day: 10 acres
ingle Family Units: 200 Multi-Family Units: 586
etail/Office/Institutional/Industrial Square Footage: 283400

ONSTRUCTION EMISSION ESTIMATES UNMITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2015***							
ase 1 - Demolition Emissions							
gitive Dust	-	-	-	-	0.00	-	0.00
f-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
n-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
orker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ase 2 - Site Grading Emissions							
gitive Dust	-	-	-	-	23.59	-	23.59
f-Road Diesel	2.36	14.29	19.89	-	0.46	0.46	0.00
n-Road Diesel	0.04	0.52	0.14	0.00	0.02	0.01	0.01
orker Trips	0.01	0.04	0.42	0.00	0.00	0.00	0.00
Total tons/year	2.41	14.85	20.45	0.00	24.07	0.47	23.60
ase 3 - Building Construction							
dg Const Off-Road Diesel	1.61	10.48	13.23	-	0.42	0.42	0.00
dg Const Worker Trips	0.12	0.06	1.58	0.00	0.10	0.00	0.09
ch Coatings Off-Gas	10.26	-	-	-	-	-	-
ch Coatings Worker Trips	0.01	0.01	0.20	0.00	0.01	0.00	0.01
phalt Off-Gas	0.04	-	-	-	-	-	-
phalt Off-Road Diesel	0.04	0.25	0.37	-	0.01	0.01	0.00
phalt On-Road Diesel	0.01	0.08	0.02	0.00	0.00	0.00	0.00
phalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	12.09	10.88	15.40	0.00	0.53	0.43	0.10
Total all phases tons/yr	14.50	25.73	35.85	0.00	24.60	0.90	23.70

ase 1 - Demolition Assumptions: Phase Turned OFF

ase 2 - Site Grading Assumptions
art Month/Year for Phase 2: Jan '15
ase 2 Duration: 3 months
n-Road Truck Travel (VMT): 1622
f-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
13	Crawler Tractors	143	0.575	8.0
3	Graders	174	0.575	8.0
8	Off Highway Trucks	417	0.490	8.0
5	Rubber Tired Loaders	165	0.465	8.0
3	Scrapers	313	0.660	8.0
5	Tractor/Loaders/Backhoes	79	0.465	8.0

ase 3 - Building Construction Assumptions
art Month/Year for Phase 3: Apr '15
ase 3 Duration: 9 months
Start Month/Year for SubPhase Building: Apr '15
SubPhase Building Duration: 9 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
8	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '15
SubPhase Architectural Coatings Duration: 1 months
Start Month/Year for SubPhase Asphalt: Dec '15
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 30.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Pavers	132	0.590	8.0
4	Rollers	114	0.430	8.0

ONSTRUCTION EMISSION ESTIMATES MITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2015***							
hase 1 - Demolition Emissions							
ugitive Dust	-	-	-	-	0.00	-	0.00
ff-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
n-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
orker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hase 2 - Site Grading Emissions							
ugitive Dust	-	-	-	-	5.03	-	5.03
ff-Road Diesel	2.36	14.29	19.89	-	0.46	0.46	0.00
n-Road Diesel	0.04	0.52	0.14	0.00	0.02	0.01	0.01
orker Trips	0.01	0.04	0.42	0.00	0.00	0.00	0.00
Total tons/year	2.41	14.85	20.45	0.00	5.51	0.47	5.04
hase 3 - Building Construction							
ldg Const Off-Road Diesel	1.61	10.48	13.23	-	0.42	0.42	0.00
ldg Const Worker Trips	0.12	0.06	1.58	0.00	0.09	0.00	0.09
rch Coatings Off-Gas	10.26	-	-	-	-	-	-
rch Coatings Worker Trips	0.01	0.01	0.20	0.00	0.01	0.00	0.01
sphalt Off-Gas	0.04	-	-	-	-	-	-
sphalt Off-Road Diesel	0.04	0.25	0.37	-	0.01	0.01	0.00
sphalt On-Road Diesel	0.01	0.08	0.02	0.00	0.00	0.00	0.00
sphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	12.09	10.88	15.40	0.00	0.53	0.43	0.10
Total all phases tons/yr	14.50	25.73	35.85	0.00	6.04	0.90	5.14

onstruction-Related Mitigation Measures

Phase 2: Soil Disturbance: Replace ground cover in disturbed areas quickly
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 15.0%)
Phase 2: Soil Disturbance: Water exposed surfaces - 2x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 34.0%)
Phase 2: Stockpiles: Cover all stock piles with tarps
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 9.5%)
Phase 2: Unpaved Roads: Water all haul roads 2x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
ase 1 - Demolition Assumptions: Phase Turned OFF

ase 2 - Site Grading Assumptions
art Month/Year for Phase 2: Jan '15
ase 2 Duration: 3 months
-Road Truck Travel (VMT): 1622
f-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
13	Crawler Tractors	143	0.575	8.0
3	Graders	174	0.575	8.0
8	Off Highway Trucks	417	0.490	8.0
5	Rubber Tired Loaders	165	0.465	8.0
3	Scrapers	313	0.660	8.0
5	Tractor/Loaders/Backhoes	79	0.465	8.0

ase 3 - Building Construction Assumptions
art Month/Year for Phase 3: Apr '15
ase 3 Duration: 9 months
Start Month/Year for SubPhase Building: Apr '15
SubPhase Building Duration: 9 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
8	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '15
SubPhase Architectural Coatings Duration: 1 months
Start Month/Year for SubPhase Asphalt: Dec '15
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 30.5

Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Pavers	132	0.590	8.0
4	Rollers	114	0.430	8.0

ıanges made to the default values for Land Use Trip Percentages

ıe Trip Rate and/or Acreage values for Single family housing
ıave changed from the defaults 9.57/66.67 to 9.57/47.36
ıe Trip Rate and/or Acreage values for Apartments low rise
ıave changed from the defaults 6.9/20.13 to 6.72/33.54
ıe Trip Rate and/or Acreage values for Apartments mid rise
ıave changed from the defaults 5.76/6.95 to 5.86/10.56

ıanges made to the default values for Construction

ıe user has overridden the Default Phase Lengths
ıte Grading Fugitive Dust Option changed from Level 1 to Level 2
rchitectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00602
rchitectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.0116
ıase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
ıase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 2x daily
has been changed from off to on.
ıase 2 mitigation measure Stockpiles: Cover all stock piles with tarps
has been changed from off to on.
ıase 2 mitigation measure Unpaved Roads: Water all haul roads 2x daily
has been changed from off to on.
ıase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Ops_Mit=BaseP
roject Name: 0517_Phase1-Yr2015_Ops_Mit=BasePD
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

REA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	57.99	11.38	80.38	0.26	11.57
TOTALS (tpy, mitigated)	57.99	11.38	80.38	0.26	11.57

PERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	51.62	58.89	547.88	0.64	50.79
TOTALS (tpy, mitigated)	47.27	53.25	495.38	0.58	45.93

JM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	109.62	70.28	628.26	0.90	62.36
TOTALS (tpy, mitigated)	105.26	64.63	575.76	0.84	57.49

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Ops_Mit=BaseP
roject Name: 0517_Phase1-Yr2015_Ops_Mit=BasePD
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

REA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.76	9.92	5.06	0.00	0.02
Hearth	8.82	1.38	70.70	0.23	11.53
Landscaping	0.58	0.08	4.62	0.03	0.01
Consumer Prdcts	41.94	-	-	-	-
Architectural Coatings	5.89	-	-	-	-
TOTALS (tpy, unmitigated)	57.99	11.38	80.38	0.26	11.57

REA SOURCE EMISSION ESTIMATES (Tons per Year, Mitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.76	9.92	5.06	0	0.02
Hearth	8.82	1.38	70.70	0.23	11.53
Landscaping	0.58	0.08	4.62	0.03	0.01
Consumer Prdcts	41.94	-	-	-	-
Architectural Coatings	5.89	-	-	-	-
TOTALS (tpy, mitigated)	57.99	11.38	80.38	0.26	11.57

rea Source Mitigation Measures

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ow Density (VRE & VLDR)	14.35	17.78	164.49	0.20	15.98
edium Density (VMDR) [RM	15.76	18.62	172.31	0.21	16.74
igh Density (VHDR) [RH]	4.57	5.28	48.83	0.06	4.74
lementary school (ES) [P	3.76	3.98	37.29	0.04	3.27
eneral Comm. (VTC) [MX]	12.74	12.86	121.44	0.12	9.70
eavy Industrial (IV) [IG	0.44	0.38	3.51	0.00	0.35
OTAL EMISSIONS (tons/yr)	51.62	58.89	547.88	0.64	50.79

ncludes correction for passby trips.
ncludes the following double counting adjustment for internal trips:
esidential trips: 20.57 % reduction. Nonresidential trips: 21.45 % reduction.

PERATIONAL (Vehicle) EMISSION ESTIMATES

nalysis Year: 2015 Season: Annual

MFAC Version: EMFAC2002 (9/2002)

ummary of Land Uses:

nit Type	Acreage	Trip Rate	No. Units	Total Trips
ow Density (VRE & VLDR)	358.50	7.60 trips/dwelling unit	1,578.00	11,995.07
edium Density (VMDR) [RM	237.40	5.34 trips/dwelling unit	2,354.00	12,564.91
igh Density (VHDR) [RH]	30.60	4.65 trips/dwelling unit	765.00	3,560.76
lementary school (ES) [P		11.38 trips/1000 sq. ft.	420.00	4,780.46
eneral Comm. (VTC) [MX]		33.73 trips/1000 sq. ft.	643.00	21,688.28
eavy Industrial (IV) [IG		1.18 trips/1000 sq. ft.	171.00	201.48
		Sum of Total Trips		54,790.96
		Total Vehicle Miles Traveled		369,161.96

ehicle Assumptions:

leet Mix:

ehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ight Auto	54.40	0.40	99.40	0.20
ight Truck < 3,750 lbs	15.30	0.70	98.00	1.30
ight Truck 3,751- 5,750	16.40	0.60	98.80	0.60
ed Truck 5,751- 8,500	7.30	0.00	98.60	1.40
te-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
te-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
ed-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
eavy-Heavy 33,001-60,000	0.80	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.20	0.00	50.00	50.00
otorcycle	1.60	50.00	50.00	0.00
hool Bus	0.10	0.00	0.00	100.00
otor Home	1.50	0.00	93.30	6.70

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			

of Trips - Commercial (by land use)

ementary school (ES) [PF]	20.0	10.0	70.0
neral Comm. (VTC) [MX]	2.0	1.0	97.0
avy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ɔw Density (VRE & VLDR)	13.13	16.07	148.73	0.18	14.45
ɜdium Density (VMDR) [RM	14.49	16.84	155.80	0.19	15.14
ɩgh Density (VHDR) [RH]	4.21	4.77	44.15	0.05	4.29
ɩementary school (ES) [P	3.45	3.60	33.72	0.04	2.96
ɜneral Comm. (VTC) [MX]	11.58	11.63	109.80	0.11	8.77
ɜavy Industrial (IV) [IG	0.41	0.35	3.18	0.00	0.32
)TAL EMISSIONS (tons/yr)	47.27	53.25	495.38	0.58	45.93
ɜRCENTAGE REDUCTION %	8	10	10	10	10

ıcludes correction for passby trips.
ıcludes the following double counting adjustment for internal trips:
ɜsidential trips: 20.57 % reduction. Nonresidential trips: 21.45 % reduction.

ɜERATIONAL (Vehicle) EMISSION ESTIMATES

ıalysis Year: 2015 Season: Annual

4FAC Version: EMFAC2002 (9/2002)

ımmary of Land Uses:

ıit Type	Acreage	Trip Rate	No. Units	Total Trips
ɔw Density (VRE & VLDR)	358.50	7.60 trips/dwelling unit	1,578.00	11,995.07
ɜdium Density (VMDR) [RM	237.40	5.34 trips/dwelling unit	2,354.00	12,564.91
.gh Density (VHDR) [RH]	30.60	4.65 trips/dwelling unit	765.00	3,560.76
.ementary school (ES) [P		11.38 trips/1000 sq. ft.	420.00	4,780.46
ɜneral Comm. (VTC) [MX]		33.73 trips/1000 sq. ft.	643.00	21,688.28
ɜavy Industrial (IV) [IG		1.18 trips/1000 sq. ft.	171.00	201.48
		Sum of Total Trips		54,790.96
		Total Vehicle Miles Traveled		369,161.96

ɜhicle Assumptions:

.eet Mix:

ɜhicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
.ght Auto	54.40	0.40	99.40	0.20
.ght Truck < 3,750 lbs	15.30	0.70	98.00	1.30
.ght Truck 3,751- 5,750	16.40	0.60	98.80	0.60
ɜd Truck 5,751- 8,500	7.30	0.00	98.60	1.40
.te-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
.te-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
ɜd-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
ɜavy-Heavy 33,001-60,000	0.80	0.00	0.00	100.00
.ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ɜban Bus	0.20	0.00	50.00	50.00
ɔtorcycle	1.60	50.00	50.00	0.00
ɜhool Bus	0.10	0.00	0.00	100.00
ɔtor Home	1.50	0.00	93.30	6.70

ɜavel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ɜban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ɩral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ɜip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			
of Trips - Commercial (by land use)						
ɜementary school (ES) [PF]				20.0	10.0	70.0
ɜneral Comm. (VTC) [MX]				2.0	1.0	97.0
ɜavy Industrial (IV) [IG]				90.0	5.0	5.0

MITIGATION OPTIONS SELECTED

esidential Mitigation Measures

esidential Mix of Uses Mitigation

ercent Reduction in Trips is 1.34% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
ıputs Selected:
ıe number of housing units within a 1/2 mile radius of the project, plus the
ımber of residential units included in the project are 4697.
ıe employment for the study area (within a 1/2 mile radius of the project) is 1557.

esidential Local-Serving Retail Mitigation

ercent Reduction in Trips is 2% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
ıputs Selected:
ıe Presence of Local-Serving Retail checkbox was selected.

esidential Transit Service Mitigation

ercent Reduction in Trips is 0.19% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
ıputs Selected:
ıe Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 0
ıe Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 7
ıe Number of Dedicated Daily Shuttle Trips is 0

esidential Pedestrian/Bicycle Friendliness Mitigation

ercent Reduction in Trips is 6.04% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
ıputs Selected:
ıe Number of Intersections per Square Mile is 18.4
ıe Percent of Streets with Sidewalks on One Side is 0%
ıe Percent of Streets with Sidewalks on Both Sides is 100%
ıe Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

on-Residential Mitigation Measures

on-Residential Mix of Uses Mitigation

ercent Reduction in Trips is 1.34%
ıputs Selected:
ıe number of housing units within a 1/2 mile radius of the project, plus the
ımber of residential units included in the project are 4697.
ıe employment for the study area (within a 1/2 mile radius of the project) is 1557.

on-Residential Local-Serving Retail Mitigation

ercent Reduction in Trips is 2%
ıputs Selected:
ıe Presence of Local-Serving Retail checkbox was selected.

on-Residential Transit Service Mitigation

ercent Reduction in Trips is 0.19%
ıputs Selected:
ıe Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 0
ıe Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 7
ıe Number of Dedicated Daily Shuttle Trips is 0

on-Residential Pedestrian/Bicycle Friendliness Mitigation

ercent Reduction in Trips is 6.04%
ıputs Selected:
ıe Number of Intersections per Square Mile is 18.4
ıe Percent of Streets with Sidewalks on One Side is 0%
ıe Percent of Streets with Sidewalks on Both Sides is 100%

ıe Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

ıanges made to the default values for Land Use Trip Percentages

ıe Trip Rate and/or Acreage values for Single family housing
ıave changed from the defaults 9.57/526. to 9.57/358.5
ıe Trip Rate and/or Acreage values for Apartments low rise
ıave changed from the defaults 6.9/147.13 to 6.72/237.4
ıe Trip Rate and/or Acreage values for Apartments mid rise
ıave changed from the defaults 5.76/20.13 to 5.86/30.6

ıanges made to the default values for Area

ıe area souce mitigation measure option switch changed from off to on.
ıe wood stove percentage changed from 67 to 27.
ıe natural gas fireplace percentage changed from 33 to 7.
ıe no hearth options percentage changed from 0 to 66.
ıe homes per acre changed from 3.0 to 7.5.
ıe landscape year changed from 2005 to 2015.
ıe residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00602.
ıe nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.0116.

