3.2.6 Air Quality

Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO_2).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to the State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the federal Clean Air Act takes place on two levels—first at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTPs) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Metropolitan Transportation Commission (MTC) for Solano County and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for CO and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

This discussion is based primarily on the *Interstate 80/Interstate 680/State Route 12 Interchange Project Air Quality Study Report* (Air Quality Study Report) and the *Traffic Operations Report for the I-80/I-680/SR 12 Interchange Project* (FTOR) prepared in 2009.

Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The following discussion describes the relevant characteristics of the air basin and offers an overview of conditions affecting pollutant ambient air concentrations in the basin.

The project alternatives lie within the Carquinez Strait region of the San Francisco Bay Area Air Basin (SFBAAB). The Carquinez Strait is the only sea-level gap between the San Francisco Bay and the Central Valley. Within the region, the prevailing winds are from the west, during the summer and fall months, marine air flows eastward through the Carquinez Strait due to high pressure off shore and low pressure in the Central Valley. These easterly winds usually contain more pollutants from the Sacramento and San Joaquin Valleys in the east than the cleaner marine air from the west. During summer and fall months, this condition can result in elevated pollutant levels as pollutants move through the strait into the central Bay Area from surrounding areas.

The high-pressure periods during the summer and fall months often are accompanied by low wind speeds, shallow mixing depths, higher temperatures, and little or no rainfall. During the summer, mean maximum temperatures reach about 32.2º C (90º F), while mean minimum temperatures in the winter are typically 1.6 º–4.4º C (35 º–40º F). In distant areas like Fairfield, where the region is sheltered from the moderating effects of the strait, temperature extremes are especially pronounced.

Attainment Status

The EPA has classified the portion of Solano County within the San Francisco Bay Area Air Basin as being a marginal nonattainment area for 8-hour ozone NAAQS. For CO NAAQS, the EPA has classified urban areas of the county as a moderate maintenance area (≤ 12.7 ppm) and the rest of the county as an unclassified/attainment area (U.S. Environmental Protection Agency 2008). For PM10 NAAQS the EPA has designated the county as an unclassified/attainment area. This information is presented in Table 3.2.6-1.

The 24-hour PM2.5 standard was lowered from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ in 2006, and the EPA issued their final attainment status designations for the 35 $\mu g/m^3$ standard on October 8, 2009. The county is now designated as a non-attainment area for 24-hour PM2.5 NAAQS.

For ozone CAAQS, CARB has classified the county as being a serious nonattainment area, and for CO CAAQS CARB has classified the county as an attainment area (California Air Resources Board 2009). For PM10 and PM2.5 CAAQS, CARB has classified the county as a nonattainment area. Solano County's attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table 3.2.6-1.

Table 3.2.6-1. Federal and State Ambient Air Quality Standards

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Solano County	
			California	National	California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	N/A	180	N/A	If exceeded	N/A	Serious non-attainment	N/A
		8 hours	0.070	0.075	137	147	If exceeded	If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor within an area	Non-attainment	Marginal non-attainment
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Moderate (≤ 12.7 ppm) maintenance
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Unclassified/ attainment
(Lake Tahoe only)		8 hours	6	N/A	7,000	N/A	If equaled or exceeded	N/A	N/A	N/A
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year	N/A	Attainment
		1 hour	0.18	0.100	339	N/A	If exceeded	N/A	Attainment	N/A
Sulfur dioxide	SO_2	Annual arithmetic mean	NA	0.030	NA	80	NA	If exceeded	N/A	Attainment
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment
		1 hour	0.25	N/A	655	N/A	If exceeded	N/A	Attainment	N/A
Hydrogen sulfide	H_2S	1 hour	0.03	N/A	42	N/A	If equaled or exceeded	N/A	Unclassified	N/A
Vinyl chloride	C_2H_3Cl	24 hours	0.01	N/A	26	N/A	If equaled or exceeded	N/A	No designation	N/A
Inhalable particulate matter	PM10	Annual arithmetic mean	N/A	N/A	20	N/A	If exceeded	If exceeded at each monitor within area	Non-attainment	N/A
		24 hours	N/A	N/A	50	150	If exceeded	If exceeded on more than 1 day per year	Non-attainment	Unclassified/ attainment
	PM2.5	Annual arithmetic mean	N/A	N/A	12	15	If exceeded	If 3-year average from single or multiple community-oriented monitors is exceeded	Non-attainment	Attainment
		24 hours	N/A	N/A	N/A	35	NA	If 3-year average of 98th percentile at each population-oriented monitor within an area is exceeded	N/A	Non-attainment
Sulfate particles	SO_4	24 hours	N/A	N/A	25	N/A	If equaled or exceeded	NA	Attainment	N/A
Lead particles	Pb	Calendar quarter	N/A	N/A	N/A	1.5	NA	If exceeded no more than 1 day per year	N/A	Attainment
		30-day average	N/A	N/A	1.5	N/A	If equaled or exceeded	N/A	Attainment	N/A
		Rolling 3-month average	N/A	N/A	N/A	0.15	If equaled or exceeded	Averaged over a rolling 3-month period	N/A	Attainment

Source: California Air Resources Board 2009.
Notes: All standards are based on measurements at 25ºC and 1 atmosphere pressure; national standards shown are the primary (health effects) standards; N/A = not applicable.

Sensitive Receptors

The Bay Area Air Quality Management District (BAAQMD) generally defines a sensitive receptor as a facility or land use that houses or attracts members of the population, such as children, the elderly, and people with illnesses, who are particularly sensitive to the effects of air pollutants.

Sensitive receptors normally refer to land uses with heightened sensitivity to localized rather than regional pollutants. Examples include emissions of criteria or toxic air pollutants (PM10 and PM2.5) that have health effects and, to a lesser extent, odors or odorous compounds such as ammonia and sulfur dioxide. Sensitive receptors would not be directly affected by emissions of regional pollutants such as ozone precursors (ROG and NO_x). Various sensitive receptors are located in the vicinity of the project area (Figure 3.2.6-1) and may include: residences, schools, playgrounds, child care facilities, athletic facilities, health care facilities, convalescent centers, or rehabilitation centers. Land use compatibility issues relative to the siting of pollution-emitting sources or the siting of sensitive receptors must be considered. In the case of schools, state law requires that siting decisions consider the potential for toxic or harmful air emissions in the surrounding area.

Figure 3.2.6-1 summarizes the general locations of sensitive receptors in the project area. Figure 3.2.6-1 does not include the locations of scattered or individual sensitive receptors. Land use compatibility issues relative to the siting of pollution-emitting sources or the siting of sensitive receptors must be considered. In the case of schools, state law requires that siting decisions consider the potential for toxic or harmful air emissions in the surrounding area.

Existing Air Quality Conditions

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants (Table 3.2.6-1) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or $\mu g/m^3$. The nearest air quality monitoring station in the vicinity of the project area is located in Fairfield at Chadbourne Road; this station monitors for ozone. The closest monitoring station that monitors for carbon monoxide and particulate matter is located in the City of Vallejo at Tuolumne Street. Table 3.2.6-2 summarizes air quality monitoring data from the Fairfield and Vallejo monitoring stations during the last three years for which complete data are available (2006–2008).

Table 3.2.6-2. Ambient Air Quality Monitoring Data Measured at the Fairfield at Chadbourne Road and of Vallejo at Tuolumne Street Monitoring Stations

Pollutant Standards	Fairfield			Vallejo		
	2006	2007	2008	2006	2007	2008
1-Hour Ozone						
Maximum 1-hour concentration (ppm)	0.106	0.089	0.116	0.080	0.078	0.109
1-hour California designation value	0.10	0.10	0.10	0.08	0.08	0.08
1-hour expected peak day concentration	0.104	0.100	0.103	0.083	0.077	0.083
Number of days standard exceeded[a]						
CAAQS 1-hour (>0.09 ppm)	3	0	2	0	0	1
8-Hour Ozone						
National maximum 8-hour concentration (ppm)	0.087	0.067	0.090	0.069	0.066	0.075
National second-highest 8-hour concentration (ppm)	0.077	0.067	0.071	0.064	0.056	0.072
State maximum 8-hour concentration (ppm)	0.087	0.068	0.090	0.070	0.067	0.075
State second-highest 8-hour concentration (ppm)	0.077	0.067	0.071	0.064	0.056	0.073
8-hour national designation value	0.069	0.066	0.068	0.057	0.054	0.060
8-hour California designation value	0.087	0.077	0.077	0.065	0.061	0.067
8-hour expected peak day concentration	0.086	0.080	0.083	0.066	0.061	0.067
Number of days standard exceeded[a]						
NAAQS 8-hour (>0.075 ppm)	3	0	1	0	0	0
CAAQS 8-hour (>0.070 ppm)	8	0	2	0	0	3
Carbon Monoxide (CO)						
National[b] maximum 8-hour concentration (ppm)	–	–	–	2.94	2.70	1.91
National[b] second-highest 8-hour concentration (ppm)	–	–	–	2.73	2.60	1.96
California[c] maximum 8-hour concentration (ppm)	–	–	–	2.94	2.70	2.31
California[c] second-highest 8-hour concentration (ppm)	–	–	–	2.73	2.60	1.96
Maximum 1-hour concentration (ppm)	–	–	–	3.7	3.3	2.7
Second-highest 1-hour concentration (ppm)	–	–	–	3.5	3.3	2.5
Number of days standard exceeded[a]						
NAAQS 8-hour (≥9 ppm)	–	–	–	0	0	0
CAAQS 8-hour (≥9.0 ppm)	–	–	–	0	0	0
NAAQS 1-hour (≥35 ppm)	–	–	–	0	0	0
CAAQS 1-hour (≥20 ppm)	–	–	–	0	0	0
Particulate Matter (PM10)[d]						
National[b] maximum 24-hour concentration ($\mu g/m^3$)	–	–	–	46.6	49.1	42.1
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	–	–	–	43.9	47.3	31.4
State[c] maximum 24-hour concentration ($\mu g/m^3$)	–	–	–	50.1	52.4	43.6
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	–	–	–	47.2	51.1	32.4
State annual average concentration ($\mu g/m^3$)[e]	–	–	–	19.8	19.0	–
National annual average concentration ($\mu g/m^3$)	–	–	–	19.1	18.2	16.0
Number of days standard exceeded[a]						
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	–	–	–	0.0	0.0	–
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	–	–	–	0.0	12.6	–

Pollutant Standards	Fairfield			Vallejo		
	2006	2007	2008	2006	2007	2008
Particulate Matter (PM2.5)						
National[b] maximum 24-hour concentration (μg/m^3)	–	–	–	42.2	40.8	41.8
National[b] second-highest 24-hour concentration (μg/m^3)	–	–	–	40.5	40.0	31.0
State[c] maximum 24-hour concentration (μg/m^3)	–	–	–	44.0	41.5	51.2
State[c] second-highest 24-hour concentration (μg/m^3)	–	–	–	43.2	41.3	47.5
National annual designation value (μg/m^3)	–	–	–	10.2	9.8	–
National annual average concentration (μg/m^3)	–	–	–	9.8	9.8	–
State annual designation value (μg/m^3)	–	–	–	13	12	–
State annual average concentration (μg/m^3) [e]	–	–	–	12.4	12.0	–
Number of days standard exceeded[a]						
NAAQS 24-hour (>35 μg/m^3)	–	–	–	5.9	12.1	–

Sources: California Air Resources Board 2008; U.S. Environmental Protection Agency 2009.

Notes: CAAQS = California ambient air quality standards.
NAAQS = national ambient air quality standards.
– = insufficient data available to determine the value.

[a] An exceedance is not necessarily a violation.

[b] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[c] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.

[d] Measurements usually are collected every 6 days.

