North County Corridor New State Route 108 Project

Air Quality Report

North County Corridor New State Route 108 Project

Stanislaus County, California

District 10 – STA – 108

(SR-108 [PM 27.5/44.5], SR-219 [PM 3.7/4.8], SR-120 [PM 6.9-11.6])

EA: 10-0S8000 & Project ID: 1000000263

January 2017

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February 2015

STATE OF CALIFORNIA
Department of Transportation

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The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 USC 326.

List of Abbreviated Terms

AADT	annual average daily traffic
AB	Assembly Bill
ADT	average daily traffic
AIA	Air Impact Assessment
ARB	Air Resources Board
BMP	Best Management Practice
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
Cal EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO-CAT	Coastal Ocean Climate Action Team
DP	Director's Policy
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FCAA	Federal Clean Air Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GHG	greenhouse gas
HFC-23	fluoroform
HFC-134a	s, s, s, 2-tetrafluoroethane
HFC-152a	difluoroethane
IPCC	Intergovernmental Panel on Climate Change
H_2S	Hydrogen Sulfide
HEI	Health Effects Institute
IRIS	Integrated Risk Information System
ISR	Indirect Source Review
LED	light-emitting diode
LOS	Level of Service
MMT	million metric tons
MPO	Metropolitan Planning Organization
MSAT	Mobil Source Air Toxics

NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessments
NCCTEA	North County Corridor Transportation Expressway Authority
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NOA	Naturally Occurring Asbestos
NOAA	National Oceanic and Atmospheric Administration
NO_2	nitrogen dioxide
N_2O	nitrous oxide
NO_x	nitrogen oxides
O_3	ozone
OPR	Office of Planning and Research
OSTP	Office of Science and Technology Policy
Pb	lead
PM	Particulate Matter
PM_{10}	Particulate Matter of 10 micrometers or less
$PM_{2.5}$	Particulate Matter of 2.5 micrometers or less
POAQC	Project of Air Quality Concern
ppb	parts per billion
ppm	parts per million
ROG	reactive organic gases
RTP	Regional Transportation Plan
SB	Senate Bill
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SR	State Route
StanCOG	Stanislaus Council of Governments
TAC	toxic air contaminant
USDOT	United States Department of Transportation
VHD	vehicle hours of delay
VMT	vehicle miles traveled
$\mu g/m^3$	micrograms per cubic meter

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Chapter 1. Introduction

The North County Corridor Transportation Expressway Authority (NCCTEA) proposes to construct the North County Corridor New State Route 108 (SR-108) Project (project). For this project, the NCCTEA is represented by California Department of Transportation (Caltrans) District 6 and 10, Stanislaus County, and the cities of Oakdale, Riverbank and Modesto. Caltrans is the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) lead agency for the project.

This air quality report describes the proposed project's potential impacts on local and regional air quality, including the identification of air pollutant standards, current air quality conditions, air quality impacts and associated avoidance, minimization, and/or mitigation measures. The purpose of this analysis is to describe the existing air quality, the applicable regulations, the potential air quality impacts of the project and measures to mitigate or minimize pollutant emissions, and to demonstrate conformity of the project to the State Implementation Plan (SIP), as required by the Clean Air Act. Air quality is described in relation to the national and state ambient air quality standards.

1.1 Project Description Summary

The proposed project is located in Caltrans District 10 within portions of the Oakdale, Riverbank, and Modesto communities of Stanislaus County, California (see Figures 1 and 2). The North County Corridor New State Route (SR) 108 Project will connect SR 219 near Modesto, CA to SR 120 near Oakdale, CA. The proposed project consists of four Build Alternatives (1A, 1B, 2A, and 2B) and the No-Build Alternative (see Figure 3).

Segment 1 of all alternatives begins at the SR-219 (Kiernan Avenue)/Tully Road intersection. The alternatives proceed to the vicinity of the Claus Road/Claribel Road intersection, where Segment 2 begins and the alternatives separate into two different alignments (A and B). In Segment 2, Alternatives 1A and 1B veer northeast near the Claus Road/Claribel Road intersection and pass through the southern boundary of Oakdale, and Alternatives 2A and 2B continue easterly along Claribel Road and turn northeastward past the intersection of Claribel Road/Bentley Road. Each of the alternatives then breaks into two possible alignments to their eastern terminus in Segment 3, just past the Oakdale-Waterford Highway. The eastern terminus of Alternatives 1A and 2A end along SR-108/120 just east of the City of Oakdale boundary. Alternatives 1B and 2B end farther east of the Alternatives 1A and 2A terminus, along SR-108/120 in the vicinity of Lancaster Road. The purpose of the project is to reduce existing and future traffic congestion in northern Stanislaus County, enhance traffic safety on existing SR-108, support the efficient movement of goods, and improve interregional travel.