ıanges made to the default values for Operations

ıe pass by trips option switch changed from off to on.
ıe double counting option switch changed from off to on.
ıe mitigation option switch changed from off to on.
ıe operational emission year changed from 2005 to 2015.
ıe home based work selection item changed from 8 to 7.
ıe home based work urban trip length changed from 10.8 to 19.2.
ıe home based shopping selection item changed from 8 to 7.
ıe home based other selection item changed from 8 to 7.
ıe home based other urban trip length changed from 7.5 to 7.0.
ıe commercial based commute selection item changed from 8 to 7.
ıe commercial based commute urban trip length changed from 9.5 to 15.
ıe commercial based non-work selection item changed from 8 to 7.
ıe commercial based non-work urban trip length changed from 7.35 to 5.
ıe commercial based customer selection item changed from 8 to 7.
ıe commercial based customer urban trip length changed from 7.35 to 5.7.
ıe paved road silt loading factor changed from 0.1 to 0.031.
ıe Res and Non-Res Mix of Uses Mitigation changed from off to on.
ıe Res and Non-Res Local-Serving Retail Mitigation changed from off to on.
ıe Res and Non-Res Transit Service Mitigation changed from off to on.
ıe Res and Non-Res Ped/Bike Mitigation changed from off to on.

A.3 "0517_BUILDOUT-YR2025_OPS_MIT=BASEPD.URB"

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Buildout-Yr2025_Ops_Mit=Bas
roject Name: 0517_Buildout-Yr2025_Ops_Mit=BasePD
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

REA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	149.46	26.67	210.81	0.69	30.59
TOTALS (tpy, mitigated)	149.46	26.67	210.81	0.69	30.59

PERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	70.88	60.35	695.76	1.70	137.90
TOTALS (tpy, mitigated)	61.85	50.51	582.32	1.42	115.41

UM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	220.33	87.02	906.57	2.39	168.48
TOTALS (tpy, mitigated)	211.30	77.18	793.13	2.11	146.00

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Buildout-Yr2025_Ops_Mit=Bas
roject Name: 0517_Buildout-Yr2025_Ops_Mit=BasePD
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

REA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.74	22.81	11.34	0.00	0.04
Hearth	23.33	3.66	186.98	0.61	30.50
Landscaping	1.57	0.20	12.49	0.08	0.04
Consumer Prdcts	96.60	-	-	-	-
Architectural Coatings	26.22	-	-	-	-
TOTALS (tpy, unmitigated)	149.46	26.67	210.81	0.69	30.59

REA SOURCE EMISSION ESTIMATES (Tons per Year, Mitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.74	22.81	11.34	0	0.04
Hearth	23.33	3.66	186.98	0.61	30.50
Landscaping	1.57	0.20	12.49	0.08	0.04
Consumer Prdcts	96.60	-	-	-	-
Architectural Coatings	26.22	-	-	-	-
TOTALS (tpy, mitigated)	149.46	26.67	210.81	0.69	30.59

rea Source Mitigation Measures

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
›w Density (VRE & VLDR)	19.51	18.91	218.54	0.54	44.15
›dium Density (VMDR) [RM	16.81	15.35	177.47	0.44	35.85
.gh Density (VHDR) [RH]	4.20	3.73	43.10	0.11	8.71
.ementary school (ES) [P	1.85	1.52	17.53	0.04	3.23
.gh school (HS) [PF]	0.63	0.54	6.19	0.01	1.18
›lta CC (DC) [PF]	0.85	0.80	9.04	0.02	1.77
›neral Comm. (VTC) [MX]	9.78	7.71	88.70	0.19	15.02
:fice: 50% of...(BP) [IL	1.67	1.60	18.45	0.05	3.68
.ght industrial: 50% of.	1.16	1.04	12.01	0.03	2.40
›avy Industrial (IV) [IG	14.42	9.14	104.73	0.27	21.90
)TAL EMISSIONS (tons/yr)	70.88	60.35	695.76	1.70	137.90

ıcludes correction for passby trips.
ıcludes the following double counting adjustment for internal trips:
:sidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

'ERATIONAL (Vehicle) EMISSION ESTIMATES

ıalysis Year: 2025 Season: Annual

IFAC Version: EMFAC2002 (9/2002)

ımmary of Land Uses:

.it Type	Acreage	Trip Rate	No. Units	Total Trips
›w Density (VRE & VLDR)	1,072.50	7.64 trips/dwelling unit	4,365.00	33,358.95
›dium Density (VMDR) [RM	533.10	5.37 trips/dwelling unit	5,048.00	27,089.73
gh Density (VHDR) [RH]	57.30	4.68 trips/dwelling unit	1,406.00	6,579.59
ementary school (ES) [P		11.31 trips/1000 sq. ft.	420.00	4,750.91
gh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
lta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
neral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	1,009.00	33,823.05
fice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
ght industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
avy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,695.00	12,523.67

Sum of Total Trips 127,199.25
Total Vehicle Miles Traveled 1,009,376.75

hicle Assumptions:

eet Mix:

hicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	50.28	0.00	100.00	0.00
ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
d Truck 5,751- 8,500	6.59	0.00	98.70	1.30
te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
d-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
avy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.09	0.00	50.00	50.00
torcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			

of Trips - Commercial (by land use)

ementary school (ES) [PF]	20.0	10.0	70.0
gh school (HS) [PF]	10.0	5.0	85.0
lta CC (DC) [PF]	5.0	2.5	92.5

eneral Comm. (VTC) [MX]	2.0	1.0	97.0
ffice: 50% of...(BP) [IL]	48.0	24.0	28.0
ight industrial: 50% of... (BP) [IL]	50.0	25.0	25.0
eavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
›w Density (VRE & VLDR)	16.79	15.83	182.91	0.46	36.95
›dium Density (VMDR) [RM	14.60	12.85	148.53	0.37	30.00
.gh Density (VHDR) [RH]	3.66	3.12	36.08	0.09	7.29
.ementary school (ES) [P	1.59	1.27	14.67	0.03	2.71
.gh school (HS) [PF]	0.54	0.46	5.18	0.01	0.98
›lta CC (DC) [PF]	0.74	0.67	7.56	0.02	1.48
›neral Comm. (VTC) [MX]	8.29	6.45	74.24	0.16	12.57
:fice: 50% of...(BP) [IL	1.44	1.34	15.44	0.04	3.08
.ght industrial: 50% of.	1.01	0.87	10.05	0.02	2.01
›avy Industrial (IV) [IG	13.19	7.65	87.65	0.23	18.33
)TAL EMISSIONS (tons/yr)	61.85	50.51	582.32	1.42	115.41
:RCENTAGE REDUCTION %	13	16	16	16	16

ıcludes correction for passby trips.
ıcludes the following double counting adjustment for internal trips:
›sidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

'ERATIONAL (Vehicle) EMISSION ESTIMATES

ıalysis Year: 2025 Season: Annual

IFAC Version: EMFAC2002 (9/2002)

ımmary of Land Uses:

ıit Type	Acreage	Trip Rate	No. Units	Total Trips
›w Density (VRE & VLDR)	1,072.50	7.64 trips/dwelling unit	4,365.00	33,358.95
›dium Density (VMDR) [RM	533.10	5.37 trips/dwelling unit	5,048.00	27,089.73
.gh Density (VHDR) [RH]	57.30	4.68 trips/dwelling unit	1,406.00	6,579.59
.ementary school (ES) [P		11.31 trips/1000 sq. ft.	420.00	4,750.91
.gh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
›lta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
›neral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	1,009.00	33,823.05
:fice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
.ght industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
›avy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,695.00	12,523.67
		Sum of Total Trips		127,199.25
		Total Vehicle Miles Traveled		1,009,376.75

:hicle Assumptions:

eet Mix:

hicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	50.28	0.00	100.00	0.00
ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
d Truck 5,751- 8,500	6.59	0.00	98.70	1.30
te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
d-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
avy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.09	0.00	50.00	50.00
torcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			

of Trips - Commercial (by land use)

ementary school (ES) [PF]	20.0	10.0	70.0
gh school (HS) [PF]	10.0	5.0	85.0

elta CC (DC) [PF]	5.0	2.5	92.5
eneral Comm. (VTC) [MX]	2.0	1.0	97.0
ffice: 50% of...(BP) [IL]	48.0	24.0	28.0
ight industrial: 50% of... (BP) [IL]	50.0	25.0	25.0
eavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATION OPTIONS SELECTED

esidential Mitigation Measures
==========

esidential Mix of Uses Mitigation
---
ercent Reduction in Trips is 8.2% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he number of housing units within a 1/2 mile radius of the project, plus the
umber of residential units included in the project are 10819.
he employment for the study area (within a 1/2 mile radius of the project) is 14198.

esidential Local-Serving Retail Mitigation
---
ercent Reduction in Trips is 2% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Presence of Local-Serving Retail checkbox was selected.

esidential Transit Service Mitigation
---
ercent Reduction in Trips is 0.08% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 0
he Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 3
he Number of Dedicated Daily Shuttle Trips is 0

esidential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.02% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Number of Intersections per Square Mile is 9.7
he Percent of Streets with Sidewalks on One Side is 0%
he Percent of Streets with Sidewalks on Both Sides is 100%
he Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

on-Residential Mitigation Measures
==========

on-Residential Mix of Uses Mitigation
---
ercent Reduction in Trips is 8.2%
nputs Selected:
he number of housing units within a 1/2 mile radius of the project, plus the
umber of residential units included in the project are 10819.
he employment for the study area (within a 1/2 mile radius of the project) is 14198.

on-Residential Local-Serving Retail Mitigation
---
ercent Reduction in Trips is 2%
nputs Selected:
he Presence of Local-Serving Retail checkbox was selected.

on-Residential Transit Service Mitigation
---
ercent Reduction in Trips is 0.08%
nputs Selected:
he Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 0
he Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 3
he Number of Dedicated Daily Shuttle Trips is 0

on-Residential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.02%
puts Selected:
e Number of Intersections per Square Mile is 9.7
e Percent of Streets with Sidewalks on One Side is 0%
e Percent of Streets with Sidewalks on Both Sides is 100%

The Percent of Arterials/Collectors with Bike Lanes or where Suitable, Direct Parallel Routes Exist is 100%

hanges made to the default values for Land Use Trip Percentages

he Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/1455. to 9.57/1072.5
he Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/315.5 to 6.72/533.1
he Trip Rate and/or Acreage values for Apartments mid rise
have changed from the defaults 5.76/37. to 5.86/57.3

hanges made to the default values for Area

he area souce mitigation measure option switch changed from off to on.
he wood stove percentage changed from 67 to 31.
he natural gas fireplace percentage changed from 33 to 9.
he no hearth options percentage changed from 0 to 60.
he homes per acre changed from 3.0 to 6.5.
he landscape year changed from 2005 to 2020.
he residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00602.
he nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.0116.

hanges made to the default values for Operations

he pass by trips option switch changed from off to on.
he double counting option switch changed from off to on.
he mitigation option switch changed from off to on.
he light auto percentage changed from 53.5 to 50.28.
he light truck < 3750 lbs percentage changed from 15.7 to 23.04.
he light truck 3751-5750 percentage changed from 16.5 to 16.53.
he med truck 5751-8500 percentage changed from 7.5 to 6.59.
he lite-heavy truck 8501-10000 percentage changed from 1.0 to 0.14.
he lite-heavy truck 10001-14000 percentage changed from 0.3 to 0.02.
he med-heavy truck 14001-33000 percentage changed from 0.9 to 0.64.
he heavy-heavy truck 33001-60000 percentage changed from 0.8 to 0.51.
he urban bus percentage changed from 0.2 to 0.09.
he motorcycle percentage changed from 1.5 to 1.17.
he school bus percentage changed from 0.1 to 0.
he motorhome percentage changed from 2.0 to 0.99.
he operational emission year changed from 2005 to 2025.
he home based work selection item changed from 8 to 7.
he home based work urban trip length changed from 10.8 to 19.2.
he home based shopping selection item changed from 8 to 7.
he home based other selection item changed from 8 to 7.
he home based other urban trip length changed from 7.5 to 7.0.
he commercial based commute selection item changed from 8 to 7.
he commercial based commute urban trip length changed from 9.5 to 15.
he commercial based non-work selection item changed from 8 to 7.
he commercial based non-work urban trip length changed from 7.35 to 5.
he commercial based customer selection item changed from 8 to 7.
he commercial based customer urban trip length changed from 7.35 to 5.7.
he paved road silt loading factor changed from 0.1 to 0.031.
he Res and Non-Res Mix of Uses Mitigation changed from off to on.
he Res and Non-Res Local-Serving Retail Mitigation changed from off to on.
he Res and Non-Res Transit Service Mitigation changed from off to on.
he Res and Non-Res Ped/Bike Mitigation changed from off to on.