[e] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[f] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

Table 3.2.6-2 indicates that the Fairfield monitoring station has exceeded the state 1-hour ozone standard on five occasions, the state 8-hour standard on ten occasions, and the national 8-hour ozone standard on four occasions during the 3-year monitoring period. During this same period, the Vallejo monitoring station has exceeded the state 1-hour ozone standard on one occasion and the state 8-hour standard on three occasions, while the national 8-hour ozone standard was not exceeded during this period. The Vallejo station has exceeded the state PM10 standard a total of 12.6 days and federal PM2.5 standard on 18 occasions during the 3-year monitoring period, while no other violations occurred at these monitoring stations during this 3-year monitoring period.

Carbon Monoxide

The project alternatives are located in a moderate (≤ 12.7 ppm) maintenance area with regards to the federal CO standard. Consequently, the evaluation of transportation conformity for CO is required. The CO transportation conformity analysis is based on the CO Protocol developed for the Department by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997). This CO protocol details a qualitative step-by-step procedure to determine whether project-related CO concentrations have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for CO.

Particulate Matter

As previously indicated, Solano County was designated by the EPA as an unclassified/attainment area for 24-hour PM2.5 NAAQS. However, the 24-hour PM2.5 standard was lowered from 65µg/m^3 to 35 µg/m^3 in 2006, and the EPA designated the Bay Area as a nonattainment area. While the county is currently designated as a nonattainment area for 24-hour PM2.5 NAAQS, the county is designated as an attainment area for annual PM2.5 NAAQS. While conformity does not yet apply for PM2.5 (the effective date is December 14, 2010), a preliminary PM2.5 hot spot analysis in accordance with the EPA's 2006 guidance has been conducted to show that the proposed project would conform when the conformity requirements apply.

On March 10, 2006, the EPA published a final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in PM2.5 and PM10 nonattainment and maintenance areas. The final rule requires PM2.5 hot spot analyses to be performed for Projects of Air Quality Concern (POAQC) or any other project identified by the PM2.5 SIP as a localized air quality concern. In March 2006, the FHWA and EPA issued a guidance document titled *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration and U.S. Environmental Protection Agency 2006). The PM10 hot spot analysis is not required for project-level conformity because the area is in attainment or unclassified for the national PM10 standards. For the assessment of PM10 hot spots, the final rule is that a hot spot analysis is to be performed only for POAQCs. POAQCs are certain highway and transit projects that involve significant levels of diesel traffic or any other project identified in the PM2.5 or PM10 SIP as a localized air quality concern.

For projects identified as not being a POAQC, qualitative PM2.5 and PM10 (for regions without an approved conformity SIP) hot spot analyses are not required. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that CAA and 40 CFR 93.116 requirements were met without a hot spot analysis because such projects have been found to not be of air quality concern under 40 CFR 93.123(b)(1). Because this analysis assumes the area is classified as a nonattainment area for the federal PM2.5 standard, a determination must be made as to whether it would result in a PM2.5 hot spot.

Mobile-Source Air Toxics

The CAAA made controlling air toxic emissions a national priority, by which Congress mandated that the EPA regulate 188 air toxics. These substances are also known as hazardous air pollutants (HAPs). In the EPA's latest rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources* (*Federal Registry, Vol. 72, No. 37, page 8430, February 2007)* it identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS). The IRIS is a comprehensive database of specific substances known to cause human health effects. In addition, the EPA identified the following seven compounds as priority MSATs:

- Acrolein.
- Benzene.
- 1,3-Butadiene.

- Diesel particulate matter/diesel exhaust organic gases.
- Formaldehyde.
- Naphthalene.
- Polycyclic organic matter.

While the FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future rules.

To address emissions of MSATs, the EPA has issued a number of regulations, including the 2007 rule mentioned above, that will dramatically decrease MSATs through cleaner fuels and cleaner engines. According to an FHWA analysis, even if VMT increases by 145% as assumed, a combined reduction of 72% in the total annual emission rate for priority MSATs is projected from 1999 to 2050, as shown in the Figure 3.2.6-2.

In light of recent developments regarding MSAT's, the FHWA has issued interim guidance for the assessment of MSAT's in NEPA documents for highways projects. The *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* uses a tiered approach to addressing MSAT emissions from highway projects in NEPA documents (Federal Highway Administration 2009a). Depending on the specific project circumstances, the FHWA has identified the following three levels of analysis:

1. No analysis for exempt projects or projects with no potential for meaningful MSAT effects.
2. Qualitative analysis for projects with low potential MSAT effects.
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Projects with Higher Potential MSAT Effects

Projects included in this category have the potential for meaningful differences among project alternatives. The FHWA expects only a limited number of projects to meet this two-pronged test. To fall into this category, projects must:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location.

or

- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000[1], or greater, by the design year. In addition, to fall into this category, projects must also be proposed to be located in proximity to populated areas.

[1] Using EPA's MOBILE 6.2 emissions model, FHWA technical staff determined that this range of AADT would be roughly equivalent to the CAA definition of a major HAP source (i.e., 25 tons per year for all HAPs or 10 tons per year for any single HAP). Significant variations in conditions such as congestion or vehicle mix could warrant a different range for AADT.

Projects falling within this category should be more rigorously assessed for impacts, and the FHWA should be contacted for assistance in developing a specific approach for assessing impacts. This approach would include a quantitative analysis to forecast local-specific emission trends of the priority MSATs (benzene, acrolein, formaldehyde, 1,3-butadiene, acetaldehyde, and diesel exhaust) for each alternative, to use as a basis of comparison. This analysis also may address the potential for cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of the assistance outlined above. If the analysis for a project in this category indicates meaningful differences in levels of MSAT emissions, mitigation options should be identified and considered.

Applicable Project MSAT Category Assessment

The FTOR prepared by the project traffic engineers does not directly evaluate AADT on I-80/I-680/SR 12. However, based on the peak-hour traffic volumes on these roadways, an approximate estimate of AADT may be made using a peak-hour–to–daily conversion multiplier of 4.5 (according to Joel Rabinovitz, a transportation engineer in Walnut Creek, California, in a January 29, 2009 telephone conversation). Based on this information, it is estimated that mainline AADT on I-80 would be in excess of the FHWA's MSAT AADT threshold of 140,000 and will be located in proximity to populated areas. Consequently, based on the FHWA's 2009 MSAT guidance, the proposed project is considered a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions is required (Federal Highway Administration 2009a). Therefore, an evaluation of MSAT emissions was performed using traffic data provided by Fehr & Peers, and the CT-EMFAC model.

Unavailable Information for Project-Specific MSAT Impact Analysis

The Air Quality Study Report includes a basic analysis of the likely MSAT emission impacts of the project alternatives. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the project alternatives in this technical study. Due to these limitations, a discussion regarding incomplete or unavailable information is included in the Air Quality Study Report in accordance with CEQA regulations (40 CFR 1502.22[b]).

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. Although available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, the Department has provided a quantitative analysis of MSAT emissions relative to the various alternatives and has acknowledged that all project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated. In accordance with CEQA regulations (40 CFR 1502.22[b])

regarding incomplete or unavailable information, a full discussion of these inadequacies is available in the Air Quality Study Report.

Environmental Consequences

The project alternatives would generate construction-related and operational emissions. The method used to evaluate construction and operational effects is described below. See the Air Quality Study Report for more detailed methodology.

Discussions with the project traffic engineers indicated that traffic volumes would not change between the build alternatives. Therefore, existing year (2004), interim year (2015) with and without project, and design-year (2035) with and without project conditions were evaluated.

Conformity of the Regional Transportation Plan with the State Implementation Plan

The evaluation of transportation conformity with regards to criteria pollutants was done by evaluating the inclusion of the proposed project in the most recent RTP as discussed above and in the Air Quality Study Report.

The first phase of either alternative of the proposed project is fully funded in the financially constrained Regional Transportation Plan *Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion* (RTP) (Appendix 1, page 126). The project is also included in the MTC's financially constrained 2009 Transportation Improvement Program as TIP ID SOL070020. The TIP is being updated to be consistent with the RTP as part of the 2011 TIP process. The 2009 RTP and 2009 TIP (Revised) were found to conform with the *State Implementation Plan* (SIP) by the MTC on April 22, 2009. The FHWA and FTA found the 2009 RTP to be in conformity with the SIP on May 29, 2009. The FHWA and FTA found the 2009 TIP (Revised) to be in conformity with the SIP also on May 29, 2009.

Because the Department has not selected a preferred alternative, conformity determination cannot be made at this time. The draft conformity analysis for the preferred alternative will be conducted in the Final Environmental Impact Statement to allow for public comment. The final conformity determination will be made in the Record of Decision. Currently, only Alternative C, Phase 1 is listed in the 2035 RTP and 2009 TIP. The design concept and scope of Alternative C, Phase 1 is consistent with the project description in the most recent 2035 RTP and 2009 TIP. The design concept and scope of the proposed project are consistent with the project listings in the 2035 RTP and 2009 TIP and would not interfere with timely implementation of TCMs.

Should another alternative be chosen, STA would be required to submit a TIP amendment for the selected alternative.

Under the No-Build Alternative, there would be no changes to the current conditions and no effect.

Potential Violations of Carbon Monoxide NAAQS or CAAQS

The effects of localized CO hot spot emissions were evaluated through CO dispersion modeling using the *Transportation Project-Level Carbon Monoxide Protocol* developed for the

Department by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997).

Existing year (2004), construction interim year (2015) with and without project, and design-future year (2035) with and without project conditions were modeled to evaluate CO concentrations relative to the NAAQS and CAAQS. As previously discussed, emissions of CO concentrations are estimated for roadway intersections within the project area, as well as mainline I-80, I-680, and SR 12 segments. These roadway intersections and segments were modeled because they represent the roadway intersections and segments in the vicinity of the project area with the highest traffic volumes and worst levels of congestion/delay. Table 3.2.6-3 and Table 3.2.6-4 summarize the results of the intersection and segment CO modeling, respectively, and indicate that CO concentrations are not anticipated to exceed the 1- or 8- hour NAAQS and CAAQS under any of the build alternatives or the No-Build Alternative.

Potential Violations of PM2.5 NAAQS or CAAQS

The effects of localized PM were evaluated using the EPA and FHWA's guidance manual, *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration, and U.S. Environmental Protection Agency 2006).

Solano County is currently classified as a non-attainment area with regard to the federal PM2.5 NAAQS. The build alternatives are not considered POAQCs for PM10 and PM2.5 due to <5% increase in diesel truck traffic volumes between build and no-build conditions. Confirmation of this determination will be made during interagency consultation (IAC) with the appropriate local, state, and federal agencies and the final analysis will be identified in the final environmental document.

The EPA's transportation conformity rules stipulate that transportation projects considered POAQCs, or any other project that is identified by the PM2.5 SIP as a localized air quality concern, must be analyzed for local air quality impacts (i.e., hot spot) in PM2.5 nonattainment and maintenance areas. As previously indicated, the County is designated by the EPA as a nonattainment area for the lower PM2.5 standard. While conformity does not yet apply for PM2.5, a preliminary PM2.5 hot spot analysis in accordance with the EPA's 2006 guidance should be conducted to show that the proposed project would conform when the conformity requirements apply.

As previously indicated, the FTOR prepared for the project does not directly evaluate AADT on I-80/I-680/SR 12. An approximate estimate of AADT may be made based on the peak-hour traffic volumes on these roadways (according to Joel Rabinovitz, in the conversation cited earlier), and it is estimated that mainline AADT on I-80 would be in excess of the FHWA and EPA's POAQC threshold of 125,000 AADT. In addition, based on traffic count data collected by the Department, it is anticipated that medium trucks are anticipated to account for 5% and heavy trucks are anticipated to account for 5% of all traffic on the I-80 I-680/SR 12 network (California Department of Transportation 2008).