The proposed project improvements include:

- At grade intersections;
- Grade separation structures at major roadway and railway crossings;
- Structures at various waterway crossings, such Modesto Irrigation District (MID) and Oakdale Irrigation District (OID) canals;
- County and City roadway improvements at various locations; and,
- New freeway/expressway controlled access travel lanes.

The four alternatives would consist of two to three 12-foot-wide through lanes with 5-foot to 10-foot-wide left and right shoulders in each direction. The eastbound and westbound alignments would be separated by a 46 to 70-foot-wide median, including the 5-foot to 19-foot-wide shoulders and 26-foot to 60-foot-wide graded, unpaved median area. Drainage ditches and/or retention basins would be located along either side of the new roadway.

As the proposed roadway would function as a freeway/expressway with controlled access, new and realigned local access roads are needed to provide continued access to existing properties. This would involve construction of a discontinuous local roadway system that would provide a 12-foot-wide through lane and an 8-foot-wide shoulder in each direction. Drainage ditches and/or longitudinal retention basins would be provided between the right-of-way limit and the edge of pavement. Where required, turn lanes would provide connections to cross roads. Each of the four build alternatives includes these proposed local access roads, which are delineated in Figure 3.

Elevated roadways, separated grade crossings, single point urban interchanges, signalized intersections, and roundabouts would be needed for each of the four alternatives. A Class 2 bike lane would also be constructed within the road shoulder from Claus Road to the eastern terminus at State-Route 108/120.

Various utilities exist throughout the project area that would need to be relocated. These include electric, telephone, water, sewer, and irrigation lines. At the time of this report, the exact locations to which the impacted utilities would be relocated is unknown, but relocation would take place within the currently defined project area.

Permanent right-of-way and temporary construction easements would also be required for the proposed project.

Project Purpose

The purpose of the project is to reduce existing and future traffic congestion in northern Stanislaus County, enhance traffic safety on existing SR-108, and support the efficient movement of goods as follows:

- **Reduce traffic congestion and accommodate future traffic on existing SR-108 and the surrounding transportation network in Stanislaus County and the Cities of Modesto, Riverbank, and Oakdale;**

- **Enhance traffic safety on existing SR-108 through the communities of Riverbank and Oakdale and Modesto by reducing average daily traffic volumes (particularly truck traffic);**

- **Support efficient movement of goods by providing a new east-west transportation facility that will reduce the number of conflict areas with non-motorized traffic, increase the average operating speeds, and improve travel time reliability; and**

- **Improve interregional travel by reducing travel times for long distance commuters, recreational traffic, and interregional goods movement.**

Project Need

The current action is needed because:

- **Traffic congestion on existing SR-108 will continue to worsen due to projected traffic volume increases;**

- **Existing accident rates on existing SR-108 are well above the statewide averages for similar facilities;**