A.4 "0517_PHASES_2-5-YR2025_OPS_MIT=BASEPD.URB"

URBEMIS 2002 For Windows 8.7.0

'ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phases_2-5-Yr2025_Ops_Mit=B
'roject Name: 0517_Phases_2-5-Yr2025_Ops_Mit=BasePD
'roject Location: San Joaquin Valley
)n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

.REA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	91.48	15.43	130.55	0.43	18.98
TOTALS (tpy, mitigated)	91.48	15.43	130.55	0.43	18.98

'PERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	45.39	37.75	434.82	1.08	87.32
TOTALS (tpy, mitigated)	40.28	32.03	368.98	0.91	74.10

UM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	136.86	53.18	565.37	1.50	106.31
TOTALS (tpy, mitigated)	131.76	47.46	499.53	1.34	93.08

URBEMIS 2002 For Windows 8.7.0

'ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phases_2-5-Yr2025_Ops_Mit=B.
'roject Name: 0517_Phases_2-5-Yr2025_Ops_Mit=BasePD
'roject Location: San Joaquin Valley
)n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

.REA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.00	13.03	6.40	0.00	0.02
Hearth	14.48	2.27	116.04	0.38	18.93
Landscaping	1.02	0.13	8.10	0.05	0.03
Consumer Prdcts	54.66	-	-	-	-
Architectural Coatings	20.32	-	-	-	-
TOTALS (tpy, unmitigated)	91.48	15.43	130.55	0.43	18.98

REA SOURCE EMISSION ESTIMATES (Tons per Year, Mitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.00	13.03	6.40	0	0.02
Hearth	14.48	2.27	116.04	0.38	18.93
Landscaping	1.02	0.13	8.10	0.05	0.03
Consumer Prdcts	54.66	-	-	-	-
Architectural Coatings	20.32	-	-	-	-
TOTALS (tpy, mitigated)	91.48	15.43	130.55	0.43	18.98

rea Source Mitigation Measures

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ow Density (VRE & VLDR)	12.46	12.07	139.53	0.35	28.19
edium Density (VMDR) [RM	8.97	8.19	94.71	0.24	19.13
igh Density (VHDR) [RH]	1.91	1.70	19.65	0.05	3.97
igh school (HS) [PF]	0.63	0.54	6.19	0.01	1.18
elta CC (DC) [PF]	0.85	0.80	9.04	0.02	1.77
eneral Comm. (VTC) [MX]	3.55	2.80	32.18	0.07	5.45
ffice: 50% of...(BP) [IL	1.67	1.60	18.45	0.05	3.68
ight industrial: 50% of.	1.16	1.04	12.01	0.03	2.40
eavy Industrial (IV) [IG	14.19	8.99	103.05	0.26	21.55
OTAL EMISSIONS (tons/yr)	45.39	37.75	434.82	1.08	87.32

ncludes correction for passby trips.
ncludes the following double counting adjustment for internal trips:
esidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

PERATIONAL (Vehicle) EMISSION ESTIMATES

nalysis Year: 2025 Season: Annual

MFAC Version: EMFAC2002 (9/2002)

ummary of Land Uses:

nit Type	Acreage	Trip Rate	No. Units	Total Trips
ow Density (VRE & VLDR)	714.00	7.64 trips/dwelling unit	2,787.00	21,299.29
edium Density (VMDR) [RM	295.70	5.37 trips/dwelling unit	2,694.00	14,457.16
gh Density (VHDR) [RH]	26.70	4.68 trips/dwelling unit	641.00	2,999.66
gh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
lta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
neral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	366.00	12,268.82
fice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
ght industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
avy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,524.00	12,323.43
		Sum of Total Trips		72,421.69
		Total Vehicle Miles Traveled		639,344.96

hicle Assumptions:

eet Mix:

hicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	50.28	0.00	100.00	0.00
ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
d Truck 5,751- 8,500	6.59	0.00	98.70	1.30
te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
d-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
avy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.09	0.00	50.00	50.00
torcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
tal Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
p Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
f Trips - Residential	32.9	18.0	49.1			

f Trips - Commercial (by land use)

h school (HS) [PF]	10.0	5.0	85.0
ta CC (DC) [PF]	5.0	2.5	92.5
eral Comm. (VTC) [MX]	2.0	1.0	97.0
ice: 50% of...(BP) [IL]	48.0	24.0	28.0
ht industrial: 50% of... (BP) [IL]	50.0	25.0	25.0

eavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ow Density (VRE & VLDR)	10.84	10.24	118.41	0.29	23.92
edium Density (VMDR) [RM	7.88	6.95	80.37	0.20	16.24
igh Density (VHDR) [RH]	1.69	1.44	16.68	0.04	3.37
igh school (HS) [PF]	0.55	0.46	5.25	0.01	1.00
elta CC (DC) [PF]	0.74	0.68	7.67	0.02	1.50
eneral Comm. (VTC) [MX]	3.05	2.37	27.30	0.06	4.62
ffice: 50% of...(BP) [IL	1.45	1.36	15.66	0.04	3.12
ight industrial: 50% of.	1.02	0.88	10.19	0.03	2.04
eavy Industrial (IV) [IG	13.06	7.63	87.45	0.22	18.29
OTAL EMISSIONS (tons/yr)	40.28	32.03	368.98	0.91	74.10
ERCENTAGE REDUCTION %	11	15	15	15	15

ncludes correction for passby trips.
ncludes the following double counting adjustment for internal trips:
esidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

PERATIONAL (Vehicle) EMISSION ESTIMATES

nalysis Year: 2025 Season: Annual

MFAC Version: EMFAC2002 (9/2002)

ummary of Land Uses:

nit Type	Acreage	Trip Rate	No. Units	Total Trips
ow Density (VRE & VLDR)	714.00	7.64 trips/dwelling unit	2,787.00	21,299.29
edium Density (VMDR) [RM	295.70	5.37 trips/dwelling unit	2,694.00	14,457.16
gh Density (VHDR) [RH]	26.70	4.68 trips/dwelling unit	641.00	2,999.66
gh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
elta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
neral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	366.00	12,268.82
fice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
ght industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
avy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,524.00	12,323.43
		Sum of Total Trips		72,421.69
		Total Vehicle Miles Traveled		639,344.96

hicle Assumptions:

eet Mix:

hicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	50.28	0.00	100.00	0.00
ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
d Truck 5,751- 8,500	6.59	0.00	98.70	1.30
te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
d-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
avy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
oan Bus	0.09	0.00	50.00	50.00
torcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
oan Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
tal Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
p Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			

of Trips - Commercial (by land use)

gh school (HS) [PF]	10.0	5.0	85.0
ta CC (DC) [PF]	5.0	2.5	92.5
eral Comm. (VTC) [MX]	2.0	1.0	97.0
ice: 50% of...(BP) [IL]	48.0	24.0	28.0

Light industrial: 50% of... (BP) [IL]	50.0	25.0	25.0
Heavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATION OPTIONS SELECTED

Residential Mitigation Measures
==========

Residential Mix of Uses Mitigation

Percent Reduction in Trips is 7.1% (calculated as a % of 9.57 trips/day)
Note that the above percent is applied to the 'double counting adjusted' trip rate
to get Mitigated Trips
Inputs Selected:
The number of housing units within a 1/2 mile radius of the project, plus the
number of residential units included in the project are 6122.
The employment for the study area (within a 1/2 mile radius of the project) is 12641.

Residential Local-Serving Retail Mitigation

Percent Reduction in Trips is 2% (calculated as a % of 9.57 trips/day)
Note that the above percent is applied to the 'double counting adjusted' trip rate
to get Mitigated Trips
Inputs Selected:
The Presence of Local-Serving Retail checkbox was selected.

Residential Transit Service Mitigation
---
ercent Reduction in Trips is 0.03% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 0
he Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 1
he Number of Dedicated Daily Shuttle Trips is 0

esidential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.02% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Number of Intersections per Square Mile is 6.8
he Percent of Streets with Sidewalks on One Side is 0%
he Percent of Streets with Sidewalks on Both Sides is 100%
he Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

on-Residential Mitigation Measures
==========

on-Residential Mix of Uses Mitigation
---
ercent Reduction in Trips is 7.1%
nputs Selected:
he number of housing units within a 1/2 mile radius of the project, plus the
umber of residential units included in the project are 6122.
he employment for the study area (within a 1/2 mile radius of the project) is 12641.

on-Residential Local-Serving Retail Mitigation
---
ercent Reduction in Trips is 2%
puts Selected:
e Presence of Local-Serving Retail checkbox was selected.

n-Residential Transit Service Mitigation
---
rcent Reduction in Trips is 0.03%
puts Selected:
e Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 0
e Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 1
e Number of Dedicated Daily Shuttle Trips is 0

n-Residential Pedestrian/Bicycle Friendliness Mitigation
---
rcent Reduction in Trips is 6.02%
puts Selected:
e Number of Intersections per Square Mile is 6.8
e Percent of Streets with Sidewalks on One Side is 0%
e Percent of Streets with Sidewalks on Both Sides is 100%

The Percent of Arterials/Collectors with Bike Lanes or where Suitable, Direct Parallel Routes Exist is 100%

:hanges made to the default values for Land Use Trip Percentages

'he Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/929. to 9.57/714
'he Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/168.38 to 6.72/295.7
'he Trip Rate and/or Acreage values for Apartments mid rise
have changed from the defaults 5.76/16.87 to 5.86/26.7

hanges made to the default values for Area

he area souce mitigation measure option switch changed from off to on.
he wood stove percentage changed from 67 to 34.
he natural gas fireplace percentage changed from 33 to 10.
he no hearth options percentage changed from 0 to 56.
he homes per acre changed from 3.0 to 5.9.
he landscape year changed from 2005 to 2020.
he residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00602.
he nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.0116.

hanges made to the default values for Operations

ne pass by trips option switch changed from off to on.
ne double counting option switch changed from off to on.
ne mitigation option switch changed from off to on.
ne light auto percentage changed from 53.5 to 50.28.
ne light truck < 3750 lbs percentage changed from 15.7 to 23.04.
ne light truck 3751-5750 percentage changed from 16.5 to 16.53.
ne med truck 5751-8500 percentage changed from 7.5 to 6.59.
ne lite-heavy truck 8501-10000 percentage changed from 1.0 to 0.14.
ne lite-heavy truck 10001-14000 percentage changed from 0.3 to 0.02.
ne med-heavy truck 14001-33000 percentage changed from 0.9 to 0.64.
ne heavy-heavy truck 33001-60000 percentage changed from 0.8 to 0.51.
ne urban bus percentage changed from 0.2 to 0.09.
ne motorcycle percentage changed from 1.5 to 1.17.
ne school bus percentage changed from 0.1 to 0.
ne motorhome percentage changed from 2.0 to 0.99.
ne operational emission year changed from 2005 to 2025.
ne home based work selection item changed from 8 to 7.
ne home based work urban trip length changed from 10.8 to 19.2.
e home based shopping selection item changed from 8 to 7.
e home based other selection item changed from 8 to 7.
e home based other urban trip length changed from 7.5 to 7.0.
e commercial based commute selection item changed from 8 to 7.
e commercial based commute urban trip length changed from 9.5 to 15.
e commercial based non-work selection item changed from 8 to 7.
e commercial based non-work urban trip length changed from 7.35 to 5.
e commercial based customer selection item changed from 8 to 7.
e commercial based customer urban trip length changed from 7.35 to 5.7.
e paved road silt loading factor changed from 0.1 to 0.031.
e Res and Non-Res Mix of Uses Mitigation changed from off to on.
e Res and Non-Res Local-Serving Retail Mitigation changed from off to on.
e Res and Non-Res Transit Service Mitigation changed from off to on.
e Res and Non-Res Ped/Bike Mitigation changed from off to on.

A.5 "0517_PHASE1-YR2015_CNS_MIT=MAX-FD.URB"

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Cns_Mit=Max-F
Project Name: 0517_Phase1-Yr2015_Cns_Mit=Max-FD
Project Location: San Joaquin Valley
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

CONSTRUCTION EMISSION ESTIMATES

*** 2015 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (tpy, unmitigated)	14.50	25.73	35.85	0.00	24.60	0.90	23.70
TOTALS (tpy, mitigated)	14.50	25.73	35.85	0.00	1.30	0.90	0.40

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Cns_Mit=Max-F
roject Name: 0517_Phase1-Yr2015_Cns_Mit=Max-FD
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

onstruction Start Month and Year: January, 2015
onstruction Duration: 12
otal Land Use Area to be Developed: 104.46 acres
aximum Acreage Disturbed Per Day: 10 acres
ingle Family Units: 200 Multi-Family Units: 586
etail/Office/Institutional/Industrial Square Footage: 283400

ONSTRUCTION EMISSION ESTIMATES UNMITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2015***							
hase 1 - Demolition Emissions							
ugitive Dust	-	-	-	-	0.00	-	0.00
ff-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
n-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
orker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hase 2 - Site Grading Emissions							
ugitive Dust	-	-	-	-	23.59	-	23.59
ff-Road Diesel	2.36	14.29	19.89	-	0.46	0.46	0.00
n-Road Diesel	0.04	0.52	0.14	0.00	0.02	0.01	0.01
orker Trips	0.01	0.04	0.42	0.00	0.00	0.00	0.00
Total tons/year	2.41	14.85	20.45	0.00	24.07	0.47	23.60
hase 3 - Building Construction							
ldg Const Off-Road Diesel	1.61	10.48	13.23	-	0.42	0.42	0.00
ldg Const Worker Trips	0.12	0.06	1.58	0.00	0.10	0.00	0.09
rch Coatings Off-Gas	10.26	-	-	-	-	-	-
rch Coatings Worker Trips	0.01	0.01	0.20	0.00	0.01	0.00	0.01
sphalt Off-Gas	0.04	-	-	-	-	-	-
sphalt Off-Road Diesel	0.04	0.25	0.37	-	0.01	0.01	0.00
sphalt On-Road Diesel	0.01	0.08	0.02	0.00	0.00	0.00	0.00
sphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	12.09	10.88	15.40	0.00	0.53	0.43	0.10
Total all phases tons/yr	14.50	25.73	35.85	0.00	24.60	0.90	23.70

ase 1 - Demolition Assumptions: Phase Turned OFF

ase 2 - Site Grading Assumptions
art Month/Year for Phase 2: Jan '15
ase 2 Duration: 3 months
-Road Truck Travel (VMT): 1622
f-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
13	Crawler Tractors	143	0.575	8.0
3	Graders	174	0.575	8.0
8	Off Highway Trucks	417	0.490	8.0
5	Rubber Tired Loaders	165	0.465	8.0
3	Scrapers	313	0.660	8.0
5	Tractor/Loaders/Backhoes	79	0.465	8.0

ase 3 - Building Construction Assumptions
art Month/Year for Phase 3: Apr '15
ase 3 Duration: 9 months
Start Month/Year for SubPhase Building: Apr '15
SubPhase Building Duration: 9 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
8	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '15
SubPhase Architectural Coatings Duration: 1 months
Start Month/Year for SubPhase Asphalt: Dec '15
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 30.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Pavers	132	0.590	8.0
4	Rollers	114	0.430	8.0

:ONSTRUCTION EMISSION ESTIMATES MITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2015***							
'hase 1 - Demolition Emissions							
'ugitive Dust	-	-	-	-	0.00	-	0.00
'ff-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
n-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
orker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hase 2 - Site Grading Emissions							
ugitive Dust	-	-	-	-	0.29	-	0.29
ff-Road Diesel	2.36	14.29	19.89	-	0.46	0.46	0.00
n-Road Diesel	0.04	0.52	0.14	0.00	0.02	0.01	0.01
orker Trips	0.01	0.04	0.42	0.00	0.00	0.00	0.00
Total tons/year	2.41	14.85	20.45	0.00	0.77	0.47	0.30
hase 3 - Building Construction							
ldg Const Off-Road Diesel	1.61	10.48	13.23	-	0.42	0.42	0.00
ldg Const Worker Trips	0.12	0.06	1.58	0.00	0.09	0.00	0.09
rch Coatings Off-Gas	10.26	-	-	-	-	-	-
rch Coatings Worker Trips	0.01	0.01	0.20	0.00	0.01	0.00	0.01
sphalt Off-Gas	0.04	-	-	-	-	-	-
sphalt Off-Road Diesel	0.04	0.25	0.37	-	0.01	0.01	0.00
sphalt On-Road Diesel	0.01	0.08	0.02	0.00	0.00	0.00	0.00
sphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	12.09	10.88	15.40	0.00	0.53	0.43	0.10
Total all phases tons/yr	14.50	25.73	35.85	0.00	1.30	0.90	0.40

onstruction-Related Mitigation Measures

?hase 2: Soil Disturbance: Apply soil stabilizers to inactive areas
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
?hase 2: Soil Disturbance: Replace ground cover in disturbed areas quickly
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 15.0%)
?hase 2: Soil Disturbance: Water exposed surfaces - 3x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 50.0%)
?hase 2: Stockpiles: Cover all stock piles with tarps
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 9.5%)
?hase 2: Unpaved Roads: Pave all haul roads
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 92.5%)
?hase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
ıase 1 - Demolition Assumptions: Phase Turned OFF

ıase 2 - Site Grading Assumptions
:art Month/Year for Phase 2: Jan '15
ıase 2 Duration: 3 months
.-Road Truck Travel (VMT): 1622
'f-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
13	Crawler Tractors	143	0.575	8.0
3	Graders	174	0.575	8.0
8	Off Highway Trucks	417	0.490	8.0
5	Rubber Tired Loaders	165	0.465	8.0
3	Scrapers	313	0.660	8.0
5	Tractor/Loaders/Backhoes	79	0.465	8.0

ase 3 - Building Construction Assumptions
art Month/Year for Phase 3: Apr '15
ase 3 Duration: 9 months
Start Month/Year for SubPhase Building: Apr '15
SubPhase Building Duration: 9 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
8	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '15
SubPhase Architectural Coatings Duration: 1 months
Start Month/Year for SubPhase Asphalt: Dec '15

SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 30.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
4	Pavers	132	0.590	8.0
4	Rollers	114	0.430	8.0

ıanges made to the default values for Land Use Trip Percentages

ıe Trip Rate and/or Acreage values for Single family housing
ıave changed from the defaults 9.57/66.67 to 9.57/47.36
ıe Trip Rate and/or Acreage values for Apartments low rise
ıave changed from the defaults 6.9/20.13 to 6.72/33.54
ıe Trip Rate and/or Acreage values for Apartments mid rise
ıave changed from the defaults 5.76/6.95 to 5.86/10.56

ıanges made to the default values for Construction

ıe user has overridden the Default Phase Lengths
ıte Grading Fugitive Dust Option changed from Level 1 to Level 2
:chitectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00602
:chitectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.0116
ıase 2 mitigation measure Soil Disturbance: Apply soil stabilizers to inactive areas
has been changed from off to on.
ıase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
ıase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
ıase 2 mitigation measure Stockpiles: Cover all stock piles with tarps
has been changed from off to on.
ıase 2 mitigation measure Unpaved Roads: Pave all haul roads
has been changed from off to on.
ıase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

A.6 "0517_PHASE1-YR2015_OPS_MIT=AQ-MITPLAN.URB"

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Ops_Mit=AQ-Mi
Project Name: 0517_Phase1-Yr2015_Ops_Mit=AQ-MitPlan
Project Location: San Joaquin Valley
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	49.17	10.00	9.68	0.03	0.03
TOTALS (tpy, mitigated)	49.08	9.99	8.94	0.02	0.03

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	51.62	58.89	547.88	0.64	50.79
TOTALS (tpy, mitigated)	47.11	53.04	493.39	0.58	45.74

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	100.79	68.89	557.56	0.67	50.83
TOTALS (tpy, mitigated)	96.18	63.02	502.33	0.60	45.77

URBEMIS 2002 For Windows 8.7.0

'ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Cns_RegVIII@M
'roject Name: 0517_Phase1-Yr2015_Cns_RegVIII@Min-FD-Mit
'roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

onstruction Start Month and Year: January, 2015
onstruction Duration: 12
otal Land Use Area to be Developed: 104.46 acres
aximum Acreage Disturbed Per Day: 10 acres
ingle Family Units: 200 Multi-Family Units: 586
etail/Office/Institutional/Industrial Square Footage: 283400

ONSTRUCTION EMISSION ESTIMATES UNMITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2015***							
hase 1 - Demolition Emissions							
ugitive Dust	-	-	-	-	0.00	-	0.00
ff-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
n-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
orker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hase 2 - Site Grading Emissions							
ugitive Dust	-	-	-	-	23.59	-	23.59
ff-Road Diesel	2.36	14.29	19.89	-	0.46	0.46	0.00
n-Road Diesel	0.04	0.52	0.14	0.00	0.02	0.01	0.01
orker Trips	0.01	0.04	0.42	0.00	0.00	0.00	0.00
Total tons/year	2.41	14.85	20.45	0.00	24.07	0.47	23.60
hase 3 - Building Construction							
ldg Const Off-Road Diesel	1.61	10.48	13.23	-	0.42	0.42	0.00
ldg Const Worker Trips	0.12	0.06	1.58	0.00	0.10	0.00	0.09
rch Coatings Off-Gas	10.26	-	-	-	-	-	-
rch Coatings Worker Trips	0.01	0.01	0.20	0.00	0.01	0.00	0.01
sphalt Off-Gas	0.04	-	-	-	-	-	-
sphalt Off-Road Diesel	0.04	0.25	0.37	-	0.01	0.01	0.00
sphalt On-Road Diesel	0.01	0.08	0.02	0.00	0.00	0.00	0.00
sphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	12.09	10.88	15.40	0.00	0.53	0.43	0.10
Total all phases tons/yr	14.50	25.73	35.85	0.00	24.60	0.90	23.70

ase 1 - Demolition Assumptions: Phase Turned OFF

ase 2 - Site Grading Assumptions
art Month/Year for Phase 2: Jan '15
ase 2 Duration: 3 months
-Road Truck Travel (VMT): 1622
f-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
13	Crawler Tractors	143	0.575	8.0
3	Graders	174	0.575	8.0
8	Off Highway Trucks	417	0.490	8.0
5	Rubber Tired Loaders	165	0.465	8.0
3	Scrapers	313	0.660	8.0
5	Tractor/Loaders/Backhoes	79	0.465	8.0

ase 3 - Building Construction Assumptions
art Month/Year for Phase 3: Apr '15
ase 3 Duration: 9 months
Start Month/Year for SubPhase Building: Apr '15
SubPhase Building Duration: 9 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
8	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '15
SubPhase Architectural Coatings Duration: 1 months
Start Month/Year for SubPhase Asphalt: Dec '15
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 30.5
Off-Road Equipment

URBEMIS 2002 For Windows 8.7.0

.le Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phase1-Yr2015_Ops_Mit=AQ-Mi
:oject Name: 0517_Phase1-Yr2015_Ops_Mit=AQ-MitPlan
:oject Location: San Joaquin Valley
ı-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

ŘEA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.76	9.92	5.06	0.00	0.02
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping	0.58	0.08	4.62	0.03	0.01
Consumer Prdcts	41.94	-	-	-	-
Architectural Coatings	5.89	-	-	-	-
TOTALS (tpy, unmitigated)	49.17	10.00	9.68	0.03	0.03

ŘEA SOURCE EMISSION ESTIMATES (Tons per Year, Mitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.76	9.92	5.06	0	0.02
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping	0.49	0.06	3.88	0.02	0.01
Consumer Prdcts	41.94	-	-	-	-
Architectural Coatings	5.89	-	-	-	-
TOTALS (tpy, mitigated)	49.08	9.99	8.94	0.02	0.03

:ea Source Mitigation Measures

Residential Electric Landscape Maintenance Equipment
Percent Reduction: 17
Commercial/Industrial Electric Landscape Maintenance Equipment
Percent Reduction: 10

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ow Density (VRE & VLDR)	14.35	17.78	164.49	0.20	15.98
edium Density (VMDR) [RM	15.76	18.62	172.31	0.21	16.74
igh Density (VHDR) [RH]	4.57	5.28	48.83	0.06	4.74
lementary school (ES) [P	3.76	3.98	37.29	0.04	3.27
eneral Comm. (VTC) [MX]	12.74	12.86	121.44	0.12	9.70
eavy Industrial (IV) [IG	0.44	0.38	3.51	0.00	0.35
OTAL EMISSIONS (tons/yr)	51.62	58.89	547.88	0.64	50.79

ncludes correction for passby trips.
ncludes the following double counting adjustment for internal trips:
esidential trips: 20.57 % reduction. Nonresidential trips: 21.45 % reduction.

PERATIONAL (Vehicle) EMISSION ESTIMATES

nalysis Year: 2015 Season: Annual

MFAC Version: EMFAC2002 (9/2002)

ummary of Land Uses:

nit Type	Acreage	Trip Rate	No. Units	Total Trips
ow Density (VRE & VLDR)	358.50	7.60 trips/dwelling unit	1,578.00	11,995.07
edium Density (VMDR) [RM	237.40	5.34 trips/dwelling unit	2,354.00	12,564.91
igh Density (VHDR) [RH]	30.60	4.65 trips/dwelling unit	765.00	3,560.76
lementary school (ES) [P		11.38 trips/1000 sq. ft.	420.00	4,780.46
eneral Comm. (VTC) [MX]		33.73 trips/1000 sq. ft.	643.00	21,688.28
eavy Industrial (IV) [IG		1.18 trips/1000 sq. ft.	171.00	201.48
		Sum of Total Trips		54,790.96
		Total Vehicle Miles Traveled		369,161.96

hicle Assumptions:

eet Mix:

hicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	54.40	0.40	99.40	0.20
ght Truck < 3,750 lbs	15.30	0.70	98.00	1.30
ght Truck 3,751- 5,750	16.40	0.60	98.80	0.60
d Truck 5,751- 8,500	7.30	0.00	98.60	1.40
te-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
te-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
d-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
avy-Heavy 33,001-60,000	0.80	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.20	0.00	50.00	50.00
torcycle	1.60	50.00	50.00	0.00
hool Bus	0.10	0.00	0.00	100.00
tor Home	1.50	0.00	93.30	6.70

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
oan Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
cal Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			

of Trips - Commercial (by land use)

ementary school (ES) [PF]	20.0	10.0	70.0
neral Comm. (VTC) [MX]	2.0	1.0	97.0
avy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ɔw Density (VRE & VLDR)	13.11	16.04	148.46	0.18	14.42
ɜdium Density (VMDR) [RM	14.47	16.81	155.52	0.19	15.11
ıgh Density (VHDR) [RH]	4.20	4.76	44.07	0.05	4.28
lementary school (ES) [P	3.38	3.52	32.97	0.04	2.89
ɜneral Comm. (VTC) [MX]	11.54	11.58	109.37	0.11	8.73
ɜavy Industrial (IV) [IG	0.40	0.33	3.00	0.00	0.30
)TAL EMISSIONS (tons/yr)	47.11	53.04	493.39	0.58	45.74
ɛRCENTAGE REDUCTION %	9	10	10	10	10

ıcludes correction for passby trips.
ıcludes the following double counting adjustment for internal trips:
ɜsidential trips: 20.57 % reduction. Nonresidential trips: 21.45 % reduction.

ʔERATIONAL (Vehicle) EMISSION ESTIMATES

ıalysis Year: 2015 Season: Annual

ıFAC Version: EMFAC2002 (9/2002)

ımmary of Land Uses:

ıit Type	Acreage	Trip Rate	No. Units	Total Trips
ɔw Density (VRE & VLDR)	358.50	7.60 trips/dwelling unit	1,578.00	11,995.07
ɜdium Density (VMDR) [RM	237.40	5.34 trips/dwelling unit	2,354.00	12,564.91
.gh Density (VHDR) [RH]	30.60	4.65 trips/dwelling unit	765.00	3,560.76
.ementary school (ES) [P		11.38 trips/1000 sq. ft.	420.00	4,780.46
ɜneral Comm. (VTC) [MX]		33.73 trips/1000 sq. ft.	643.00	21,688.28
ɜavy Industrial (IV) [IG		1.18 trips/1000 sq. ft.	171.00	201.48
		Sum of Total Trips		54,790.96
		Total Vehicle Miles Traveled		369,161.96

ɜhicle Assumptions:

.eet Mix:

ɜhicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	54.40	0.40	99.40	0.20
ght Truck < 3,750 lbs	15.30	0.70	98.00	1.30
ght Truck 3,751- 5,750	16.40	0.60	98.80	0.60
d Truck 5,751- 8,500	7.30	0.00	98.60	1.40
te-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
te-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
d-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
avy-Heavy 33,001-60,000	0.80	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.20	0.00	50.00	50.00
torcycle	1.60	50.00	50.00	0.00
hool Bus	0.10	0.00	0.00	100.00
tor Home	1.50	0.00	93.30	6.70

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			

of Trips - Commercial (by land use)

ementary school (ES) [PF]	20.0	10.0	70.0
neral Comm. (VTC) [MX]	2.0	1.0	97.0
avy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATION OPTIONS SELECTED

esidential Mitigation Measures
==========

esidential Mix of Uses Mitigation
---
ercent Reduction in Trips is 1.34% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne number of housing units within a 1/2 mile radius of the project, plus the
umber of residential units included in the project are 4697.
ne employment for the study area (within a 1/2 mile radius of the project) is 1557.

esidential Local-Serving Retail Mitigation
---
ercent Reduction in Trips is 2% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne Presence of Local-Serving Retail checkbox was selected.

esidential Transit Service Mitigation
---
ercent Reduction in Trips is 0.32% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 9
ne Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 7
ne Number of Dedicated Daily Shuttle Trips is 0

esidential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.04% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne Number of Intersections per Square Mile is 18.4
ne Percent of Streets with Sidewalks on One Side is 0%
ne Percent of Streets with Sidewalks on Both Sides is 100%
ne Percent of Arterials/Collectors with Bike Lanes or where Suitable,
rect Parallel Routes Exist is 100%

sidential Free Transit Passes Mitigation
---
rcent Reduction in Trips is 0.08% (calculated as a % of 9.57 trips/day)
te that the above percent is applied ONLY to worker trips. And the 'double counting adjusted'
ip rate is used to get the number of Mitigated Trips
puts Selected:
e Free Transit Passes checkbox was selected.

n-Residential Mitigation Measures
==========

n-Residential Mix of Uses Mitigation
---
rcent Reduction in Trips is 1.34%
puts Selected:
e number of housing units within a 1/2 mile radius of the project, plus the
mber of residential units included in the project are 4697.
e employment for the study area (within a 1/2 mile radius of the project) is 1557.

n-Residential Local-Serving Retail Mitigation
---
rcent Reduction in Trips is 2%
puts Selected:
e Presence of Local-Serving Retail checkbox was selected.

n-Residential Transit Service Mitigation
---
rcent Reduction in Trips is 0.32%
puts Selected:
e Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 9
e Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 7
e Number of Dedicated Daily Shuttle Trips is 0

on-Residential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.04%
nputs Selected:
he Number of Intersections per Square Mile is 18.4
he Percent of Streets with Sidewalks on One Side is 0%
he Percent of Streets with Sidewalks on Both Sides is 100%
he Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

on-Residential Free Transit Passes Mitigation
---
ercent Reduction in Trips is 0.08%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
he Free Transit Passes checkbox was selected.

on-Residential Telecommuting Mitigation
---
ercent Reduction in Trips is 3%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
he Employee Telecommuting Program was selected with 10% of the employees participating
n average of 1 Days/Week
he Compressed Work Schedule 9/80 was selected with 10% of the employees participating

on-Residential Other Transportation Demand Measures Mitigation
---
ercent Reduction in Trips is 2.64%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
he 'Secure Bike Parking' measure was selected
he 'Showers/Changing Facilities Provided' measure was selected
he 'Guaranteed Ride Home Program Provided' measure was selected
he 'Car-Sharing Services Provided' measure was selected
he 'Information provided on Transportation Alternatives' measure was selected
he 'Dedicated Employee Transportation Coordinator' measure was selected
he 'Preferential Carpool/Vanpool Parking' measure was selected

hanges made to the default values for Land Use Trip Percentages

he Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/526. to 9.57/358.5
he Trip Rate and/or Acreage values for Apartments low rise
have changed from the defaults 6.9/147.13 to 6.72/237.4
he Trip Rate and/or Acreage values for Apartments mid rise
have changed from the defaults 5.76/20.13 to 5.86/30.6

nanges made to the default values for Area

ne area souce mitigation measure option switch changed from off to on.
ne wood stove percentage changed from 67 to 0.
ne natural gas fireplace percentage changed from 33 to 34.
ne no hearth options percentage changed from 0 to 66.
ne homes per acre changed from 3.0 to 7.5.
ne landscape year changed from 2005 to 2015.
ne residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00602.
ne nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.0116.
itigation measure Residential Electric Landscape Maintenance Equipment
has been changed from off to on.
.tigation measure Commercial/Industrial Electric Landscape Maintenance Equipment
has been changed from off to on.