However, because it has been concluded that diesel truck traffic volumes will not increase by more than 5% between no-build and build conditions, the build alternatives are not considered a POAQC for PM10 and PM2.5. Because the proposed project is not considered a POAQC, CAA and 40 CFR 93.116 requirements were met without a hot spot analysis because the build alternatives have been found to not be of air quality concern under 40 CFR 93.123(b)(1). Confirmation of this determination will be made during interagency consultation (IAC) with the appropriate local, state, and federal agencies and the final analysis will be identified in the final environmental document.

There would be no effect under the No-Build Alternative.

Table 3.2.6-3. Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area (Intersections)

Intersection	North-South Roadway	East-West Roadway	2004			2015									2035														
			Existing			2015 No Project			2015 Alt B Phase 1			2015 Alt C Phase 1			2035 No Project			2035 Alt B Phase 1			2035 Alt C Phase 1			2035 Full Build Alt B			2035 Full Build Alt C		
			Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr
4	Lopes Rd	Gold Hill Rd	1.6	5.3	4.06	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36	0.4	4.1	3.22	0.4	4.1	3.22	0.4	4.1	3.22	0.2	3.9	3.08	0.4	4.1	3.22
7	I-80 EB Ramps	Red Top Rd	1.4	5.1	3.92	0.9	4.6	3.57	0.9	4.6	3.57	0.9	4.6	3.57	0.6	4.3	3.36	0.7	4.4	3.43	0.5	4.2	3.29	0.4	4.1	3.22	0.5	4.2	3.29
8	I-80 WB Ramps	Red Top Rd	0.9	4.6	3.57	0.7	4.4	3.43	0.8	4.5	3.5	0.7	4.4	3.43	0.6	4.3	3.36	0.5	4.2	3.29	0.5	4.2	3.29	0.3	4	3.15	0.5	4.2	3.29
9	Jameson Canyon Rd (SR12 West)	Red Top Rd	5	8.7	6.44	1	4.7	3.64	1	4.7	3.64	0.3	4	3.15	0.6	4.3	3.36	0.7	4.4	3.43	0.2	3.9	3.08	0.1	3.8	3.01	0.2	3.9	3.08
12	Lopes Rd	Cordelia Rd	4.2	7.9	5.88	1.2	4.9	3.78	1.2	4.9	3.78	0.5	4.2	3.29	0.6	4.3	3.36	0.8	4.5	3.5	0.4	4.1	3.22	0.5	4.2	3.29	0.4	4.1	3.22
13	Lopes Rd	Bridgeport Ave	3.5	7.2	5.39	1	4.7	3.64	1.1	4.8	3.71	0.5	4.2	3.29	0.6	4.3	3.36	0.7	4.4	3.43	0.3	4	3.15	0.5	4.2	3.29	0.3	4	3.15
14	Central Wy	Cordelia Rd	2.3	6	4.55	0.6	4.3	3.36	0.6	4.3	3.36	0.7	4.4	3.43	0.4	4.1	3.22	0.4	4.1	3.22	0.3	4	3.15	0.3	4	3.15	0.3	4	3.15
18	Green Valley Rd	Business Center Dr	2.4	6.1	4.62	1.2	4.9	3.78	1.2	4.9	3.78	1.2	4.9	3.78	0.6	4.3	3.36	0.8	4.5	3.5	0.5	4.2	3.29	0.5	4.2	3.29	0.5	4.2	3.29
21	I-80 EB Ramps	Pittman Rd	5.2	8.9	6.58	1.1	4.8	3.71	1.3	5	3.85	0.9	4.6	3.57	0.6	4.3	3.36	0.6	4.3	3.36	0.5	4.2	3.29	0.5	4.2	3.29	0.5	4.2	3.29
27	I-80 EB Ramps	Abernathy Rd	3.3	7	5.25	1	4.7	3.64	1	4.7	3.64	1	4.7	3.64	0.5	4.2	3.29	0.6	4.3	3.36	0.6	4.3	3.36	0.4	4.1	3.22	0.6	4.3	3.36
30	I-80 EB Off-Ramp	West Texas St	2.5	6.2	4.69	1.2	4.9	3.78	1.4	5.1	3.92	1.1	4.8	3.71	0.6	4.3	3.36	0.8	4.5	3.5	0.6	4.3	3.36	0.5	4.2	3.29	0.6	4.3	3.36
31	I-80 EB On-Ramp - Beck Ave	West Texas St	4.3	8	5.95	1.3	5	3.85	1.3	5	3.85	1.3	5	3.85	0.6	4.3	3.36	0.8	4.5	3.5	0.2	3.9	3.08	0.6	4.3	3.36	0.2	3.9	3.08
38	SR 12 East	Beck Ave	3.8	7.5	5.6	1.9	5.6	4.27	0.3	4	3.15	0.3	4	3.15	1	4.7	3.64	0.2	3.9	3.08	0.2	3.9	3.08	0.3	4	3.15	0.2	3.9	3.08
39	SR 12 East	Pennsylvania Ave	4	7.7	5.74	1.9	5.6	4.27	1.8	5.5	4.2	1.8	5.5	4.2	1	4.7	3.64	1.1	4.8	3.71	1	4.7	3.64	0.3	4	3.15	1	4.7	3.64
40	Pennsylvania Ave	Cordelia Rd	0.8	4.5	3.5	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36	0.8	4.5	3.5	0.4	4.1	3.22	0.3	4	3.15	0.8	4.5	3.5	0.3	4	3.15
44	I-80 EB Ramps	Travis Blvd	5.6	9.3	6.86	1.8	5.5	4.2	1.7	5.4	4.13	1.8	5.5	4.2	0.8	4.5	3.5	1	4.7	3.64	0.8	4.5	3.5	0.8	4.5	3.5	0.8	4.5	3.5
45	Gateway Shopping Center - 2nd St	Travis Blvd	4.3	8	5.95	1.3	5	3.85	1.3	5	3.85	1.3	5	3.85	0.6	4.3	3.36	0.7	4.4	3.43	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36
46	Pennsylvania Ave	Travis Blvd	2.8	6.5	4.9	1.1	4.8	3.71	1.1	4.8	3.71	1.1	4.8	3.71	0.6	4.3	3.36	0.7	4.4	3.43	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36
51	I-80 WB On-Ramp - Hilborne Rd	Waterman Blvd	5.2	8.9	6.58	1.6	5.3	4.06	1.6	5.3	4.06	1.6	5.3	4.06	0.6	4.3	3.36	0.8	4.5	3.5	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36
53	I-80 EB Ramps	Air Base Pkwy	4.8	8.5	6.3	1.8	5.5	4.2	1.8	5.5	4.2	1.8	5.5	4.2	0.8	4.5	3.5	1	4.7	3.64	0.8	4.5	3.5	0.8	4.5	3.5	0.8	4.5	3.5
54	Health Dr	Air Base Pkwy	4.5	8.2	6.09	1.3	5	3.85	1.3	5	3.85	1.3	5	3.85	0.6	4.3	3.36	0.7	4.4	3.43	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36

Source: ICF Jones & Stokes 2009.

[a] Receptors are located 100 feet from the center of each intersection diagonal, 71 feet from the roadway centerline, and at the boundary of the mixing zone.

[b] Background concentrations of 3.7 ppm and 2.94 ppm were added to the modeling 1-hour and 8-hour results, respectively.

[c] The federal and state 1-hour standards are 35 and 20 ppm, respectively.

[d] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Table 3.2.6-4. Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area (Segments)

Segment		Existing			No Project			Alternative B Phase 1			Alternative C Phase 1			No Project			Alternative B Phase 1			Alternative C Phase 1			Full Build Alternative B			Full Build Alternative C		
		Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr
I-680	between Gold Hill and Red Top	2.9	6.6	4.97	1.8	5.5	4.2	1.4	5.1	3.92	1.5	5.2	3.99	0.9	4.6	3.57	0.6	4.3	3.36	0.9	4.6	3.57	1.1	4.8	3.71	1	4.7	3.64
I-80	between I-680 and Green Valley Rd	5.2	8.9	6.58	2.1	5.8	4.41	1.4	5.1	3.92	2	5.7	4.34	1.3	5	3.85	0.7	4.4	3.43	1.7	5.4	4.13	0.8	4.5	3.5	1.2	4.9	3.78
SR 12 West	between Red Top Rd and I-680 SB/Green Valley Rd	4.9	8.6	6.37	2.5	6.2	4.69	2.5	6.2	4.69	2.2	5.9	4.48	1.5	5.2	3.99	1.2	4.9	3.78	1.3	5	3.85	1.2	4.9	3.78	1.2	4.9	3.78
I-80	between Pittman/Suisin Valley and Truck Scales	4.8	8.5	6.3	2	5.7	4.34	2.4	6.1	4.62	2	5.7	4.34	1.1	4.8	3.71	1.1	4.8	3.71	1.1	4.8	3.71	2	5.7	4.34	2	5.7	4.34
I-80	between Truck Scales and Abernathy/SR12 East	6	9.7	7.14	3.4	7.1	5.32	2.7	6.4	4.83	3.3	7	5.25	1.6	5.3	4.06	1.5	5.2	3.99	1.4	5.1	3.92	1.8	5.5	4.2	1.4	5.1	3.92
I-80	between Green Valley Rd and Pittman Rd	6.1	9.8	7.21	3.3	7	5.25	2.8	6.5	4.9	2.1	5.8	4.41	1.3	5	3.85	1	4.7	3.64	1	4.7	3.64	1.3	5	3.85	1.4	5.1	3.92
I-80	between Abernathy Rd and W Texas St	7.3	11	8.05	3	6.7	5.04	2.9	6.6	4.97	2.7	6.4	4.83	1.8	5.5	4.2	1.4	5.1	3.92	1.7	5.4	4.13	1.5	5.2	3.99	1.5	5.2	3.99
I-80	between Beck Ave and Travis Blvd	6.2	9.9	7.28	2.6	6.3	4.76	2.6	6.3	4.76	2.4	6.1	4.62	1.5	5.2	3.99	1.2	4.9	3.78	1.5	5.2	3.99	1.3	5	3.85	1.4	5.1	3.92
I-80	between Travis Blvd and Air Base Pkwy/Waterman Blvd	6.3	10	7.35	2.7	6.4	4.83	2.7	6.4	4.83	2.4	6.1	4.62	1.6	5.3	4.06	1.3	5	3.85	1.5	5.2	3.99	1.3	5	3.85	1.3	5	3.85
SR 12 East	between Main St and Jackson St	1.9	5.6	4.27	0.9	4.6	3.57	0.9	4.6	3.57	1	4.7	3.64	0.7	4.4	3.43	0.5	4.2	3.29	0.5	4.2	3.29	0.7	4.4	3.43	0.5	4.2	3.29
SR 12 East	between Chadbourne Rd and Beck Ave	2.1	5.8	4.41	1.4	5.1	3.92	1.2	4.9	3.78	1.7	5.4	4.13	0.8	4.5	3.5	0.6	4.3	3.36	0.7	4.4	3.43	0.9	4.6	3.57	0.8	4.5	3.5
I-680	between Red Top and Central Ave/680 interchange	2.4	6.1	4.62	1.7	5.4	4.13	1.6	5.3	4.06	1.3	5	3.85	0.7	4.4	3.43	0.8	4.5	3.5	0.6	4.3	3.36	0.8	4.5	3.5	0.7	4.4	3.43

Source: ICF Jones & Stokes 2009.

[a] Receptors are located 10, 25, 50, and 100 feet from the edge of the freeway segment on either side of the roadway segment.

[b] Background concentrations of 3.7 ppm and 2.94 ppm were added to the modeling 1-hour and 8-hour results, respectively.

[c] The federal and state 1-hour standards are 35 and 20 ppm, respectively.

[d] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Potential Generation of Significant Levels of MSAT Emissions

MSAT emissions were evaluated using the Federal Highway Administration's *Interim Guidance on Air Toxic Analysis in NEPA* (Federal Highway Administration 2006).