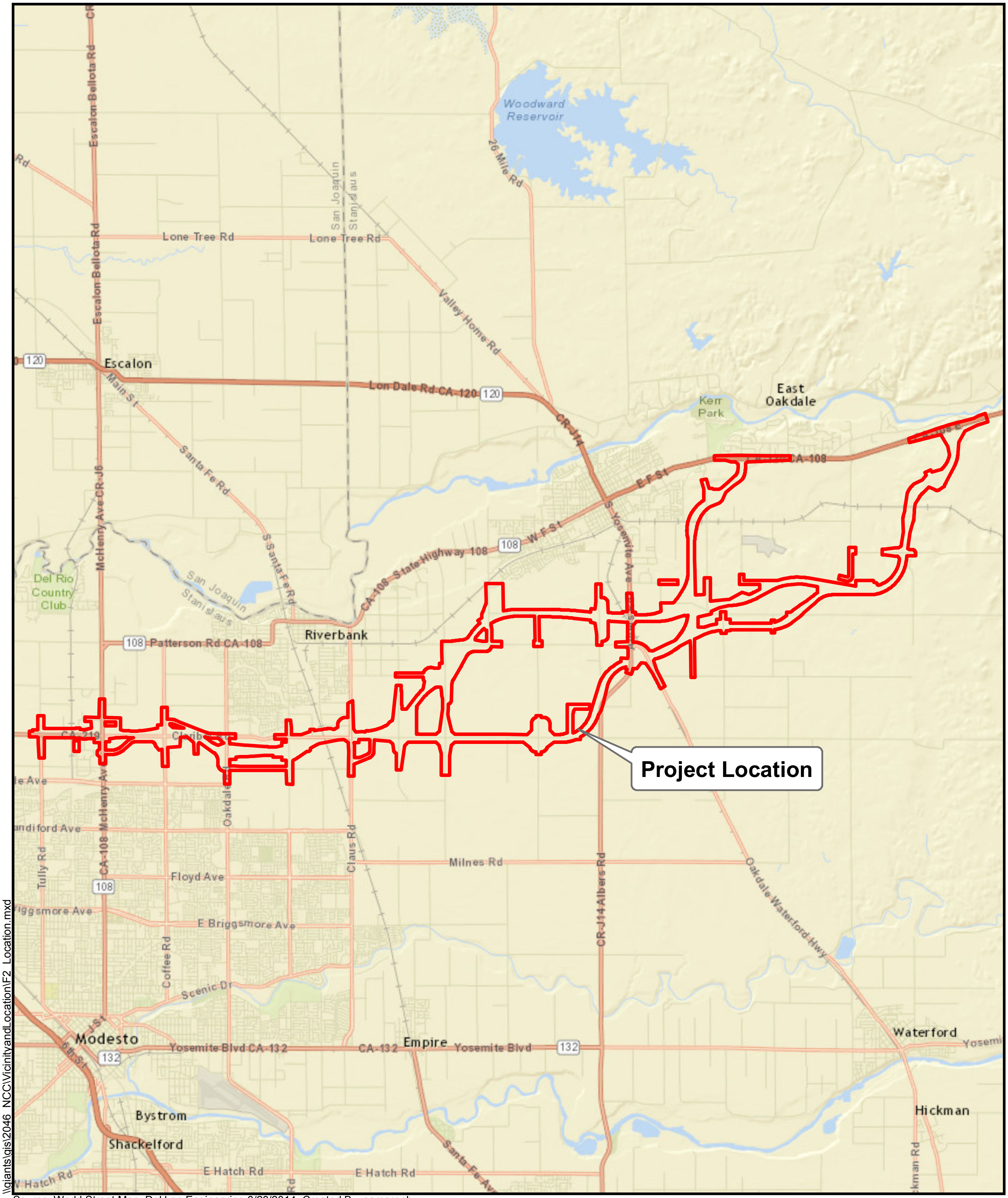
- **Traffic congestion on existing truck routes will continue to inhibit the efficient movement of goods; and**

- **Existing SR-108 is part of the interregional system and interregional circulation will become increasingly constrained as travel times on existing SR-108 increase substantially with planned residential and employment growth.**

Source: ESRI 2008; Dokken Engineering6/23/2014; Created By: cameronb

0 5 10 Miles

FIGURE 1
Project Vicinity
EA: 10-0S8000, Project ID # 1000000263
North County Corridor State Route 108 Project
Stanislaus County, California



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Source: World Street Map; Dokken Engineering 6/23/2014; Created By: cameronb