ıanges made to the default values for Operations

ıe pass by trips option switch changed from off to on.
ıe double counting option switch changed from off to on.
ıe mitigation option switch changed from off to on.
ıe operational emission year changed from 2005 to 2015.
ıe home based work selection item changed from 8 to 7.
ıe home based work urban trip length changed from 10.8 to 19.2.
ıe home based shopping selection item changed from 8 to 7.
.e home based other selection item changed from 8 to 7.
.e home based other urban trip length changed from 7.5 to 7.0.
.e commercial based commute selection item changed from 8 to 7.
.e commercial based commute urban trip length changed from 9.5 to 15.
e commercial based non-work selection item changed from 8 to 7.
e commercial based non-work urban trip length changed from 7.35 to 5.
e commercial based customer selection item changed from 8 to 7.
e commercial based customer urban trip length changed from 7.35 to 5.7.
e paved road silt loading factor changed from 0.1 to 0.031.
e Res and Non-Res Mix of Uses Mitigation changed from off to on.
e Res and Non-Res Local-Serving Retail Mitigation changed from off to on.
e Res and Non-Res Transit Service Mitigation changed from off to on.
e Res and Non-Res Ped/Bike Mitigation changed from off to on.
e Res and Non-Res Trans Demand Mgmt Measures Mitigation changed from off to on.

A.7 "0517_BUILDOUT-YR2025_OPS_MIT=AQ-MITPLAN.URB"

URBEMIS 2002 For Windows 8.7.0

ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Buildout-Yr2025_Ops_Mit=AQ-
roject Name: 0517_Buildout-Yr2025_Ops_Mit=AQ-MitPlan
roject Location: San Joaquin Valley
n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

REA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	126.12	23.01	23.83	0.08	0.08
TOTALS (tpy, mitigated)	125.82	22.97	21.43	0.06	0.08

PERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	70.88	60.35	695.76	1.70	137.90
TOTALS (tpy, mitigated)	61.32	49.89	575.19	1.40	113.93

JM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	197.00	83.36	719.59	1.78	137.98
TOTALS (tpy, mitigated)	187.15	72.86	596.62	1.47	114.01

URBEMIS 2002 For Windows 8.7.0

'ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Buildout-Yr2025_Ops_Mit=AQ-
'roject Name: 0517_Buildout-Yr2025_Ops_Mit=AQ-MitPlan
'roject Location: San Joaquin Valley
'n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

REA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.74	22.81	11.34	0.00	0.04
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping	1.57	0.20	12.49	0.08	0.04
Consumer Prdcts	96.60	-	-	-	-
Architectural Coatings	26.22	-	-	-	-
TOTALS (tpy, unmitigated)	126.12	23.01	23.83	0.08	0.08

REA SOURCE EMISSION ESTIMATES (Tons per Year, Mitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.74	22.81	11.34	0	0.04
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping	1.27	0.16	10.09	0.06	0.03
Consumer Prdcts	96.60	-	-	-	-
Architectural Coatings	26.22	-	-	-	-
TOTALS (tpy, mitigated)	125.82	22.97	21.43	0.06	0.08

rea Source Mitigation Measures

Residential Electric Landscape Maintenance Equipment
Percent Reduction: 20
Commercial/Industrial Electric Landscape Maintenance Equipment
Percent Reduction: 10

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ɔw Density (VRE & VLDR)	19.51	18.91	218.54	0.54	44.15
ɜdium Density (VMDR) [RM	16.81	15.35	177.47	0.44	35.85
ıgh Density (VHDR) [RH]	4.20	3.73	43.10	0.11	8.71
lementary school (ES) [P	1.85	1.52	17.53	0.04	3.23
ıgh school (HS) [PF]	0.63	0.54	6.19	0.01	1.18
ɜlta CC (DC) [PF]	0.85	0.80	9.04	0.02	1.77
ɜneral Comm. (VTC) [MX]	9.78	7.71	88.70	0.19	15.02
ffice: 50% of...(BP) [IL	1.67	1.60	18.45	0.05	3.68
ıght industrial: 50% of.	1.16	1.04	12.01	0.03	2.40
ɜavy Industrial (IV) [IG	14.42	9.14	104.73	0.27	21.90
)TAL EMISSIONS (tons/yr)	70.88	60.35	695.76	1.70	137.90

ıcludes correction for passby trips.
ıcludes the following double counting adjustment for internal trips:
ɜsidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

?ERATIONAL (Vehicle) EMISSION ESTIMATES

ıalysis Year: 2025 Season: Annual

ıFAC Version: EMFAC2002 (9/2002)

ımmary of Land Uses:

ıit Type	Acreage	Trip Rate	No. Units	Total Trips
ɔw Density (VRE & VLDR)	1,072.50	7.64 trips/dwelling unit	4,365.00	33,358.95
ɜdium Density (VMDR) [RM	533.10	5.37 trips/dwelling unit	5,048.00	27,089.73
.gh Density (VHDR) [RH]	57.30	4.68 trips/dwelling unit	1,406.00	6,579.59
.ementary school (ES) [P		11.31 trips/1000 sq. ft.	420.00	4,750.91
.gh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
ɜlta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
ɜneral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	1,009.00	33,823.05
ffice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
.ght industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
ɜavy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,695.00	12,523.67
		Sum of Total Trips		127,199.25
		Total Vehicle Miles Traveled		1,009,376.75

ɜhicle Assumptions:

.eet Mix:

ɜhicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
.ght Auto	50.28	0.00	100.00	0.00
.ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
.ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
ɜd Truck 5,751- 8,500	6.59	0.00	98.70	1.30
.te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
.te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
ɜd-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
ɜavy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.09	0.00	50.00	50.00
ɜtorcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			

of Trips - Commercial (by land use)

ementary school (ES) [PF]	20.0	10.0	70.0
gh school (HS) [PF]	10.0	5.0	85.0
lta CC (DC) [PF]	5.0	2.5	92.5

eneral Comm. (VTC) [MX]	2.0	1.0	97.0
ffice: 50% of...(BP) [IL]	48.0	24.0	28.0
ght industrial: 50% of... (BP) [IL]	50.0	25.0	25.0
eavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ow Density (VRE & VLDR)	16.77	15.80	182.65	0.45	36.90
edium Density (VMDR) [RM	14.58	12.83	148.32	0.37	29.96
igh Density (VHDR) [RH]	3.66	3.12	36.02	0.09	7.28
lementary school (ES) [P	1.57	1.24	14.34	0.03	2.64
igh school (HS) [PF]	0.54	0.45	5.11	0.01	0.97
elta CC (DC) [PF]	0.73	0.67	7.51	0.02	1.47
eneral Comm. (VTC) [MX]	8.26	6.43	73.97	0.16	12.52
ffice: 50% of...(BP) [IL	1.39	1.29	14.82	0.04	2.95
ight industrial: 50% of.	0.98	0.84	9.64	0.02	1.93
eavy Industrial (IV) [IG	12.84	7.22	82.81	0.21	17.31
OTAL EMISSIONS (tons/yr)	61.32	49.89	575.19	1.40	113.93
ERCENTAGE REDUCTION %	13	17	17	17	17

ncludes correction for passby trips.
ncludes the following double counting adjustment for internal trips:
esidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

PERATIONAL (Vehicle) EMISSION ESTIMATES

nalysis Year: 2025 Season: Annual

MFAC Version: EMFAC2002 (9/2002)

ummary of Land Uses:

nit Type	Acreage	Trip Rate	No. Units	Total Trips
ow Density (VRE & VLDR)	1,072.50	7.64 trips/dwelling unit	4,365.00	33,358.95
edium Density (VMDR) [RM	533.10	5.37 trips/dwelling unit	5,048.00	27,089.73
igh Density (VHDR) [RH]	57.30	4.68 trips/dwelling unit	1,406.00	6,579.59
lementary school (ES) [P		11.31 trips/1000 sq. ft.	420.00	4,750.91
igh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
elta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
eneral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	1,009.00	33,823.05
ffice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
ight industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
eavy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,695.00	12,523.67
		Sum of Total Trips		127,199.25
		Total Vehicle Miles Traveled		1,009,376.75

ehicle Assumptions:

eet Mix:

ehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	50.28	0.00	100.00	0.00
ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
d Truck 5,751- 8,500	6.59	0.00	98.70	1.30
te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
d-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
avy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.09	0.00	50.00	50.00
torcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			
of Trips - Commercial (by land use)						
ementary school (ES) [PF]				20.0	10.0	70.0
gh school (HS) [PF]				10.0	5.0	85.0

elta CC (DC) [PF]	5.0	2.5	92.5
eneral Comm. (VTC) [MX]	2.0	1.0	97.0
ffice: 50% of...(BP) [IL]	48.0	24.0	28.0
ight industrial: 50% of... (BP) [IL]	50.0	25.0	25.0
eavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATION OPTIONS SELECTED

esidential Mitigation Measures
==========

esidential Mix of Uses Mitigation
---
ercent Reduction in Trips is 8.2% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne number of housing units within a 1/2 mile radius of the project, plus the
umber of residential units included in the project are 10819.
ne employment for the study area (within a 1/2 mile radius of the project) is 14198.

esidential Local-Serving Retail Mitigation
---
ercent Reduction in Trips is 2% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne Presence of Local-Serving Retail checkbox was selected.

esidential Transit Service Mitigation
---
ercent Reduction in Trips is 0.18% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 7
ne Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 3
ne Number of Dedicated Daily Shuttle Trips is 0

esidential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.02% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
ne Number of Intersections per Square Mile is 9.7
ne Percent of Streets with Sidewalks on One Side is 0%
ne Percent of Streets with Sidewalks on Both Sides is 100%
ne Percent of Arterials/Collectors with Bike Lanes or where Suitable,
rect Parallel Routes Exist is 100%

sidential Free Transit Passes Mitigation
---
rcent Reduction in Trips is 0.05% (calculated as a % of 9.57 trips/day)
te that the above percent is applied ONLY to worker trips. And the 'double counting adjusted'
ip rate is used to get the number of Mitigated Trips
puts Selected:
e Free Transit Passes checkbox was selected.

n-Residential Mitigation Measures
==========

n-Residential Mix of Uses Mitigation
---
rcent Reduction in Trips is 8.2%
puts Selected:
e number of housing units within a 1/2 mile radius of the project, plus the
mber of residential units included in the project are 10819.
e employment for the study area (within a 1/2 mile radius of the project) is 14198.

n-Residential Local-Serving Retail Mitigation
---
rcent Reduction in Trips is 2%
puts Selected:
e Presence of Local-Serving Retail checkbox was selected.

n-Residential Transit Service Mitigation
---
rcent Reduction in Trips is 0.18%
puts Selected:
e Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 7
e Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 3
e Number of Dedicated Daily Shuttle Trips is 0

on-Residential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.02%
nputs Selected:
he Number of Intersections per Square Mile is 9.7
he Percent of Streets with Sidewalks on One Side is 0%
he Percent of Streets with Sidewalks on Both Sides is 100%
he Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

on-Residential Free Transit Passes Mitigation
---
ercent Reduction in Trips is 0.05%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
he Free Transit Passes checkbox was selected.

on-Residential Telecommuting Mitigation
---
ercent Reduction in Trips is 3%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
he Employee Telecommuting Program was selected with 10% of the employees participating
n average of 1 Days/Week
he Compressed Work Schedule 9/80 was selected with 10% of the employees participating

on-Residential Other Transportation Demand Measures Mitigation
---
ercent Reduction in Trips is 2.62%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
he 'Secure Bike Parking' measure was selected
he 'Showers/Changing Facilities Provided' measure was selected
he 'Guaranteed Ride Home Program Provided' measure was selected
he 'Information provided on Transportation Alternatives' measure was selected
he 'Dedicated Employee Transportation Coordinator' measure was selected
he 'Carpool Matching Programs' measure was selected
he 'Preferential Carpool/Vanpool Parking' measure was selected

ıanges made to the default values for Land Use Trip Percentages

ıe Trip Rate and/or Acreage values for Single family housing
ıave changed from the defaults 9.57/1455. to 9.57/1072.5
ıe Trip Rate and/or Acreage values for Apartments low rise
ıave changed from the defaults 6.9/315.5 to 6.72/533.1
ıe Trip Rate and/or Acreage values for Apartments mid rise
ıave changed from the defaults 5.76/37. to 5.86/57.3

ıanges made to the default values for Area

ıe area souce mitigation measure option switch changed from off to on.
ıe wood stove percentage changed from 67 to 0.
ıe natural gas fireplace percentage changed from 33 to 40.
ıe no hearth options percentage changed from 0 to 60.
ıe homes per acre changed from 3.0 to 6.5.
ıe landscape year changed from 2005 to 2020.
ıe residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00602.
ıe nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.0116.
ıtigation measure Residential Electric Landscape Maintenance Equipment
has been changed from off to on.
ıtigation measure Commercial/Industrial Electric Landscape Maintenance Equipment
has been changed from off to on.

ıanges made to the default values for Operations

ıe pass by trips option switch changed from off to on.
ıe double counting option switch changed from off to on.
ıe mitigation option switch changed from off to on.
ıe light auto percentage changed from 53.5 to 50.28.
ıe light truck < 3750 lbs percentage changed from 15.7 to 23.04.
ıe light truck 3751-5750 percentage changed from 16.5 to 16.53.
ıe med truck 5751-8500 percentage changed from 7.5 to 6.59.
ıe lite-heavy truck 8501-10000 percentage changed from 1.0 to 0.14.
ıe lite-heavy truck 10001-14000 percentage changed from 0.3 to 0.02.
ıe med-heavy truck 14001-33000 percentage changed from 0.9 to 0.64.
ıe heavy-heavy truck 33001-60000 percentage changed from 0.8 to 0.51.
ıe urban bus percentage changed from 0.2 to 0.09.
ıe motorcycle percentage changed from 1.5 to 1.17.
ıe school bus percentage changed from 0.1 to 0.
ıe motorhome percentage changed from 2.0 to 0.99.
ıe operational emission year changed from 2005 to 2025.
ıe home based work selection item changed from 8 to 7.
ıe home based work urban trip length changed from 10.8 to 19.2.
ıe home based shopping selection item changed from 8 to 7.
ıe home based other selection item changed from 8 to 7.
ıe home based other urban trip length changed from 7.5 to 7.0.
ıe commercial based commute selection item changed from 8 to 7.
ıe commercial based commute urban trip length changed from 9.5 to 15.
ıe commercial based non-work selection item changed from 8 to 7.
ıe commercial based non-work urban trip length changed from 7.35 to 5.
ıe commercial based customer selection item changed from 8 to 7.
ıe commercial based customer urban trip length changed from 7.35 to 5.7.
ıe paved road silt loading factor changed from 0.1 to 0.031.
ıe Res and Non-Res Mix of Uses Mitigation changed from off to on.
ıe Res and Non-Res Local-Serving Retail Mitigation changed from off to on.
.e Res and Non-Res Transit Service Mitigation changed from off to on.
.e Res and Non-Res Ped/Bike Mitigation changed from off to on.
.e Res and Non-Res Trans Demand Mgmt Measures Mitigation changed from off to on.