The area of air toxics analysis is a new and emerging field and is a continuing area of research. Currently, limited tools and techniques are available for assessing project-specific health impacts from MSATs, as there are no established criteria for determining when MSAT emissions should be considered a significant issue in the NEPA context.

To comply with Council on Environmental Quality regulations (40 CFR 1502.22[b]) regarding incomplete or unavailable information, Appendix C of the Air Quality Study Report contains discussion regarding how air toxics analysis is an emerging field and current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that would result from a transportation project in a way that would be useful to decision-makers. Also in compliance with 40 CFR 150.22(b), Appendix C of the Air Quality Study Report contains a summary of current studies regarding the health impacts of MSATs.

The FTOR prepared for the project does not directly evaluate AADT on I-80/I-680/SR 12. However, based on the peak-hour traffic volumes on these roadways, an approximate estimate of AADT may be made (according to Joel Rabinovitz, in the conversation cited earlier). Based on this information, it is estimated that mainline AADT on I-80 would be in excess of the FHWA's MSAT AADT threshold of 140,000 and will be located in proximity to populated areas. Consequently, based on the FHWA's 2006 MSAT guidance, the proposed project is considered a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions was conducted using the CT-EMFAC program and traffic data presented in Table 3.2.6-5 and Table 3.2.6-6. Table 3.2.6-7 and Figure 3.2.6-3 through Figure 3.2.6-8 present modeled MSAT emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the build alternatives.

Emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the construction-interim year (2015) and design-future year (2035) scenarios. Table 3.2.6-7, which presents the project-level emissions for all alternatives, indicates that implementation of Alternative B or Alternative C would result in minor increases in all MSAT emissions for 2035 conditions. Alternative B, Phase 1 would result in small increases for all MSAT emission for 2015 and 2035 conditions. Alternative C, Phase 1 would result in minor increases for all MSAT emissions for 2015 conditions and minor increases in all MSATS except for acetaldehyde and formaldehyde, for 2035 conditions. The No-Build Alternative would result in lower MSAT emissions under 2015 conditions and 2035 conditions than all build alternatives except Alternative C, Phase 1.

To the extent that it is applicable or feasible for the project alternatives and through coordination with the project development team, implementation of measures to reduce MSAT and criteria pollutant emissions, as described in *Avoidance, Minimization, and/or Mitigation Measures*, would be implemented to reduce this effect for all build alternatives.

Table 3.2.6-5. Criteria Pollutant, MSAT, and CO_2 Modeling Peak Period Traffic Data Inputs

EMFAC Speed Bin Name	VMT Speed Bins Actual	Existing		2015 No Project		2015 Alt B Phase 1		2015 Alt C Phase 1		2035 No Project		2035 Alt B Phase 1		2035 Alt C Phase1		2035 Alt B Full Build		2035 Alt C Full Build	
		VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%
5	0.0–4.99	3,590	0.6	6,215	0.7	2,047	0.2	3,545	0.4	21,989	2.3	12,646	1.1	3,976	0.4	3,216	0.3	2,559	0.2
10	5.0–9.99	17,038	2.6	16,242	1.7	3,562	0.4	7,539	0.8	41,087	4.3	16,067	1.4	17,791	1.7	8,904	0.7	11,641	0.9
15	10.0–14.99	11,810	1.8	14,557	1.6	3,401	0.3	9,132	0.9	48,812	5.1	15,480	1.4	16,896	1.6	8,904	0.7	15,604	1.3
20	15.0–19.99	7,904	1.2	23,837	2.6	9,252	0.9	7,337	0.8	21,129	2.2	12,036	1.1	5,964	0.6	11,460	0.9	26,090	2.1
25	20.0–24.99	23,955	3.7	30,830	3.3	14,910	1.5	16,290	1.7	21,760	2.3	18,856	1.7	18,222	1.8	29,268	2.4	39,874	3.2
30	25.0–29.99	33,274	5.1	12,635	1.4	10,365	1.1	13,777	1.4	15,723	1.7	26,951	2.4	14,660	1.4	24,901	2.0	26,252	2.1
35	30.0–34.99	50,273	7.7	28,900	3.1	28,966	2.9	36,619	3.8	40,434	4.2	65,329	5.7	36,444	3.6	37,728	3.1	41,104	3.3
40	35.0–39.99	35,486	5.5	34,740	3.7	29,240	3.0	44,901	4.7	38,276	4.0	56,737	5.0	24,450	2.4	26,778	2.2	33,182	2.7
45	40.0–44.99	28,251	4.3	40,116	4.3	41,813	4.3	50,507	5.2	35,568	3.7	45,606	4.0	53,390	5.2	28,098	2.3	56,301	4.5
50	45.0–49.99	14,061	2.2	66,066	7.1	58,947	6.0	33,837	3.5	58,120	6.1	96,091	8.4	47,359	4.6	14,827	1.2	42,022	3.4
55	50.0–54.99	35,562	5.5	58,966	6.3	99,068	10.1	104,719	10.9	72,410	7.6	88,650	7.8	142,873	13.9	210,737	17.1	240,163	19.4
60	55.0–59.99	30,615	4.7	83,806	9.0	91,023	9.3	98,014	10.2	176,533	18.5	189,314	16.6	123,109	12.0	193,360	15.6	227,071	18.3
65	60.0–64.99	103,135	15.8	192,765	20.7	194,363	19.8	209,644	21.7	111,859	11.7	171,672	15.1	193,862	18.9	188,653	15.3	153,073	12.4
70	65.0–69.99	256,001	39.3	316,914	34.1	393,885	40.1	316,180	32.8	243,730	25.6	323,270	28.3	316,593	30.8	445,133	36.0	321,283	26.0
75	70.0–74.99	0	0.0	3,691	0.4	1,886	0.2	12,296	1.3	5,176	0.5	1,716	0.2	10,966	1.1	3,622	0.3	1,816	0.1
Total		**650,956**	**100.0**	**930,280**	**100.0**	**982,728**	**100.0**	**964,339**	**100.0**	**952,605**	**100.0**	**1,140,420**	**100.0**	**1,026,555**	**100.0**	**1,235,590**	**100.0**	**1,238,035**	**100.0**

Note: Calculated from Fehr and Peers peak period traffic data (Fehr & Peers 2009).

Table 3.2.6-6. Criteria Pollutant, MSAT, and CO_2 Modeling Non-Peak Period Traffic Data Inputs

EMFAC Speed Bin Name	VMT Speed Bins Actual	Existing		2015 No Project		2015 Alt B Phase 1		2015 Alt C Phase 1		2035 No Project		2035 Alt B Phase 1		2035 Alt C Phase 1		2035 Alt B Full Build		2035 Alt C Full Build	
		VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%
5	0.0–4.99	12,564	0.6	21,752	0.7	7,165	0.2	12,408	0.4	76,963	2.3	44,259	1.1	13,915	0.4	11,258	0.3	8,957	0.2
10	5.0–9.99	59,632	2.6	56,848	1.7	12,468	0.4	26,387	0.8	143,804	4.3	56,234	1.4	62,267	1.7	31,164	0.7	40,743	0.9
15	10.0–14.99	41,336	1.8	50,949	1.6	11,904	0.3	31,964	0.9	170,842	5.1	54,179	1.4	59,136	1.6	31,164	0.7	54,614	1.3
20	15.0–19.99	27,665	1.2	83,430	2.6	32,383	0.9	25,681	0.8	73,951	2.2	42,126	1.1	20,872	0.6	40,111	0.9	91,315	2.1
25	20.0–24.99	83,843	3.7	107,904	3.3	52,185	1.5	57,015	1.7	76,161	2.3	65,997	1.7	63,776	1.8	102,440	2.4	139,561	3.2
30	25.0–29.99	116,459	5.1	44,223	1.4	36,276	1.1	48,219	1.4	55,032	1.7	94,329	2.4	51,311	1.4	87,155	2.0	91,882	2.1
35	30.0–34.99	175,957	7.7	101,149	3.1	101,381	2.9	128,167	3.8	141,517	4.2	228,652	5.7	127,552	3.6	132,048	3.1	143,865	3.3
40	35.0–39.99	124,202	5.5	121,589	3.7	102,340	3.0	157,152	4.7	133,965	4.0	198,578	5.0	85,576	2.4	93,722	2.2	116,136	2.7
45	40.0–44.99	98,880	4.3	140,406	4.3	146,345	4.3	176,776	5.2	124,486	3.7	159,620	4.0	186,866	5.2	98,344	2.3	197,054	4.5
50	45.0–49.99	49,213	2.2	231,232	7.1	206,314	6.0	118,430	3.5	203,419	6.1	336,318	8.4	165,757	4.6	51,895	1.2	147,078	3.4
55	50.0–54.99	124,465	5.5	206,381	6.3	346,738	10.1	366,517	10.9	253,436	7.6	310,275	7.8	500,057	13.9	737,578	17.1	840,569	19.4
60	55.0–59.99	107,154	4.7	293,322	9.0	318,581	9.3	343,050	10.2	617,865	18.5	662,598	16.6	430,881	12.0	676,760	15.6	794,748	18.3
65	60.0–64.99	360,974	15.8	674,678	20.7	680,271	19.8	733,753	21.7	391,505	11.7	600,854	15.1	678,516	18.9	660,286	15.3	535,754	12.4
70	65.0–69.99	896,004	39.3	1,109,200	34.1	1,378,596	40.1	1,106,630	32.8	853,054	25.6	1,131,444	28.3	1,108,076	30.8	1,557,965	36.0	1,124,492	26.0
75	70.0–74.99	0	0.0	12,917	0.4	6,601	0.2	43,036	1.3	18,117	0.5	6,007	0.2	38,382	1.1	12,676	0.3	6,354	0.1
Total		**2,278,348**	**100.0**	**3,255,980**	**100.0**	**3,439,548**	**100.0**	**3,375,186**	**100.0**	**3,334,118**	**100.0**	**3,991,470**	**100.0**	**3,592,941**	**100.0**	**4,324,565**	**100.0**	**4,333,123**	**100.0**

Note: Calculated from Fehr and Peers peak period traffic data (Fehr & Peers 2009).

Table 3.2.6-7. I-80/I-680/SR 12 MSAT Emissions (pounds per day)

Scenario	Acrolein	Acetalydehyde	Benzene	1, 3-Butadiene	Diesel Particulate Matter	Formaldehyde
Existing (2004)	3.25	24.68	71.48	14.39	110.91	71.34
2015 No Project	1.39	14.29	32.95	6.25	71.95	38.05
2015 Alt B, Phase 1	1.76	17.00	40.50	7.90	90.88	45.97
2015 Alt C, Phase 1	1.71	16.96	39.93	7.69	88.76	45.59
2035 No Project	0.96	8.76	22.76	4.31	31.61	23.98
2035 Alt B, Phase 1	1.11	9.05	25.19	4.96	36.35	25.53
2035 Alt C, Phase 1	1.04	8.07	23.14	4.64	33.24	23.10
2035 Alt B	1.27	9.48	27.85	5.65	40.10	27.44
2035 Alt C	1.17	9.25	26.31	5.22	38.92	26.33
Comparison of Alternatives to Existing						
2015 Alt B, Phase 1 to Existing	-1	-8	-31	-6	-20	-25
2015 Alt C, Phase 1 to Existing	-2	-8	-32	-7	-22	-26
2035 Alt B, Phase 1 to Existing	-2	-16	-46	-9	-75	-46
2035 Alt C, Phase 1 to Existing	-2	-17	-48	-10	-78	-48
2035 Alt B to Existing	-2	-15	-44	-9	-71	-44
2035 Alt C to Existing	-2	-15	-45	-9	-72	-45
Comparison of Alternatives to No Project						
2015 Alt B, Phase 1 to 2015 No Project	0.37	2.72	7.55	1.65	18.94	7.91
2015 Alt C, Phase 1 to 2015 No Project	0.32	2.68	6.99	1.44	16.81	7.53
2035 Alt B, Phase 1 to 2035 No Project	0.15	0.29	2.43	0.65	4.74	1.55
2035 Alt C, Phase 1 to 2035 No Project	0.08	-0.69	0.38	0.33	1.63	-0.88
2035 Alt B to 2035 No Project	0.31	0.72	5.09	1.34	8.49	3.46
2035 Alt C to 2035 No Project	0.21	0.49	3.55	0.91	7.31	2.35

Source: Air Quality Study Report

Potential Generation of Significant Operation-Related Emissions of Ozone Precursors, Carbon Monoxide, and Particulate Matter

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emission of ROG, NO_x, CO, PM10, PM2.5, and CO_2 for existing year (2004), construction interim year (2015) with and without project, and design-future year (2035) with and without project conditions were evaluated through modeling conducted using the Department's CT-EMFAC model and vehicle activity data provided in the FTOR.