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FIGURE 2
Project Location
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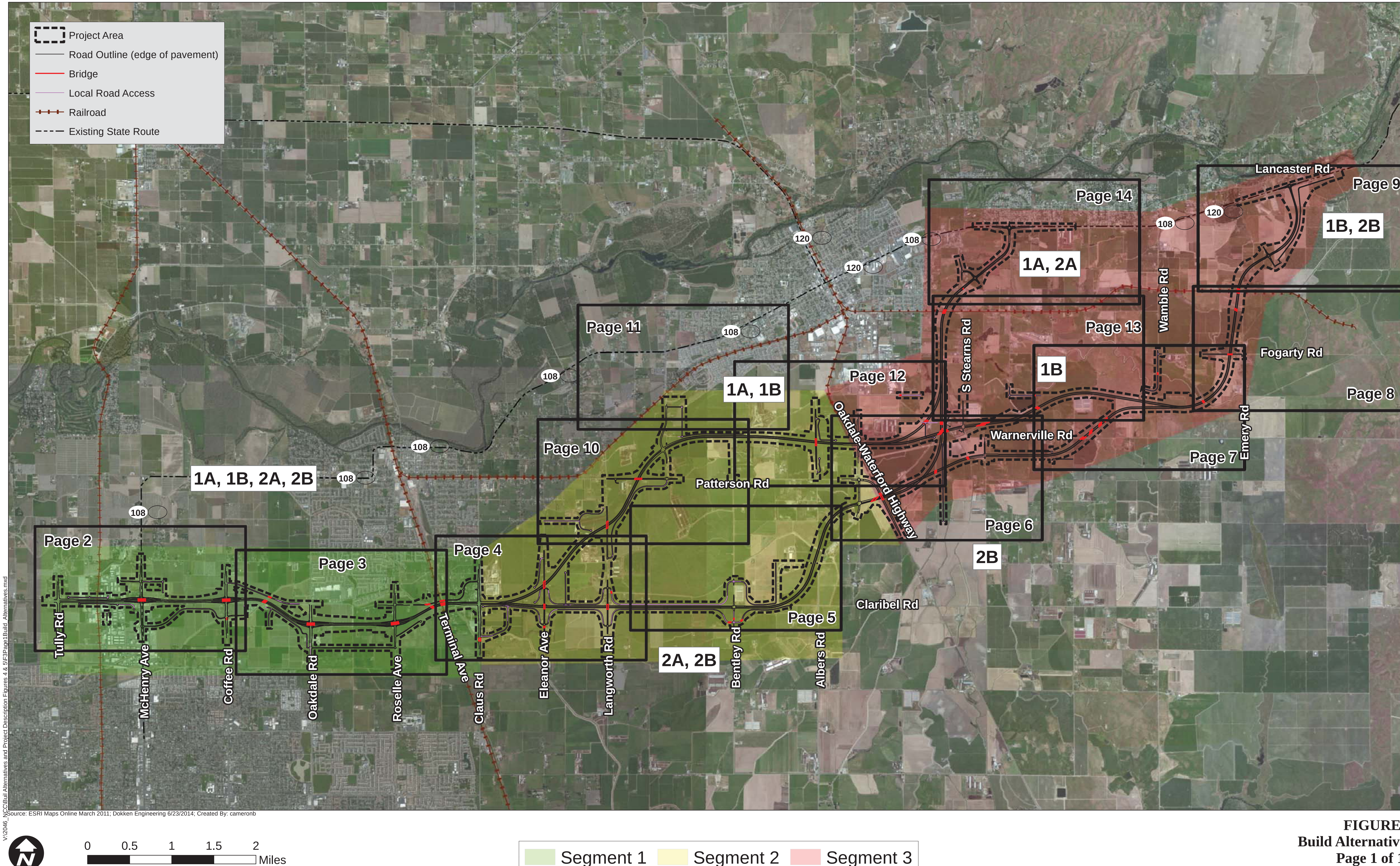
North County Corridor State Route 108 Project
Stanislaus County, California



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Source: ESRI Maps Online March 2011; Dokken Engineering 6/23/2014; Created By: cameronb

FIGURE 3
Build Alternatives
Page 1 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Source: ESRI Maps Online March 2011; Dokken Engineering 6/23/2014; Created By: cameronb

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FIGURE 3
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Stanislaus County, California

Source: ESRI Maps Online March 2011; Dokken Engineering 6/23/2014; Created By: cameronb

FIGURE 3
Build Alternatives
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EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Match Line - See Page 10

Match Line - See Page 3

Match Line - See Page 45

Source: ESRI Maps Online March 2011; Dokken Engineering 6/23/2014; Created By: cameronb

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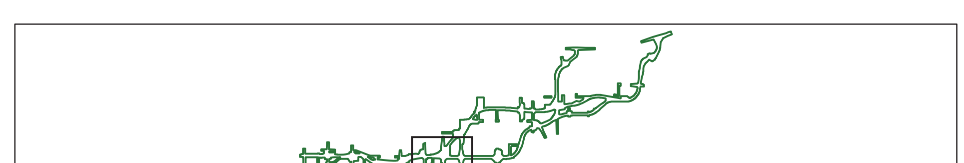

FIGURE 3
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Stanislaus County, California

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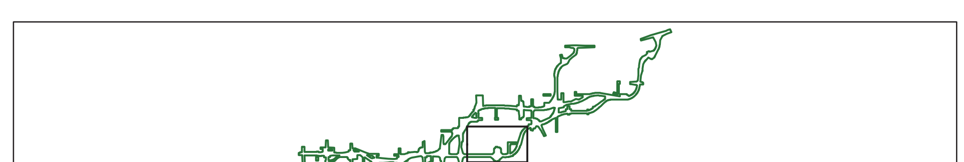