A.8 "0517_PHASES_2-5-YR2025_OPS_MIT=AQ-MITPLAN.URB"

URBEMIS 2002 For Windows 8.7.0

'ile Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phases_2-5-Yr2025_Ops_Mit=A
'roject Name: 0517_Phases_2-5-Yr2025_Ops_Mit=AQ-MitPlan
'roject Location: San Joaquin Valley
'n-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

REA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	77.00	13.16	14.50	0.05	0.05
TOTALS (tpy, mitigated)	77.00	13.16	14.50	0.05	0.05

PERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	45.39	37.75	434.82	1.08	87.32
TOTALS (tpy, mitigated)	39.84	31.50	362.88	0.90	72.82

UM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	122.38	50.91	449.32	1.13	87.38
TOTALS (tpy, mitigated)	116.84	44.66	377.38	0.95	72.88

URBEMIS 2002 For Windows 8.7.0

.le Name: C:\Program Files\TechProg\AirQual\URBEMIS\2002\8.7\Projects2k2\0517_Phases_2-5-Yr2025_Ops_Mit=A
:oject Name: 0517_Phases_2-5-Yr2025_Ops_Mit=AQ-MitPlan
:oject Location: San Joaquin Valley
ı-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

:EA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
latural Gas	1.00	13.03	6.40	0.00	0.02
learth	0.00	0.00	0.00	0.00	0.00
,andscaping	1.02	0.13	8.10	0.05	0.03
:onsumer Prdcts	54.66	-	-	-	-
ırchitectural Coatings	20.32	-	-	-	-
'OTALS (tpy, unmitigated)	77.00	13.16	14.50	0.05	0.05

:EA SOURCE EMISSION ESTIMATES (Tons per Year, Mitigated)

Source	ROG	NOx	CO	SO2	PM10
latural Gas	1.00	13.03	6.40	0	0.02
learth	0.00	0.00	0.00	0.00	0.00
,andscaping	1.02	0.13	8.10	0.05	0.03
:onsumer Prdcts	54.66	-	-	-	-
ırchitectural Coatings	20.32	-	-	-	-
'OTALS (tpy, mitigated)	77.00	13.16	14.50	0.05	0.05

:ea Source Mitigation Measures

Residential Electric Landscape Maintenance Equipment
Percent Reduction: 0
Commercial/Industrial Electric Landscape Maintenance Equipment
Percent Reduction: 0

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
›w Density (VRE & VLDR)	12.46	12.07	139.53	0.35	28.19
›dium Density (VMDR) [RM	8.97	8.19	94.71	0.24	19.13
.gh Density (VHDR) [RH]	1.91	1.70	19.65	0.05	3.97
.gh school (HS) [PF]	0.63	0.54	6.19	0.01	1.18
›lta CC (DC) [PF]	0.85	0.80	9.04	0.02	1.77
›neral Comm. (VTC) [MX]	3.55	2.80	32.18	0.07	5.45
:fice: 50% of...(BP) [IL	1.67	1.60	18.45	0.05	3.68
.ght industrial: 50% of.	1.16	1.04	12.01	0.03	2.40
›avy Industrial (IV) [IG	14.19	8.99	103.05	0.26	21.55
)TAL EMISSIONS (tons/yr)	45.39	37.75	434.82	1.08	87.32

›cludes correction for passby trips.
›cludes the following double counting adjustment for internal trips:
›sidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

'ERATIONAL (Vehicle) EMISSION ESTIMATES

›alysis Year: 2025 Season: Annual

IFAC Version: EMFAC2002 (9/2002)

.mmary of Land Uses:

.it Type	Acreage	Trip Rate	No. Units	Total Trips
›w Density (VRE & VLDR)	714.00	7.64 trips/dwelling unit	2,787.00	21,299.29
›dium Density (VMDR) [RM	295.70	5.37 trips/dwelling unit	2,694.00	14,457.16
gh Density (VHDR) [RH]	26.70	4.68 trips/dwelling unit	641.00	2,999.66
gh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
lta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
neral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	366.00	12,268.82
fice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
ght industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
avy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,524.00	12,323.43
		Sum of Total Trips		72,421.69
		Total Vehicle Miles Traveled		639,344.96

hicle Assumptions:

eet Mix:

hicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	50.28	0.00	100.00	0.00
ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
d Truck 5,751- 8,500	6.59	0.00	98.70	1.30
te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
d-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
avy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.09	0.00	50.00	50.00
torcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
of Trips - Residential	32.9	18.0	49.1			
of Trips - Commercial (by land use)						
gh school (HS) [PF]				10.0	5.0	85.0
lta CC (DC) [PF]				5.0	2.5	92.5
neral Comm. (VTC) [MX]				2.0	1.0	97.0
fice: 50% of...(BP) [IL]				48.0	24.0	28.0
ght industrial: 50% of... (BP) [IL]				50.0	25.0	25.0

eavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
ɔw Density (VRE & VLDR)	10.84	10.24	118.34	0.29	23.90
ɜdium Density (VMDR) [RM	7.87	6.95	80.32	0.20	16.23
igh Density (VHDR) [RH]	1.69	1.44	16.67	0.04	3.37
igh school (HS) [PF]	0.54	0.46	5.19	0.01	0.98
ɜlta CC (DC) [PF]	0.74	0.68	7.62	0.02	1.49
ɜneral Comm. (VTC) [MX]	3.04	2.37	27.22	0.06	4.61
ffice: 50% of...(BP) [IL	1.41	1.30	15.04	0.04	2.99
ight industrial: 50% of.	0.99	0.85	9.78	0.02	1.95
ɜavy Industrial (IV) [IG	12.73	7.22	82.70	0.21	17.29
)TAL EMISSIONS (tons/yr)	39.84	31.50	362.88	0.90	72.82
ɜRCENTAGE REDUCTION %	12	17	17	17	17

ıcludes correction for passby trips.
ıcludes the following double counting adjustment for internal trips:
ɜsidential trips: 20.14 % reduction. Nonresidential trips: 21.93 % reduction.

ɜERATIONAL (Vehicle) EMISSION ESTIMATES

ıalysis Year: 2025 Season: Annual

ıFAC Version: EMFAC2002 (9/2002)

ımmary of Land Uses:

ıit Type	Acreage	Trip Rate	No. Units	Total Trips
ɔw Density (VRE & VLDR)	714.00	7.64 trips/dwelling unit	2,787.00	21,299.29
ɜdium Density (VMDR) [RM	295.70	5.37 trips/dwelling unit	2,694.00	14,457.16
.gh Density (VHDR) [RH]	26.70	4.68 trips/dwelling unit	641.00	2,999.66
.gh school (HS) [PF]		10.06 trips/1000 sq. ft.	162.00	1,630.15
ɜlta CC (DC) [PF]		10.06 trips/1000 sq. ft.	218.00	2,193.66
ɜneral Comm. (VTC) [MX]		33.52 trips/1000 sq. ft.	366.00	12,268.82
ɜfice: 50% of...(BP) [IL		8.60 trips/1000 sq. ft.	374.00	3,214.54
.ght industrial: 50% of.		5.44 trips/1000 sq. ft.	374.00	2,035.00
ɜavy Industrial (IV) [IG		1.17 trips/1000 sq. ft.	10,524.00	12,323.43
		Sum of Total Trips		72,421.69
		Total Vehicle Miles Traveled		639,344.96

ɜhicle Assumptions:

eet Mix:

hicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
ght Auto	50.28	0.00	100.00	0.00
ght Truck < 3,750 lbs	23.04	0.00	99.40	0.60
ght Truck 3,751- 5,750	16.53	0.00	100.00	0.00
d Truck 5,751- 8,500	6.59	0.00	98.70	1.30
te-Heavy 8,501-10,000	0.14	0.00	80.00	20.00
te-Heavy 10,001-14,000	0.02	0.00	66.70	33.30
d-Heavy 14,001-33,000	0.64	0.00	22.20	77.80
avy-Heavy 33,001-60,000	0.51	0.00	0.00	100.00
ne Haul > 60,000 lbs	0.00	0.00	0.00	100.00
ban Bus	0.09	0.00	50.00	50.00
torcycle	1.17	40.00	60.00	0.00
hool Bus	0.00	0.00	0.00	100.00
tor Home	0.99	0.00	90.00	10.00

avel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
ban Trip Length (miles)	19.2	7.3	7.0	15.0	5.0	5.7
ral Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
ip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
ɔf Trips - Residential	32.9	18.0	49.1			

ɔf Trips - Commercial (by land use)

gh school (HS) [PF]	10.0	5.0	85.0
lta CC (DC) [PF]	5.0	2.5	92.5
ɜneral Comm. (VTC) [MX]	2.0	1.0	97.0
fice: 50% of...(BP) [IL]	48.0	24.0	28.0

ight industrial: 50% of... (BP) [IL]	50.0	25.0	25.0
eavy Industrial (IV) [IG]	90.0	5.0	5.0

MITIGATION OPTIONS SELECTED

esidential Mitigation Measures
==========

esidential Mix of Uses Mitigation
---
ercent Reduction in Trips is 7.1% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he number of housing units within a 1/2 mile radius of the project, plus the
umber of residential units included in the project are 6122.
he employment for the study area (within a 1/2 mile radius of the project) is 12641.

esidential Local-Serving Retail Mitigation
---
ercent Reduction in Trips is 2% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Presence of Local-Serving Retail checkbox was selected.

esidential Transit Service Mitigation
---
ercent Reduction in Trips is 0.07% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 3
he Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 1
he Number of Dedicated Daily Shuttle Trips is 0

esidential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.02% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied to the 'double counting adjusted' trip rate
o get Mitigated Trips
nputs Selected:
he Number of Intersections per Square Mile is 6.8
he Percent of Streets with Sidewalks on One Side is 0%
he Percent of Streets with Sidewalks on Both Sides is 100%
he Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

esidential Free Transit Passes Mitigation
---
ercent Reduction in Trips is 0.02% (calculated as a % of 9.57 trips/day)
ote that the above percent is applied ONLY to worker trips. And the 'double counting adjusted'
rip rate is used to get the number of Mitigated Trips
nputs Selected:
ne Free Transit Passes checkbox was selected.

on-Residential Mitigation Measures
==========

on-Residential Mix of Uses Mitigation
---
ercent Reduction in Trips is 7.1%
nputs Selected:
ne number of housing units within a 1/2 mile radius of the project, plus the
umber of residential units included in the project are 6122.
ne employment for the study area (within a 1/2 mile radius of the project) is 12641.

on-Residential Local-Serving Retail Mitigation
---
ercent Reduction in Trips is 2%
nputs Selected:
ne Presence of Local-Serving Retail checkbox was selected.

on-Residential Transit Service Mitigation
---
ercent Reduction in Trips is 0.07%
nputs Selected:
ne Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 3
ne Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 1
ne Number of Dedicated Daily Shuttle Trips is 0

on-Residential Pedestrian/Bicycle Friendliness Mitigation
---
ercent Reduction in Trips is 6.02%
nputs Selected:
ne Number of Intersections per Square Mile is 6.8
ne Percent of Streets with Sidewalks on One Side is 0%
ne Percent of Streets with Sidewalks on Both Sides is 100%
ne Percent of Arterials/Collectors with Bike Lanes or where Suitable,
irect Parallel Routes Exist is 100%

on-Residential Free Transit Passes Mitigation
---
ercent Reduction in Trips is 0.02%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
ne Free Transit Passes checkbox was selected.

on-Residential Telecommuting Mitigation
---
ercent Reduction in Trips is 3%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
ne Employee Telecommuting Program was selected with 10% of the employees participating
n average of 1 Days/Week
ne Compressed Work Schedule 9/80 was selected with 10% of the employees participating

on-Residential Other Transportation Demand Measures Mitigation
---
ercent Reduction in Trips is 2.61%
ote that the above percent is applied ONLY to worker trips.
nputs Selected:
ne 'Secure Bike Parking' measure was selected
ne 'Showers/Changing Facilities Provided' measure was selected
ne 'Guaranteed Ride Home Program Provided' measure was selected
ne 'Car-Sharing Services Provided' measure was selected
ne 'Information provided on Transportation Alternatives' measure was selected
ne 'Dedicated Employee Transportation Coordinator' measure was selected
ne 'Preferential Carpool/Vanpool Parking' measure was selected

anges made to the default values for Land Use Trip Percentages

e Trip Rate and/or Acreage values for Single family housing
ave changed from the defaults 9.57/929. to 9.57/714
e Trip Rate and/or Acreage values for Apartments low rise
ave changed from the defaults 6.9/168.38 to 6.72/295.7
e Trip Rate and/or Acreage values for Apartments mid rise
ave changed from the defaults 5.76/16.87 to 5.86/26.7

anges made to the default values for Area

e area souce mitigation measure option switch changed from off to on.
e wood stove percentage changed from 67 to 0.
e natural gas fireplace percentage changed from 33 to 46.
e no hearth options percentage changed from 0 to 54.
e homes per acre changed from 3.0 to 5.9.
e landscape year changed from 2005 to 2020.
e residential Arch. Coatings ROG emission factor changed from 0.0185 to 0.00602.
e nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to 0.0116.
tigation measure Residential Electric Landscape Maintenance Equipment
has been changed from off to on.
tigation measure Commercial/Industrial Electric Landscape Maintenance Equipment
has been changed from off to on.

anges made to the default values for Operations

e pass by trips option switch changed from off to on.
e double counting option switch changed from off to on.
e mitigation option switch changed from off to on.
e light auto percentage changed from 53.5 to 50.28.
e light truck < 3750 lbs percentage changed from 15.7 to 23.04.
e light truck 3751-5750 percentage changed from 16.5 to 16.53.
e med truck 5751-8500 percentage changed from 7.5 to 6.59.
e lite-heavy truck 8501-10000 percentage changed from 1.0 to 0.14.
e lite-heavy truck 10001-14000 percentage changed from 0.3 to 0.02.
e med-heavy truck 14001-33000 percentage changed from 0.9 to 0.64.
e heavy-heavy truck 33001-60000 percentage changed from 0.8 to 0.51.
e urban bus percentage changed from 0.2 to 0.09.
e motorcycle percentage changed from 1.5 to 1.17.
e school bus percentage changed from 0.1 to 0.
e motorhome percentage changed from 2.0 to 0.99.
e operational emission year changed from 2005 to 2025.
e home based work selection item changed from 8 to 7.
e home based work urban trip length changed from 10.8 to 19.2.
e home based shopping selection item changed from 8 to 7.
e home based other selection item changed from 8 to 7.
e home based other urban trip length changed from 7.5 to 7.0.
e commercial based commute selection item changed from 8 to 7.
e commercial based commute urban trip length changed from 9.5 to 15.
e commercial based non-work selection item changed from 8 to 7.
e commercial based non-work urban trip length changed from 7.35 to 5.
e commercial based customer selection item changed from 8 to 7.
e commercial based customer urban trip length changed from 7.35 to 5.7.
e paved road silt loading factor changed from 0.1 to 0.031.
e Res and Non-Res Mix of Uses Mitigation changed from off to on.
e Res and Non-Res Local-Serving Retail Mitigation changed from off to on.
e Res and Non-Res Transit Service Mitigation changed from off to on.
e Res and Non-Res Ped/Bike Mitigation changed from off to on.
e Res and Non-Res Trans Demand Mgmt Measures Mitigation changed from off to on.

B. APPENDIX B: CALINE4 OUTPUT

The model output presented below includes only the local component of predicted CO concentrations; the assumed background concentrations were added separately.

For Intersection 21, results reported in the *Air Quality Report* for scenarios where the Traffic Study recommends mitigation -- including signalization -- are based on with-traffic-mitigation conditions. The reason for this is that – for the circumstances at this intersection and the assumptions applied in this analysis – CO concentration modeling results were generally very slightly higher for with-traffic-mitigation (signalized) conditions, so those results are appropriately conservative for the purposes of the *Air Quality Report*. The difference between without- and with-traffic-mitigation CO results were very small, and total predicted worst-case CO concentrations remained well below applicable standards in either case.