Table 3.2.6-8 summarizes the modeled yearly emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the build alternatives. Vehicular emission rates are anticipated to lessen in

future years due to continuing improvements in engine technology and the retirement of older, higher-emitting vehicles.

Table 3.2.6-8. I-80/I-680/SR 12 Project-Related Emissions (pounds per day)

Scenario	ROG	NO_x	CO	PM10	PM2.5	CO_2[a]
Existing (2004)	2,720	7,671	39,631	191	176	493,410
2015 No Project	1,424	4,386	19,025	206	187	694,836
2015 Alt B, Phase 1	1,696	5,696	24,179	249	226	870,093
2015 Alt C, Phase 1	1,697	5,527	23,656	247	225	857,141
2035 No Project	995	1,625	10,379	222	207	908,948
2035 Alt B, Phase 1	1,054	1,900	12,097	228	213	1,014,343
2035 Alt C, Phase 1	948	1,742	11,094	203	189	915,991
2035 Alt B	1,125	2,109	13,426	238	221	1,093,767
2035 Alt C	1,092	2,032	12,888	238	220	1,079,032
Comparison of Alternatives to Existing						
2015 Alt B, Phase 1 to Existing	-1,024	-1,976	-15,452	58	50	376,683
2015 Alt C, Phase 1 to Existing	-1,023	-2,145	-15,975	56	49	363,731
2035 Alt B, Phase 1 to Existing	-1,665	-5,772	-27,534	37	36	520,932
2035 Alt C, Phase 1 to Existing	-1,771	-5,929	-28,537	12	12	422,581
2035 Alt B to Existing	-1,594	-5,562	-26,205	47	45	600,357
2035 Alt C to Existing	-1,628	-5,639	-26,743	46	43	585,621
Comparison of Alternatives to No Project						
2015 Alt B, Phase 1 to 2015 No Project	272	1,310	5,154	44	39	175,257
2015 Alt C, Phase 1 to 2015 No Project	273	1,141	4,631	42	38	162,305
2035 Alt B, Phase 1 to 2035 No Project	59	275	1,718	6	6	105,395
2035 Alt C, Phase 1 to 2035 No Project	-47	117	715	-19	-18	7,043
2035 Alt B to 2035 No Project	130	484	3,047	16	14	184,819
2035 Alt C to 2035 No Project	97	407	2,509	16	13	170,084

Source: Air Quality Study Report
[a] CO_2 presented in metric tons per year.

Emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the construction-interim year (2015) and design-future year (2035) scenarios. Because the Department has statewide jurisdiction, and the setting for projects varies so extensively across the state, the Department has not and has no intention to develop thresholds of significance for CEQA. Further, because most air district thresholds have not been established by regulation or by delegation down from a federal or state agency with regulatory authority over the Department, the Department is not required to adopt those thresholds in their documents. Nevertheless, project-level operational emissions are presented in Table 3.2.6-8. In 2035, ROG, NO_x, CO, PM10, and PM2.5 emissions would increase for Alternative B, Alternative C, and Alternative B, Phase 1 when compared to the No-Build Alternative. Alternative C, Phase 1 would result in increases in ROG, NO_x, CO, PM10, and PM2.5 emissions for 2015 conditions, and increases in NO_x and CO emissions for 2035 conditions. ROG, PM10, and PM2.5 emissions would decrease for 2035 conditions. As previously indicated, there are no established criteria for determining when MSAT emissions should be considered a significant issue given that the EPA has not established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process and the emerging state of the science and of project-level analysis techniques. To the extent that it is applicable or feasible for the proposed project and through

coordination with the project development team, implementation of measures to reduce MSAT and criteria pollutant emissions, as described in *Avoidance, Minimization, and/or Mitigation Measures*, would be implemented to reduce this effect for all build alternatives.

Potential Temporary Increase in Ozone Precursors (ROG and NO_x), CO, and PM10 Emissions during Grading and Construction Activities

Construction activity is a source of dust and exhaust emissions that can have substantial temporary impacts on local air quality (i.e., exceeding state air quality standards for ozone, CO, PM10, and PM2.5). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and roadway construction. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A major portion of dust emissions for the build alternatives would likely be caused by construction traffic on temporary areas.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and various other activities. Emissions from construction equipment also are anticipated and would include CO, nitrogen oxides (NO_x), volatile organic compounds (VOCs), directly emitted particulate matter (PM10 and PM 2.5), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from NO_x and VOCs in the presence of sunlight and heat.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM10, PM2.5, and small amounts of CO, SO_2, NO_x, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM10 emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM10 emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

The EPA estimates that construction activities for large development projects add 1.09 tonne (1.2 tons) of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50%. The Department's Standard Specifications (Section 14) pertaining to dust minimization requirements requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM10 emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, VOCs and some soot particulate (PM10 and PM2.5) in exhaust emissions. If construction activities were to increase traffic

congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO_2 is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting Federal standards can contain up to 5,000 parts per million of sulfur, whereas on-road diesel is restricted to less than 15 parts per million of sulfur. However, under California law and Air Resources Board regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel, so SO_2-related issues due to diesel exhaust will be minimal. Some phases of construction, particularly asphalt paving, would result in short-term odors in the immediate area of each paving sites. Such odors would be quickly dispersed below detectable thresholds as distance from the sites increases.

Implementation of all build alternatives would result in the construction of widened roads, overcrossings, and embankments, as well as intersection improvements. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/subgrade construction, and paving activities and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The SMAQMD's Road Construction Emissions Model (Version 6.3.1) was used to estimate construction-related ozone precursors ROG and NO_x, CO, PM10, PM2.5, and CO_2 emissions from construction activities. The model estimates emissions for load hauling (on-road heavy-duty vehicle trips), worker commute trips, construction site fugitive dust (PM10 and PM2.5), and off-road construction vehicles. This analysis is based on anticipated construction equipment calculated by the Road Construction Emissions Model, which estimates construction equipment based on project size, duration of construction activities, and level of daily construction activities. While exhaust emissions are estimated for each activity, fugitive dust estimates are currently limited to major dust-generating activities, which include grubbing/land clearing and grading/excavation. In addition, dust estimates do not account for control measures required by BAAQMD.

Construction of the fundable first phase is expected to begin in 2012. It was assumed that construction activities would occur for eight hours per day. There are no projected dates for later phases of construction. The total project length was assumed to be 13 miles, and total area of disturbed ground is 192.5 acres for Alternative B and 220.2 acres for Alternative C. To represent a worst-case scenario, the total area of disturbed ground associated with Alternative C was evaluated, with an assumed maximum of 55.1 acres disturbed per day (based on a default assumption that the maximum amount of acreage disturbed in any given day would be 0.25 of the overall assumed project acreage). It was also assumed that no soil would be imported or exported. Construction activities were divided into separate phases and analyzed separately. Construction emission estimates represent the maximum emissions for each phase of construction. Total emissions per day represents the potential maximum daily emissions, while the total emissions provides an estimate of total maximum emissions associated with construction of the proposed project. The results of modeling for construction activities for the worst case alternative, Alternative C, are summarized in Table 3.2.6-9.

Table 3.2.6-9. Worst-Case Construction Emission Estimates (pounds per day)

Construction Phase	ROG	NO_x	CO	PM10	PM2.5	CO_2[a]
Grubbing/land clearing	64.7	547.3	287.9	574.7	135.9	7,019.0
Grading/excavation	56.5	440.6	271.4	573.5	134.8	6,659.8
Drainage/utilities/sub-grade	32.7	215.1	135.0	563.3	125.8	3,153.4
Paving	33.4	180.4	136.8	15.1	13.8	2,320.5
Total	**187.3**	**1,383.3**	**831.1**	**1,726.5**	**410.3**	**19,152.7**

Source: Air Quality Study Report
Note: Emissions calculations based on Road Construction Emissions Model (Version 6.3.1).
[a] CO_2 presented in metric tons per year.

Construction activities are subject to requirements found in the Standard Specifications for Construction of Local Streets and Roads (California Department of Transportation 2006). Standard Specification Section 14 stipulates that construction activities must comply with all rules, regulations, ordinances, and statutes of the local air pollution control district; addresses dust control requirements; and addresses dust palliatives.

Implementation of the Department's standard specification and measures to control dust and exhaust emissions during construction would help to minimize air quality impacts from construction activities.

There would be no effect under the No-Build Alternative because there would be no construction.

Naturally Occurring Asbestos

According to the California Department of Conservation's 2000 publication, *A General Location Guide for Ultramafic Rock in California*, there are no geologic features normally associated with NOA (i.e., serpentine rock or ultramafic rock near fault zones) in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to NOA emissions during construction activities. However, construction activities that involve the demolition of any building or structure containing asbestos would be subject to EPAs National Emissions Standards for Hazardous Air Pollutants (NESHAP) and CARB's Airborne Toxic Control Measures (ATCMs).

Climate Change

Climate change is analyzed in Chapter 4. Neither the EPA nor the FHWA has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on the FHWA's climate change Web site (Federal Highway Administration 2009b), climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because more requirements have been set forth in California legislation and executive orders regarding climate change, the issue is addressed in the CEQA chapter of this environmental document and may be used to inform the NEPA decision. The four strategies set forth by the FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

Avoidance, Minimization, and/or Mitigation Measures

Amend the Transportation Improvement Program to Include Additional Alternatives

STA will submit a TIP amendment for the selected alternative if Alternative C, Phase 1 is not selected as the Preferred Alternative.

Implement Measures to Reduce MSAT and Criteria Pollutant Emissions

The project applicant shall implement measures to reduce MSAT emissions where feasible. The U.S. Department of Transportation Federal Highway Administration presents mitigation strategies to reduce emissions of MSATs (Federal Highway Administration 2006). Operational and long-term MSAT emissions are much more difficult to control than short-term construction MSAT emissions because variables such as daily traffic and vehicle fleet mix are elusive and beyond the Department's control. To the extent that it is applicable or feasible for the proposed project and through coordination with the project development team, the Department will consider the following MSAT emission reduction measures:

- Implement operational strategies that focus on speed limit enforcement and traffic management.
- Implement active Intelligent Transportation System programs, such as traffic management centers or incident management systems.
- Implement anti-idling strategies, such as truck-stop electrification.
- Establish buffer zones between new and expanded highway alignments and areas of vulnerable populations.
- Modify local zoning and develop guidelines that are more protective to separate emissions from sensitive receptors.

Most of the construction impacts on air quality are short term in duration and, therefore, will not result in adverse or long-term conditions. The Department's Standard Specifications pertaining to dust control and dust palliative requirement is a required part of all construction contracts and should effectively reduce and control emission impacts during construction. The provisions of the Department's Standard Specifications, Section 14 "Environmental Stewardship" "requires the contractor to comply with rules, ordinances, regulations, and statutes.

Implementation of the following measures would minimize air quality impacts from construction activities.