B.1 "0517_#5_WD_PM_2006_EXISTING"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#5_WD_PM_2006_Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	-2	750	-2	150	AG	541	10.7	.0	9.9
B. Link B	-2	150	-2	0	AG	98	13.9	.0	9.9
C. Link C	-5	150	-5	0	AG	417	14.5	.0	9.9
D. Link D	-2	0	-2	-150	AG	518	11.8	.0	9.9
E. Link E	-2	-150	-2	-750	AG	518	10.7	.0	9.9
F. Link F	2	-750	2	-150	AG	396	10.7	.0	9.9
G. Link G	2	-150	2	0	AG	113	13.9	.0	9.9
H. Link H	5	-150	5	-5	AG	337	13.9	.0	9.9
I. Link I	2	0	2	150	AG	399	11.5	.0	9.9
J. Link J	2	150	2	750	AG	399	10.7	.0	9.9
K. Link K	-750	-2	-150	-2	AG	254	11.8	.0	9.9
L. Link L	-150	-2	0	-2	AG	254	15.2	.0	9.9
M. Link M	0	-2	106	-109	AG	260	12.5	.0	9.9
N. Link N	106	-109	530	-533	AG	260	11.8	.0	9.9
O. Link O	530	-528	106	-104	AG	279	11.8	.0	9.9
P. Link P	106	-104	0	2	AG	279	15.2	.0	9.9
Q. Link Q	0	2	-150	2	AG	293	12.5	.0	9.9
R. Link R	-150	2	-750	2	AG	293	11.8	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#5_WD_PM_2006_Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	3	.5
2. NE_8hr	11	4	.5
3. SE_1hr	10	-20	.5
4. SE_8hr	14	-29	.5
5. SW_1hr	-7	-7	.5
6. SW_8hr	-11	-11	.5
7. NW_1hr	-10	7	.5
8. NW_8hr	-14	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	269.	2.1	.0	.0	.2	.0	.0	.0	.0	.0
2. NE_8hr	268.	1.6	.0	.0	.2	.0	.0	.0	.0	.0
3. SE_1hr	355.	1.6	.2	.0	.2	.0	.0	.0	.0	.3
4. SE_8hr	345.	1.1	.0	.0	.3	.0	.0	.0	.0	.1
5. SW_1hr	2.	2.3	.2	.2	.9	.1	.0	.0	.0	.0
6. SW_8hr	4.	1.6	.2	.1	.7	.0	.0	.0	.0	.0
7. NW_1hr	134.	2.4	.0	.0	.3	.2	.0	.0	.0	.1
8. NW_8hr	134.	2.0	.0	.0	.2	.1	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#5_WD_PM_2006_Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	*	.3	.0	.2	.5	.0	.0	.0	.1	.6	.2
2. NE_8hr	*	.2	.0	.2	.4	.0	.0	.0	.0	.5	.2
3. SE_1hr	*	.3	.1	.0	.0	.2	.0	.0	.2	.0	.0
4. SE_8hr	*	.2	.0	.0	.0	.2	.0	.0	.2	.0	.0
5. SW_1hr	*	.2	.2	.0	.2	.0	.0	.0	.0	.1	.0
6. SW_8hr	*	.2	.2	.0	.2	.0	.0	.0	.0	.1	.0
7. NW_1hr	*	.0	.0	.0	.1	.4	.2	.2	.5	.2	.0
8. NW_8hr	*	.0	.0	.0	.1	.4	.2	.2	.5	.2	.0

B.2 "0517_#5_WD_PM_2015_EPAP"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#5_WD_PM_2015_EPAP
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	*	-2	750	-2	150	*	AG	569	4.8	.0	9.9
B. Link B	*	-2	150	-2	0	*	AG	100	6.0	.0	9.9
C. Link C	*	-5	150	-5	0	*	AG	439	6.2	.0	9.9
D. Link D	*	-2	0	-2	-150	*	AG	564	5.4	.0	9.9
E. Link E	*	-2	-150	-2	-750	*	AG	564	4.8	.0	9.9
F. Link F	*	2	-750	2	-150	*	AG	882	4.8	.0	9.9
G. Link G	*	2	-150	2	0	*	AG	184	6.0	.0	9.9
H. Link H	*	5	-150	5	-5	*	AG	748	6.7	.0	9.9
I. Link I	*	2	0	2	150	*	AG	814	6.0	.0	9.9
J. Link J	*	2	150	2	750	*	AG	814	4.8	.0	9.9
K. Link K	*	-750	-2	-150	-2	*	AG	385	5.3	.0	9.9
L. Link L	*	-150	-2	0	-2	*	AG	385	6.6	.0	9.9
M. Link M	*	0	-2	106	-109	*	AG	374	5.5	.0	9.9
N. Link N	*	106	-109	530	-533	*	AG	374	5.3	.0	9.9
O. Link O	*	530	-528	106	-104	*	AG	468	5.3	.0	9.9
P. Link P	*	106	-104	0	2	*	AG	468	6.7	.0	9.9
Q. Link Q	*	0	2	-150	2	*	AG	552	5.7	.0	9.9
R. Link R	*	-150	2	-750	2	*	AG	552	5.3	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#5_WD_PM_2015_EPAP
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	3	.5
2. NE_8hr	11	4	.5
3. SE_1hr	10	-20	.5
4. SE_8hr	14	-29	.5
5. SW_1hr	-7	-7	.5
6. SW_8hr	-11	-11	.5
7. NW_1hr	-10	7	.5
8. NW_8hr	-14	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	182.	1.6	.0	.0	.0	.1	.1	.2	.2	.7
2. NE_8hr	268.	1.2	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	354.	1.2	.0	.0	.0	.0	.0	.0	.0	.3
4. SE_8hr	343.	.7	.0	.0	.1	.0	.0	.0	.0	.1
5. SW_1hr	3.	1.3	.0	.0	.4	.0	.0	.0	.0	.0
6. SW_8hr	4.	.9	.0	.0	.3	.0	.0	.0	.0	.0
7. NW_1hr	134.	1.6	.0	.0	.1	.0	.0	.0	.0	.1
8. NW_8hr	134.	1.3	.0	.0	.0	.0	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#5_WD_PM_2015_EPAP
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	*	.0	.0	.0	.0	.1	.0	.0	.2	.0	.0
2. NE_8hr	*	.2	.0	.0	.2	.0	.0	.0	.0	.4	.1
3. SE_1hr	*	.3	.0	.0	.0	.1	.0	.0	.2	.0	.0
4. SE_8hr	*	.2	.0	.0	.0	.1	.0	.0	.1	.0	.0
5. SW_1hr	*	.2	.1	.0	.1	.0	.0	.0	.0	.1	.0
6. SW_8hr	*	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	*	.0	.0	.0	.0	.3	.0	.1	.4	.2	.0
8. NW_8hr	*	.0	.0	.0	.0	.2	.0	.1	.3	.1	.0

B.3 "0517_#5_WD_PM_2015_EPAP+PHASE1_V3"

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

     JOB: 0517_#5_WD_PM_2015_EPAP+Phase1_v3
     RUN: Hour 1            (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
     U=   1.0 M/S            Z0= 100. CM            ALT=     0. (M)
   BRG= WORST CASE           VD=   .0 CM/S
  CLAS=     7 (G)            VS=   .0 CM/S
  MIXH= 1000. M             AMB=   .0 PPM
 SIGTH=    5. DEGREES       TEMP= 10.0 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	-2	750	-2	150	AG	841	4.8	.0	9.9
B. Link B	-2	150	-2	0	AG	98	6.0	.0	9.9
C. Link C	-5	150	-5	0	AG	717	6.2	.0	9.9
D. Link D	-2	0	-2	-150	AG	898	5.4	.0	9.9
E. Link E	-2	-150	-2	-750	AG	898	4.8	.0	9.9
F. Link F	2	-750	2	-150	AG	1490	4.8	.0	9.9
G. Link G	2	-150	2	0	AG	540	6.0	.0	9.9
H. Link H	5	-150	5	-5	AG	911	6.7	.0	9.9
I. Link I	2	0	2	150	AG	926	6.0	.0	9.9
J. Link J	2	150	2	750	AG	926	4.8	.0	9.9
K. Link K	-750	-2	-150	-2	AG	403	5.3	.0	9.9
L. Link L	-150	-2	0	-2	AG	403	6.6	.0	9.9
M. Link M	0	-2	106	-109	AG	425	5.5	.0	9.9
N. Link N	106	-109	530	-533	AG	425	5.3	.0	9.9
O. Link O	530	-528	106	-104	AG	386	5.3	.0	9.9
P. Link P	106	-104	0	2	AG	386	6.7	.0	9.9
Q. Link Q	0	2	-150	2	AG	871	5.7	.0	9.9
R. Link R	-150	2	-750	2	AG	871	5.3	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#5_WD_PM_2015_EPAP+Phase1_v3
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	3	.5
2. NE_8hr	11	4	.5
3. SE_1hr	10	-20	.5
4. SE_8hr	14	-29	.5
5. SW_1hr	-7	-7	.5
6. SW_8hr	-11	-11	.5
7. NW_1hr	-10	7	.5
8. NW_8hr	-14	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	183.	2.2	.0	.0	.0	.2	.2	.2	.5	.8
2. NE_8hr	268.	1.5	.0	.0	.1	.0	.0	.0	.0	.0
3. SE_1hr	353.	1.4	.0	.0	.2	.0	.0	.0	.0	.4
4. SE_8hr	332.	.9	.0	.0	.1	.0	.0	.0	.1	.3
5. SW_1hr	3.	1.7	.1	.0	.6	.1	.0	.0	.0	.0
6. SW_8hr	4.	1.2	.1	.0	.5	.0	.0	.0	.0	.0
7. NW_1hr	134.	1.9	.0	.0	.2	.1	.0	.0	.1	.2
8. NW_8hr	134.	1.5	.0	.0	.2	.1	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#5_WD_PM_2015_EPAP+Phase1_v3
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	*	.0	.0	.0	.0	.1	.0	.0	.2	.0	.0
2. NE_8hr	*	.2	.0	.0	.2	.0	.0	.0	.0	.6	.2
3. SE_1hr	*	.4	.0	.0	.0	.2	.0	.0	.1	.0	.0
4. SE_8hr	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	*	.3	.2	.0	.1	.0	.0	.0	.0	.2	.0
6. SW_8hr	*	.2	.2	.0	.1	.0	.0	.0	.0	.1	.0
7. NW_1hr	*	.0	.0	.0	.0	.3	.1	.1	.3	.3	.0
8. NW_8hr	*	.0	.0	.0	.0	.3	.1	.0	.3	.2	.0

B.4 "0517_#5_WD_PM_2028_GP2035"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#5_WD_PM_2028_GP2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	*	-2	750	-2	150	*	AG	1672	2.1	.0	9.9
B. Link B	*	-2	150	-2	0	*	AG	843	2.6	.0	9.9
C. Link C	*	-5	150	-5	0	*	AG	825	2.6	.0	9.9
D. Link D	*	-2	0	-2	-150	*	AG	1302	2.6	.0	9.9
E. Link E	*	-2	-150	-2	-750	*	AG	1302	2.0	.0	9.9
F. Link F	*	2	-750	2	-150	*	AG	1572	2.1	.0	9.9
G. Link G	*	2	-150	2	0	*	AG	504	2.5	.0	9.9
H. Link H	*	5	-150	5	-5	*	AG	1120	2.6	.0	9.9
I. Link I	*	2	0	2	150	*	AG	1585	2.6	.0	9.9
J. Link J	*	2	150	2	750	*	AG	1585	2.0	.0	9.9
K. Link K	*	-750	-2	-150	-2	*	AG	864	2.1	.0	9.9
L. Link L	*	-150	-2	0	-2	*	AG	864	2.6	.0	9.9
M. Link M	*	0	-2	106	-109	*	AG	1509	2.6	.0	9.9
N. Link N	*	106	-109	530	-533	*	AG	1509	2.1	.0	9.9
O. Link O	*	530	-528	106	-104	*	AG	1324	2.4	.0	9.9
P. Link P	*	106	-104	0	2	*	AG	1324	2.6	.0	9.9
Q. Link Q	*	0	2	-150	2	*	AG	1036	2.6	.0	9.9
R. Link R	*	-150	2	-750	2	*	AG	1036	2.1	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#5_WD_PM_2028_GP2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	3	.5
2. NE_8hr	11	4	.5
3. SE_1hr	10	-20	.5
4. SE_8hr	14	-29	.5
5. SW_1hr	-7	-7	.5
6. SW_8hr	-11	-11	.5
7. NW_1hr	-10	7	.5
8. NW_8hr	-14	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	269.	1.3	.0	.0	.0	.0	.0	.0	.0	.0
2. NE_8hr	268.	1.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	352.	1.1	.0	.1	.0	.0	.0	.0	.0	.2
4. SE_8hr	345.	.8	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	3.	1.2	.0	.3	.3	.0	.0	.0	.0	.0
6. SW_8hr	5.	.8	.0	.1	.2	.0	.0	.0	.0	.0
7. NW_1hr	134.	1.6	.0	.0	.1	.0	.0	.0	.0	.0
8. NW_8hr	134.	1.3	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#5_WD_PM_2028_GP2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	.2	.0	.0	.3	.0	.0	.0	.1	.4	.0
2. NE_8hr	.1	.0	.0	.2	.0	.0	.0	.0	.3	.0
3. SE_1hr	.3	.0	.0	.0	.3	.0	.0	.2	.0	.0
4. SE_8hr	.2	.0	.0	.0	.2	.0	.0	.1	.0	.0
5. SW_1hr	.2	.0	.0	.1	.0	.0	.0	.0	.1	.0
6. SW_8hr	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	.0	.0	.0	.0	.4	.1	.1	.3	.2	.0
8. NW_8hr	.0	.0	.0	.0	.4	.0	.1	.3	.1	.0

B.5 "0517_#5_WD_PM_2028_GP2035+PROJECT_V3"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#5_WD_PM_2028_GP2035+Project_v3
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	*	-2	750	-2	150	*	AG	1491	2.0	.0	9.9
B. Link B	*	-2	150	-2	0	*	AG	430	2.3	.0	9.9
C. Link C	*	-5	150	-5	0	*	AG	1057	2.6	.0	9.9
D. Link D	*	-2	0	-2	-150	*	AG	1590	2.4	.0	9.9
E. Link E	*	-2	-150	-2	-750	*	AG	1590	2.0	.0	9.9
F. Link F	*	2	-750	2	-150	*	AG	1596	2.0	.0	9.9
G. Link G	*	2	-150	2	0	*	AG	565	2.4	.0	9.9
H. Link H	*	5	-150	5	-5	*	AG	1012	2.6	.0	9.9
I. Link I	*	2	0	2	150	*	AG	1388	2.4	.0	9.9
J. Link J	*	2	150	2	750	*	AG	1388	2.0	.0	9.9
K. Link K	*	-750	-2	-150	-2	*	AG	635	2.6	.0	9.9
L. Link L	*	-150	-2	0	-2	*	AG	635	2.6	.0	9.9
M. Link M	*	0	-2	106	-109	*	AG	747	2.3	.0	9.9
N. Link N	*	106	-109	530	-533	*	AG	747	2.1	.0	9.9
O. Link O	*	530	-528	106	-104	*	AG	907	2.3	.0	9.9
P. Link P	*	106	-104	0	2	*	AG	907	2.6	.0	9.9
Q. Link Q	*	0	2	-150	2	*	AG	904	2.4	.0	9.9
R. Link R	*	-150	2	-750	2	*	AG	904	2.1	.0	9.9

A.2 "0517_PHASE1-YR2015_OPS_MIT=BASEPD.URB"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#5_WD_PM_2028_GP2035+Project_v3
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	3	.5
2. NE_8hr	11	4	.5
3. SE_1hr	10	-20	.5
4. SE_8hr	14	-29	.5
5. SW_1hr	-7	-7	.5
6. SW_8hr	-11	-11	.5
7. NW_1hr	-10	7	.5
8. NW_8hr	-14	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	183.	1.1	.0	.0	.0	.2	.0	.0	.2	.3
2. NE_8hr	268.	.8	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	353.	.8	.0	.0	.0	.0	.0	.0	.0	.2
4. SE_8hr	344.	.5	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	3.	1.1	.0	.1	.4	.0	.0	.0	.0	.0
6. SW_8hr	4.	.7	.0	.0	.3	.0	.0	.0	.0	.0
7. NW_1hr	134.	1.2	.0	.0	.1	.1	.0	.0	.0	.0
8. NW_8hr	134.	1.0	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#5_WD_PM_2028_GP2035+Project_v3
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0
2. NE_8hr	.1	.0	.0	.1	.0	.0	.0	.0	.3	.0
3. SE_1hr	.2	.0	.0	.0	.1	.0	.0	.1	.0	.0
4. SE_8hr	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. SW_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	.0	.0	.0	.0	.2	.0	.0	.2	.1	.0
8. NW_8hr	.0	.0	.0	.0	.2	.0	.0	.2	.0	.0

B.6 "0517_#21_WD_PM_2006_EXISTING"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#21_WD_PM_2006_Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	-2	750	-2	150	AG	54	10.1	.0	9.9
B. Link B	-2	150	-2	0	AG	54	11.8	.0	9.9
C. Link C	-2	0	-2	-150	AG	67	10.9	.0	9.9
D. Link D	-2	-150	-2	-750	AG	67	10.1	.0	9.9
E. Link E	2	-750	2	-150	AG	71	10.1	.0	9.9
F. Link F	2	-150	2	0	AG	71	11.8	.0	9.9
G. Link G	2	0	2	150	AG	100	10.9	.0	9.9
H. Link H	2	150	2	750	AG	100	10.1	.0	9.9
I. Link I	-750	-2	-150	-2	AG	93	10.1	.0	9.9
J. Link J	-150	-2	0	-2	AG	49	15.6	.0	9.9
K. Link K	-150	-7	0	-7	AG	44	15.6	.0	13.2
L. Link L	0	-2	150	-2	AG	41	10.6	.0	9.9
M. Link M	150	-2	750	-2	AG	41	10.1	.0	9.9
N. Link N	750	2	150	2	AG	33	10.1	.0	9.9
O. Link O	150	4	0	4	AG	33	15.6	.0	13.2
P. Link P	0	2	-150	2	AG	43	10.6	.0	9.9
Q. Link Q	-150	2	-750	2	AG	43	10.1	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#21_WD_PM_2006_Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	11	.5
2. NE_8hr	11	15	.5
3. SE_1hr	7	-7	.5
4. SE_8hr	11	-11	.5
5. SW_1hr	-7	-14	.5
6. SW_8hr	-11	-18	.5
7. NW_1hr	-7	7	.5
8. NW_8hr	-11	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	183.	.4	.0	.0	.0	.0	.0	.1	.0	.0
2. NE_8hr	265.	.2	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	272.	.5	.0	.0	.0	.0	.0	.0	.0	.0
4. SE_8hr	273.	.4	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	3.	.4	.0	.0	.0	.0	.0	.0	.0	.0
6. SW_8hr	4.	.3	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	177.	.4	.0	.0	.1	.0	.0	.0	.0	.0
8. NW_8hr	176.	.3	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#21_WD_PM_2006_Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q
1. NE_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NE_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	.0	.1	.1	.0	.0	.0	.0	.0	.0
4. SE_8hr	.0	.0	.1	.0	.0	.0	.0	.0	.0
5. SW_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. SW_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. NW_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0

B.7 "0517_#21_WD_PM_2015_EPAP"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#21_WD_PM_2015_EPAP
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	*	-2	750	-2	150	*	AG	239	4.5	.0	9.9
B. Link B	*	-2	150	-2	0	*	AG	239	5.2	.0	9.9
C. Link C	*	-2	0	-2	-150	*	AG	79	4.9	.0	9.9
D. Link D	*	-2	-150	-2	-750	*	AG	79	4.5	.0	9.9
E. Link E	*	2	-750	2	-150	*	AG	79	4.5	.0	9.9
F. Link F	*	2	-150	2	0	*	AG	79	5.2	.0	9.9
G. Link G	*	2	0	2	150	*	AG	250	5.4	.0	9.9
H. Link H	*	2	150	2	750	*	AG	250	4.5	.0	9.9
I. Link I	*	-750	-2	-150	-2	*	AG	240	4.5	.0	9.9
J. Link J	*	-150	-2	0	-2	*	AG	190	6.5	.0	9.9
K. Link K	*	-150	-7	0	-7	*	AG	50	6.5	.0	13.2
L. Link L	*	0	-2	150	-2	*	AG	229	4.7	.0	9.9
M. Link M	*	150	-2	750	-2	*	AG	229	4.5	.0	9.9
N. Link N	*	750	2	150	2	*	AG	50	4.5	.0	9.9
O. Link O	*	150	4	0	4	*	AG	50	6.5	.0	13.2
P. Link P	*	0	2	-150	2	*	AG	50	4.8	.0	9.9
Q. Link Q	*	-150	2	-750	2	*	AG	50	4.5	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#21_WD_PM_2015_EPAP
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	11	.5
2. NE_8hr	11	15	.5
3. SE_1hr	7	-7	.5
4. SE_8hr	11	-11	.5
5. SW_1hr	-7	-14	.5
6. SW_8hr	-11	-18	.5
7. NW_1hr	-7	7	.5
8. NW_8hr	-11	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	356.	.4	.0	.0	.0	.0	.0	.0	.2	.0
2. NE_8hr	264.	.2	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	357.	.4	.0	.0	.0	.0	.0	.0	.2	.0
4. SE_8hr	356.	.3	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	3.	.4	.0	.1	.0	.0	.0	.0	.0	.0
6. SW_8hr	4.	.3	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	4.	.4	.0	.2	.0	.0	.0	.0	.0	.0
8. NW_8hr	94.	.2	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#21_WD_PM_2015_EPAP
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q
1. NE_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NE_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. SE_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. SW_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. NW_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0

B.8 "0517_#21_WD_PM_2015_EPAP+PHASE1_MIT"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#21_WD_PM_2015_EPAP+Phase1_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	-2	750	-2	150	AG	1202	4.8	.0	9.9
B. Link B	-2	150	-2	0	AG	106	6.8	.0	9.9
C. Link C	-5	150	-5	0	AG	1052	6.8	.0	9.9
D. Link D	-2	0	-2	-150	AG	120	5.3	.0	9.9
E. Link E	-2	-150	-2	-750	AG	120	4.8	.0	9.9
F. Link F	2	-750	2	-150	AG	100	4.8	.0	9.9
G. Link G	2	-150	2	0	AG	100	6.8	.0	9.9
H. Link H	2	0	2	150	AG	1289	6.6	.0	9.9
I. Link I	2	150	2	750	AG	1289	4.8	.0	9.9
J. Link J	-750	-2	-150	-2	AG	1266	5.3	.0	9.9
K. Link K	-150	-4	0	-4	AG	1149	6.4	.0	9.9
L. Link L	-150	-7	0	-7	AG	99	6.1	.0	13.2
M. Link M	0	-2	150	-2	AG	173	5.5	.0	9.9
N. Link N	150	-2	750	-2	AG	173	5.3	.0	9.9
O. Link O	750	2	150	2	AG	225	5.3	.0	9.9
P. Link P	150	4	0	4	AG	225	6.8	.0	13.2
Q. Link Q	0	2	-150	2	AG	1211	5.8	.0	9.9
R. Link R	-150	2	-750	2	AG	1211	5.3	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#21_WD_PM_2015_EPAP+Phase1_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	11	.5
2. NE_8hr	11	15	.5
3. SE_1hr	7	-7	.5
4. SE_8hr	11	-11	.5
5. SW_1hr	-7	-14	.5
6. SW_8hr	-11	-18	.5
7. NW_1hr	-7	7	.5
8. NW_8hr	-11	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	265.	1.6	.0	.0	.2	.0	.0	.0	.0	.5
2. NE_8hr	265.	1.2	.0	.0	.2	.0	.0	.0	.0	.3
3. SE_1hr	273.	1.9	.0	.0	.0	.0	.0	.0	.0	.0
4. SE_8hr	275.	1.3	.0	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	3.	2.1	.2	.0	.8	.0	.0	.0	.0	.4
6. SW_8hr	4.	1.7	.2	.0	.6	.0	.0	.0	.0	.3
7. NW_1hr	266.	1.8	.0	.0	.1	.0	.0	.0	.0	.0
8. NW_8hr	5.	1.6	.1	.0	1.0	.0	.0	.0	.0	.3

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#21_WD_PM_2015_EPAP+Phase1_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	.0	.2	.2	.0	.0	.0	.0	.0	.4	.1
2. NE_8hr	.0	.2	.1	.0	.0	.0	.0	.0	.2	.2
3. SE_1hr	.0	.2	1.0	.0	.0	.0	.0	.0	.3	.2
4. SE_8hr	.0	.1	.6	.0	.0	.0	.0	.0	.2	.2
5. SW_1hr	.2	.0	.2	.0	.0	.0	.0	.0	.2	.0
6. SW_8hr	.2	.0	.2	.0	.0	.0	.0	.0	.2	.0
7. NW_1hr	.0	.2	.3	.0	.0	.0	.0	.0	1.0	.2
8. NW_8hr	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0

B.9 "0517_#21_WD_PM_2028_GP2035_MIT"

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 0517_#21_WD_PM_2028_GP2035_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	.0 PPM		
SIGTH=	5. DEGREES	TEMP=	10.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	*	-2	750	-2	150	*	AG	1292	2.0	.0	9.9
B. Link B	*	-2	150	-2	0	*	AG	589	2.6	.0	9.9
C. Link C	*	-5	150	-5	0	*	AG	703	2.6	.0	9.9
D. Link D	*	-2	0	-2	-150	*	AG	719	2.5	.0	9.9
E. Link E	*	-2	-150	-2	-750	*	AG	719	2.0	.0	9.9
F. Link F	*	2	-750	2	-150	*	AG	1080	2.0	.0	9.9
G. Link G	*	2	-150	2	0	*	AG	1080	2.6	.0	9.9
H. Link H	*	2	0	2	150	*	AG	2122	2.6	.0	9.9
I. Link I	*	2	150	2	750	*	AG	2122	2.0	.0	9.9
J. Link J	*	-750	-2	-150	-2	*	AG	1359	2.1	.0	9.9
K. Link K	*	-150	-4	0	-4	*	AG	1209	2.6	.0	9.9
L. Link L	*	-150	-7	0	-7	*	AG	150	2.5	.0	13.2
M. Link M	*	0	-2	150	-2	*	AG	60	2.2	.0	9.9
N. Link N	*	150	-2	750	-2	*	AG	60	2.1	.0	9.9
O. Link O	*	750	2	150	2	*	AG	60	2.1	.0	9.9
P. Link P	*	150	4	0	4	*	AG	60	2.6	.0	13.2
Q. Link Q	*	0	2	-150	2	*	AG	890	2.6	.0	9.9
R. Link R	*	-150	2	-750	2	*	AG	890	2.1	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#21_WD_PM_2028_GP2035_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	11	.5
2. NE_8hr	11	15	.5
3. SE_1hr	7	-7	.5
4. SE_8hr	11	-11	.5
5. SW_1hr	-7	-14	.5
6. SW_8hr	-11	-18	.5
7. NW_1hr	-7	7	.5
8. NW_8hr	-11	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	356.	1.0	.0	.0	.0	.0	.0	.0	.0	.7
2. NE_8hr	264.	.6	.0	.0	.0	.0	.0	.0	.0	.2
3. SE_1hr	273.	1.0	.0	.0	.0	.0	.0	.0	.2	.0
4. SE_8hr	275.	.7	.0	.0	.0	.0	.0	.0	.1	.0
5. SW_1hr	4.	1.0	.0	.2	.2	.0	.0	.0	.0	.3
6. SW_8hr	5.	.7	.0	.1	.2	.0	.0	.0	.0	.2
7. NW_1hr	4.	.9	.0	.2	.3	.0	.0	.0	.0	.2
8. NW_8hr	5.	.7	.0	.0	.3	.0	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#21_WD_PM_2028_GP2035_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NE_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SE_1hr	.0	.0	.4	.0	.0	.0	.0	.0	.1	.0
4. SE_8hr	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0
5. SW_1hr	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0
6. SW_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. NW_8hr	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0

B.10 "0517_#21_WD_PM_2028_GP2035+PROJECT_MIT"

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

     JOB: 0517_#21_WD_PM_2028_GP2035+Project_Mit
     RUN: Hour 1            (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide
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I. SITE VARIABLES

```
     U=   1.0 M/S              Z0= 100. CM            ALT=     0. (M)
   BRG= WORST CASE             VD=   .0 CM/S
  CLAS=     7 (G)              VS=   .0 CM/S
  MIXH= 1000. M               AMB=   .0 PPM
 SIGTH=    5. DEGREES         TEMP= 10.0 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	*	-2	750	-2	150	*	AG	1981	2.0	.0	9.9
B. Link B	*	-2	150	-2	0	*	AG	824	2.6	.0	9.9
C. Link C	*	-5	150	-5	0	*	AG	1157	2.6	.0	9.9
D. Link D	*	-2	0	-2	-150	*	AG	1105	2.5	.0	9.9
E. Link E	*	-2	-150	-2	-750	*	AG	1105	2.0	.0	9.9
F. Link F	*	2	-750	2	-150	*	AG	1379	2.0	.0	9.9
G. Link G	*	2	-150	2	0	*	AG	1379	2.6	.0	9.9
H. Link H	*	2	0	2	150	*	AG	2644	2.6	.0	9.9
I. Link I	*	2	150	2	750	*	AG	2644	2.0	.0	9.9
J. Link J	*	-750	-2	-150	-2	*	AG	1861	2.1	.0	9.9
K. Link K	*	-150	-4	0	-4	*	AG	1560	2.6	.0	9.9
L. Link L	*	-150	-7	0	-7	*	AG	301	2.5	.0	13.2
M. Link M	*	0	-2	150	-2	*	AG	60	2.2	.0	9.9
N. Link N	*	150	-2	750	-2	*	AG	60	2.1	.0	9.9
O. Link O	*	750	2	150	2	*	AG	60	2.1	.0	9.9
P. Link P	*	150	4	0	4	*	AG	60	2.6	.0	13.2
Q. Link Q	*	0	2	-150	2	*	AG	1472	2.6	.0	9.9
R. Link R	*	-150	2	-750	2	*	AG	1472	2.1	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 0517_#21_WD_PM_2028_GP2035+Project_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE_1hr	7	11	.5
2. NE_8hr	11	15	.5
3. SE_1hr	7	-7	.5
4. SE_8hr	11	-11	.5
5. SW_1hr	-7	-14	.5
6. SW_8hr	-11	-18	.5
7. NW_1hr	-7	7	.5
8. NW_8hr	-11	11	.5

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE_1hr	355.	1.3	.0	.1	.0	.0	.0	.0	.0	.9
2. NE_8hr	261.	.7	.0	.0	.0	.0	.0	.0	.0	.2
3. SE_1hr	273.	1.3	.0	.0	.0	.1	.0	.0	.2	.0
4. SE_8hr	275.	.9	.0	.0	.0	.0	.0	.0	.1	.0
5. SW_1hr	3.	1.4	.0	.2	.3	.1	.0	.0	.0	.3
6. SW_8hr	5.	1.0	.0	.1	.3	.0	.0	.0	.0	.2
7. NW_1hr	176.	1.2	.0	.0	.1	.3	.0	.0	.2	.0
8. NW_8hr	6.	.9	.0	.1	.4	.0	.0	.0	.0	.2

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: 0517_#21_WD_PM_2028_GP2035+Project_Mit
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R
1. NE_1hr	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. NE_8hr	.0	.0	.1	.0	.0	.0	.0	.0	.2	.0
3. SE_1hr	.0	.0	.5	.0	.0	.0	.0	.0	.2	.0
4. SE_8hr	.0	.0	.3	.0	.0	.0	.0	.0	.1	.0
5. SW_1hr	.1	.0	.1	.0	.0	.0	.0	.0	.0	.0
6. SW_8hr	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0
7. NW_1hr	.0	.0	.1	.0	.0	.0	.0	.0	.2	.0
8. NW_8hr	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0