Implement California Department of Transportation Standard Specification Section 14

To control the generation of construction-related PM10 emissions, the project proponent will follow Standard Specification Section 14, "Environmental Stewardship," which addresses the contractor's responsibility on many items of concern, such as: air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; and convenience of the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.01 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. Section 14-9.02 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 14.9-01.

- Water or dust palliative will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Trucks will be washed off as they leave the right-of-way as necessary to control fugitive dust emissions.
- Construction equipment and vehicles will be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in 17 CCR 93114.
- A dust control plan will be developed to address sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts on existing communities.
- Equipment and materials storage sites will be located as far away as practical from residential and park uses. Construction areas will be kept clean and orderly.
- To the extent feasible, ESAs will be established for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited.
- Track-out reduction measures such as gravel pads at project access points, will be used to minimize dust and mud deposits on roads affected by construction traffic.
- Transported loads of soils and wet materials will be coved prior to transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to reduce PM10 and deposition of particulate during transportation.
- Dust and mud deposited on paved, public roads due to construction activity and traffic will be removed to decrease particulate matter.
- To the extent feasible, construction traffic will be routed and scheduled to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Vegetation will be planted or mulched as soon as practical after grading to reduce windblown particulate in the area.

Implement Additional Control Measures for Construction Emissions of Fugitive Dust

Additional measures to control dust shall be borrowed from the BAAQMD (see Table 3.2.6-10) and implemented to the extent practicable when the measures have not already been incorporated and do not conflict with requirements of the Department's Standard Specifications, Special Provisions, NPDES permit, and the Biological Opinions, Clean Water Act Section 404 permit, Clean Water Act Section 401 Certification, and other permits issued for the project.

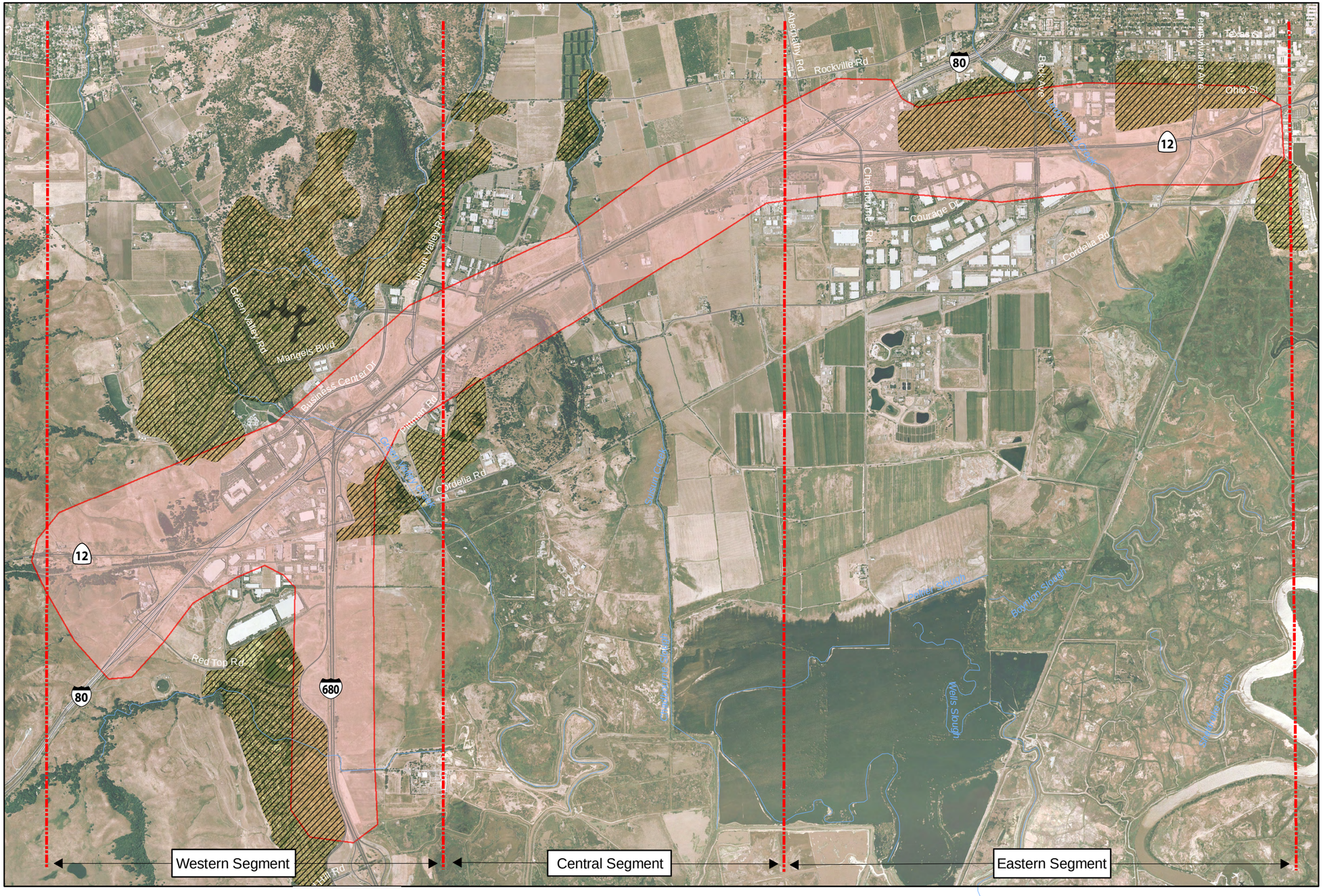
Table 3.2.6-10. Feasible Control Measures for Construction Emissions of PM10

Basic Control Measures (The following controls should be implemented at all construction sites.)
• Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 0.6 meters (2 feet) of freeboard. • Pave; apply water three times daily; or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites. • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
Enhanced Control Measures (The following additional measures should be implemented at construction sites greater than four acres in area.)
• Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (i.e., previously graded areas inactive for 10 days or more). • Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (e.g., dirt and sand). • Limit traffic speeds on unpaved roads to 24.1 kilometers per hour (15 miles per hour). • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible.
Optional Control Measures (The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or for any other reason may warrant additional emissions reductions, but the project applicant is not required to implement them.)
• Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site. • Install windbreaks or plant trees or vegetative wind breaks at windward sides of construction areas. • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour. • Limit the area subject to excavation, grading, and other construction activity at any one time.

Source: Bay Area Air Quality Management District 1999.

Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel-Powered Equipment

The construction contractor will be required to implement measures to reduce construction-related exhaust emissions. Such measures could include, but are not limited to maintaining properly tuned engines; minimizing the idling time of diesel powered construction equipment to two minutes; using alternative powered construction equipment (i.e., compressed natural gas, biodiesel, electric); using add-on mitigation devices such as diesel oxidation catalysts or particulate filters; using equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines; phasing project construction; and limiting the operating hours of heavy-duty equipment.



Legend

I680/I80/SR12 Interchange

- Proposed Project Area
- Segment Lines
- General Location of Sensitive Receptors in Vicinity of Project Area *

* Does not include locations of scattered sensitive receptors in the project area.

1 inch equals 3,000 feet

Meters: 0 — 750 — 1,500

Feet: 0 — 3,100 — 6,200

Source: Nolte 2007, ESRI 2005, CirclePoint 2007, NAIP 2006.

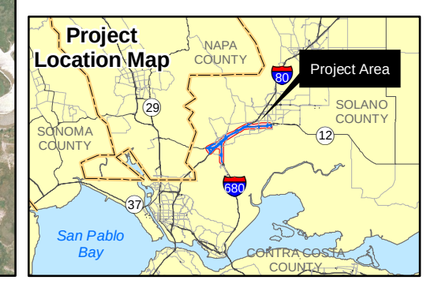
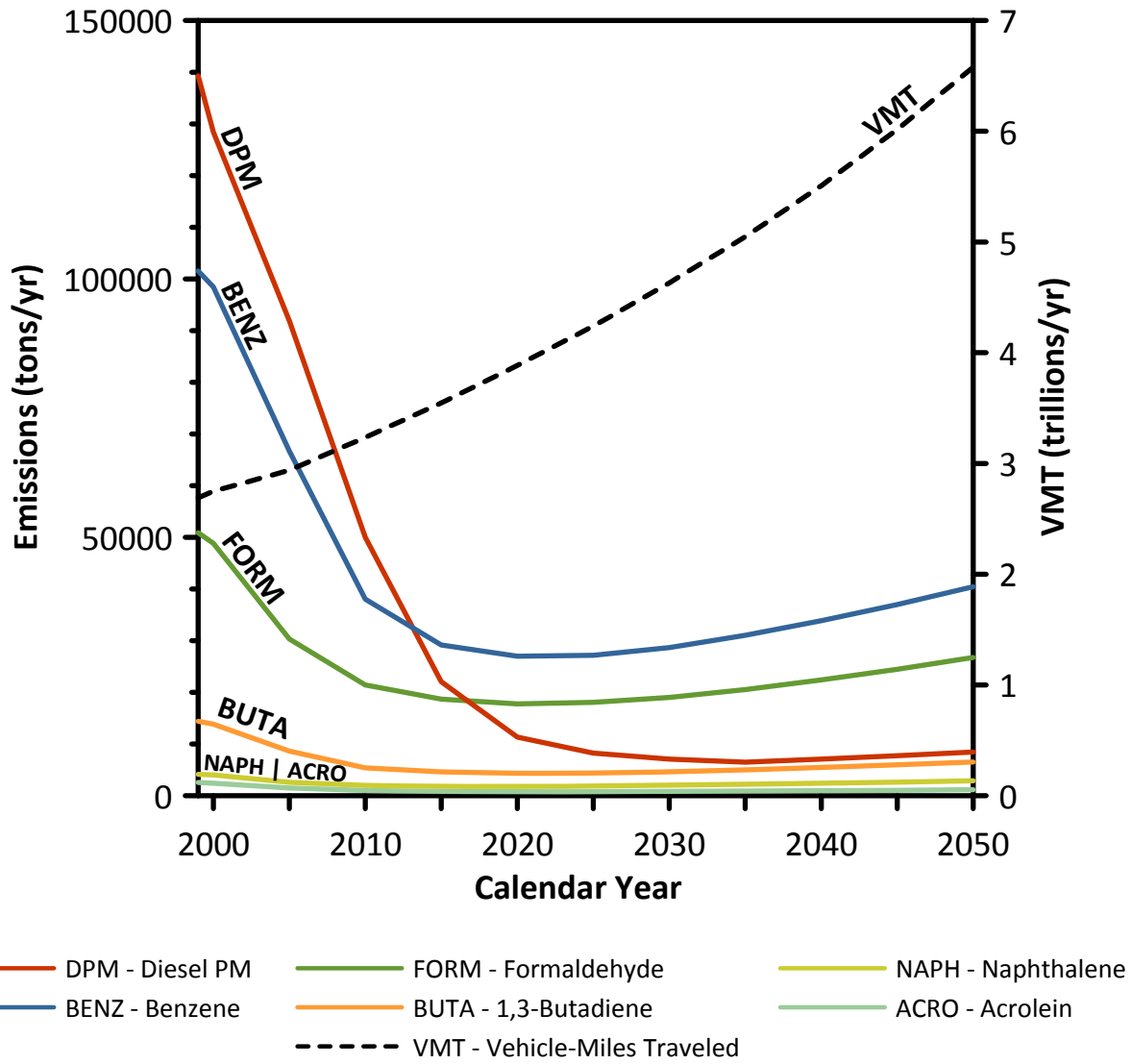


Figure 3.2.6-1
Project Area Map and General Locations of Sensitive Receptors

Graphics : 02166.02 EIS (6-09)



Note: (1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Source: FHWA 2009

Graphics/Projects/02166.02/EIS (11-09) SS

Figure 3.2.6-2
National MSAT Emission Trends 1999-2050
For Vehicle Operating on Roadways Using EPA's Mobile6.2 Model

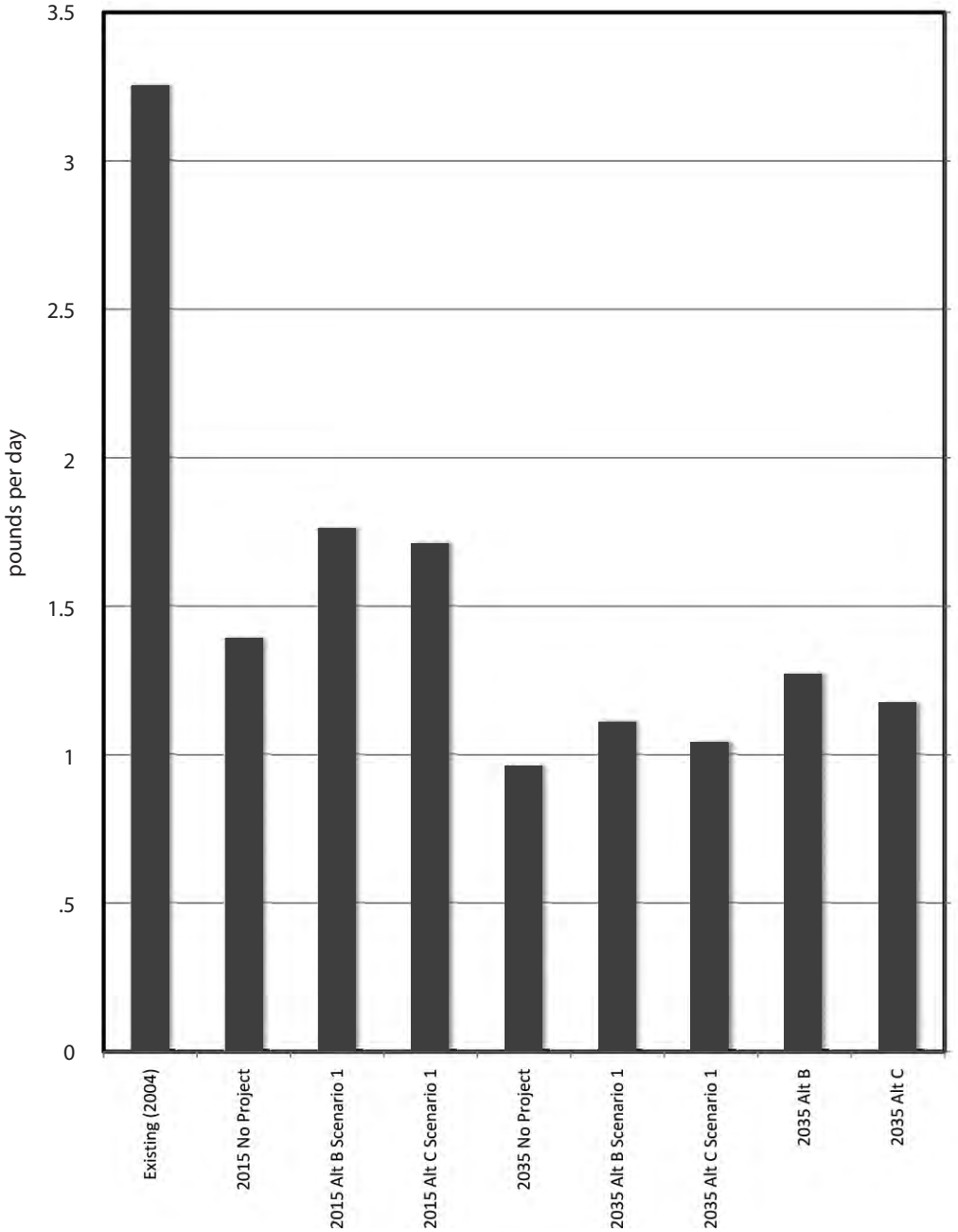


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Figure 3.2.6-3
Summary of Project Level Acrolein Emissions (pounds per day)

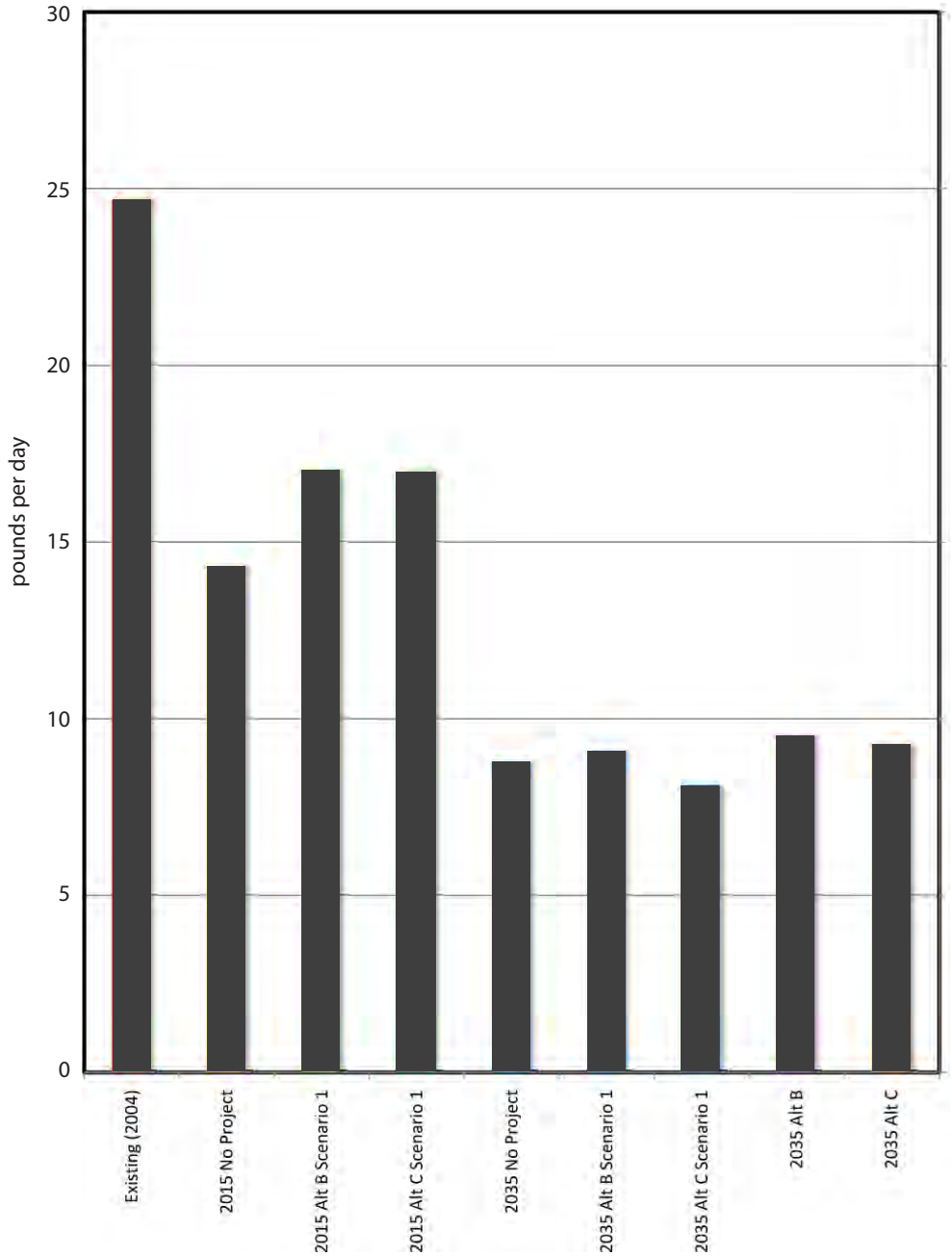

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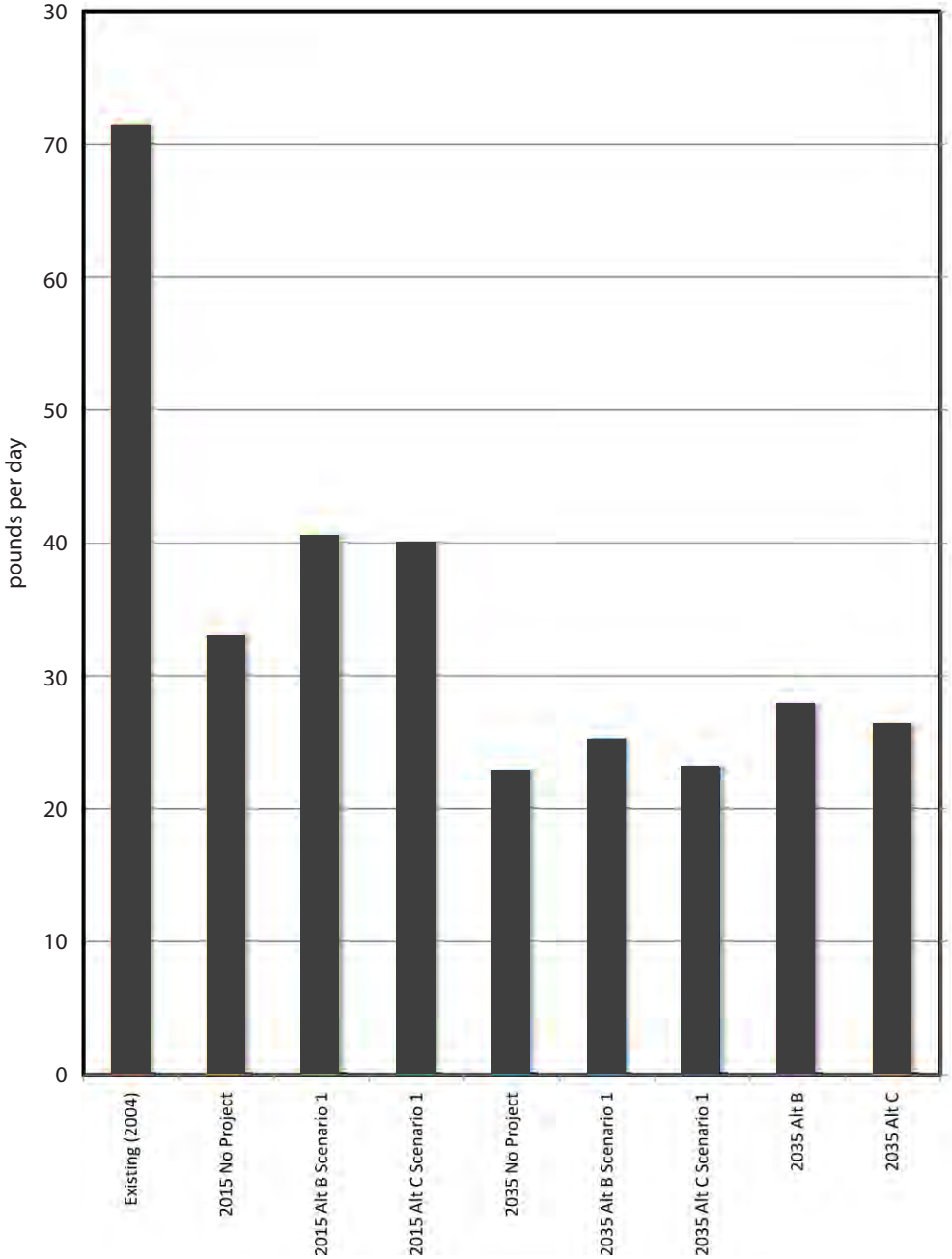
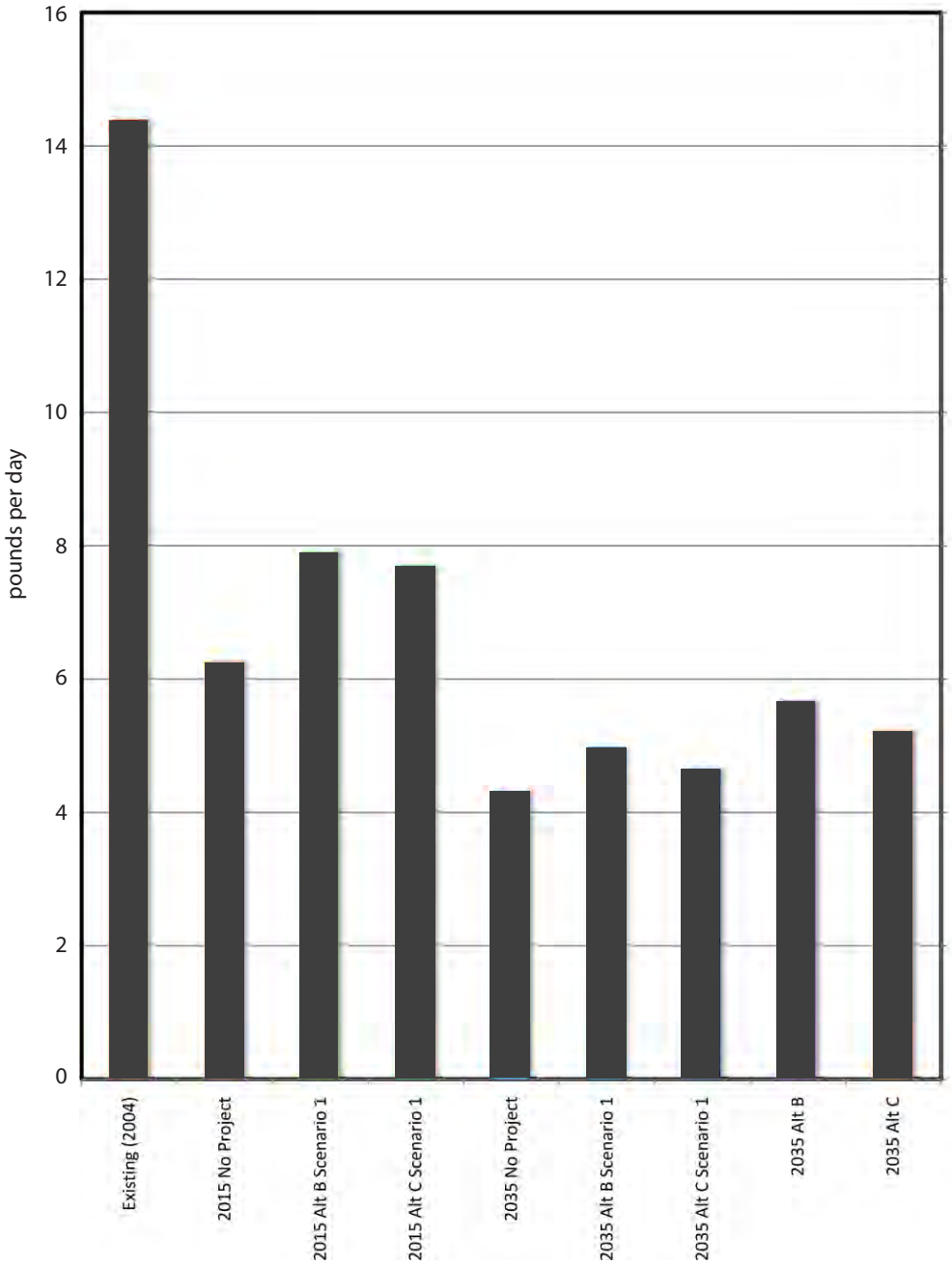
Figure 3.2.6-4
Summary of Project Level Acetaldehyde Emissions (pounds per day)



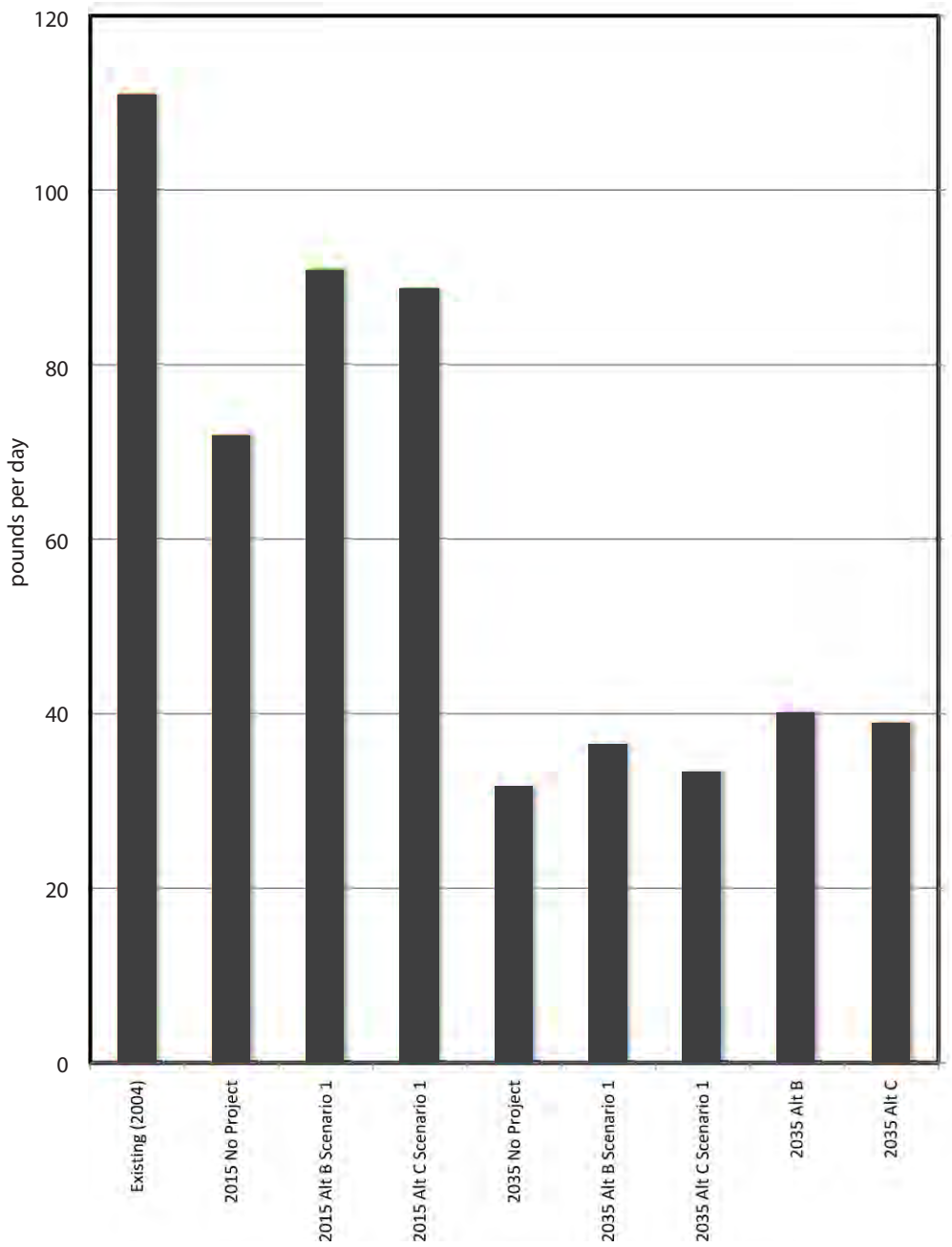
Graphics ... 02166.02 EIS (6-09) tm

Figure 3.2.6-5
Summary of Project Level Benzene Emissions (pounds per day)



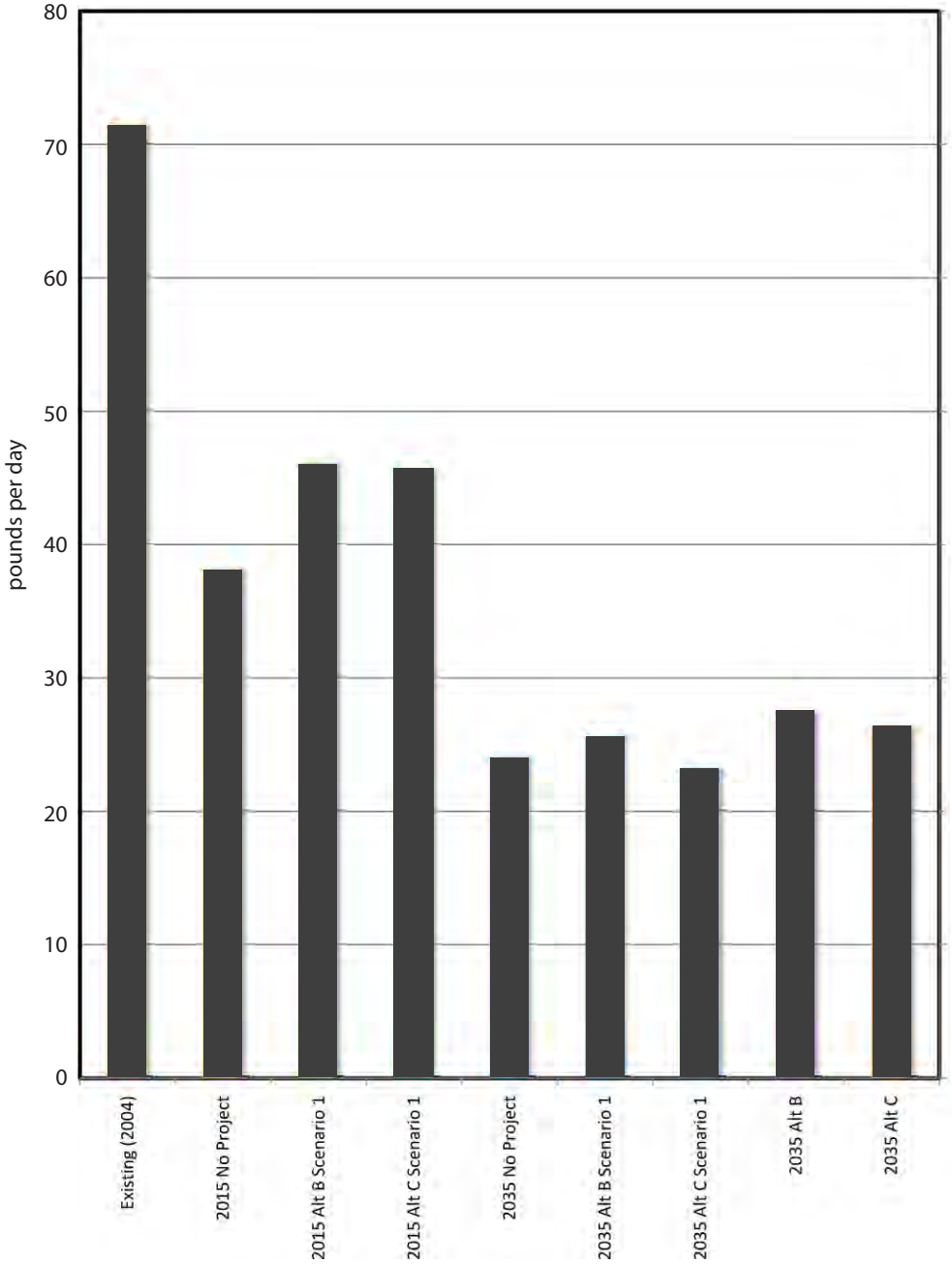
Graphics ... 02166.02 EIS (6-09) tm

Figure 3.2.6-6
Summary of Project Level 1,3-Butadiene Emissions (pounds per day)



Graphics ... 02166.02 EIS (6-09) tm

Figure 3.2.6-7
Summary of Project Level Diesel Particulate Matter Emissions (pounds per day)



Graphics ... 02166.02 EIS (6-09) tm

Figure 3.2.6-8
Summary of Project Level Formaldehyde Emissions (pounds per day)