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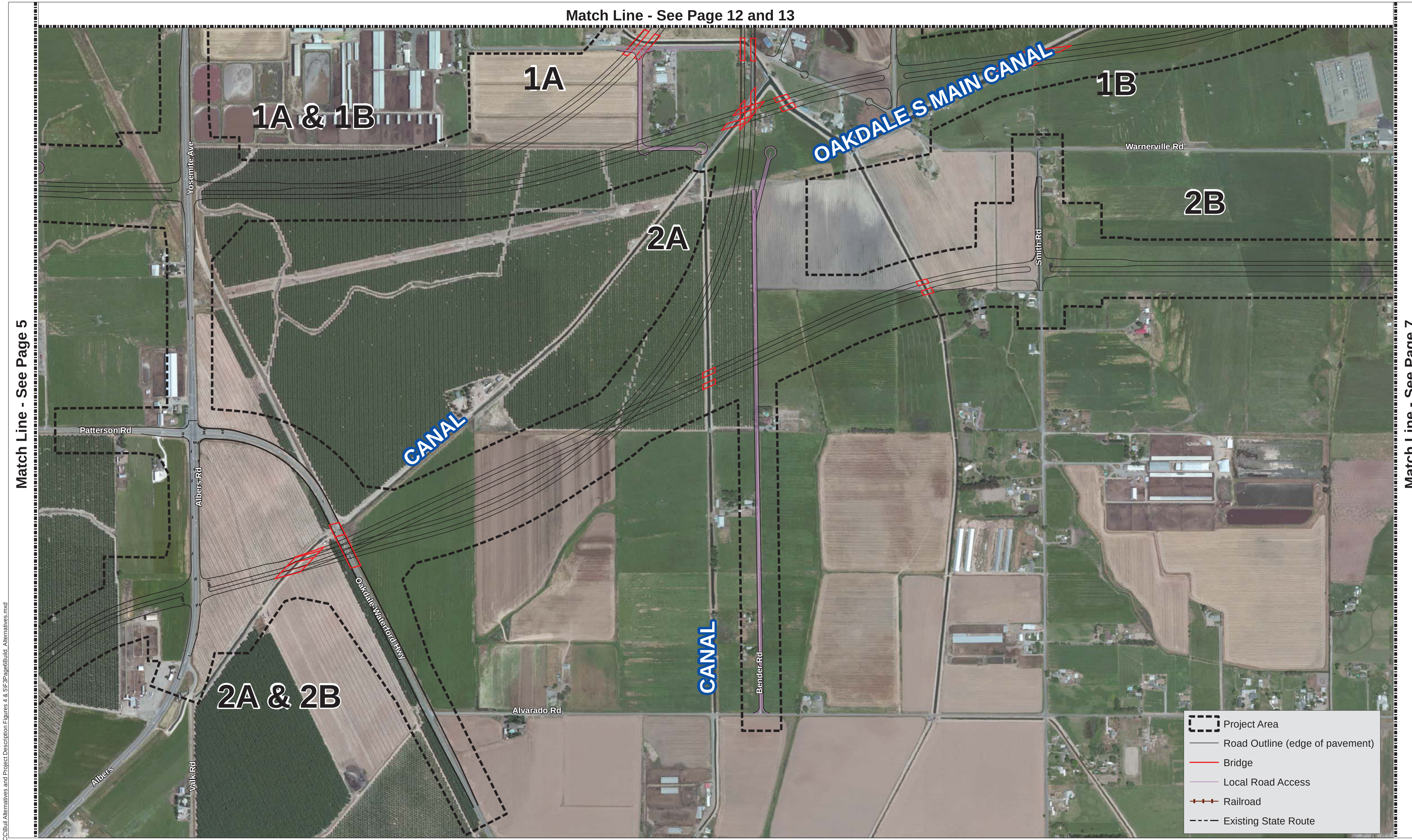
Stanislaus County, California



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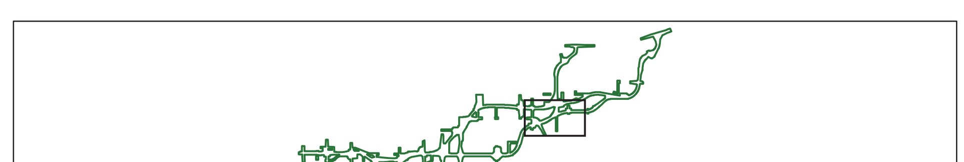

FIGURE 3
Build Alternatives
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EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Source: ESRI Maps Online March 2011; Dokken Engineering 6/23/2014; Created By: cameronb

FIGURE 3
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Page 7 of 14
EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Match Line - See Page 9

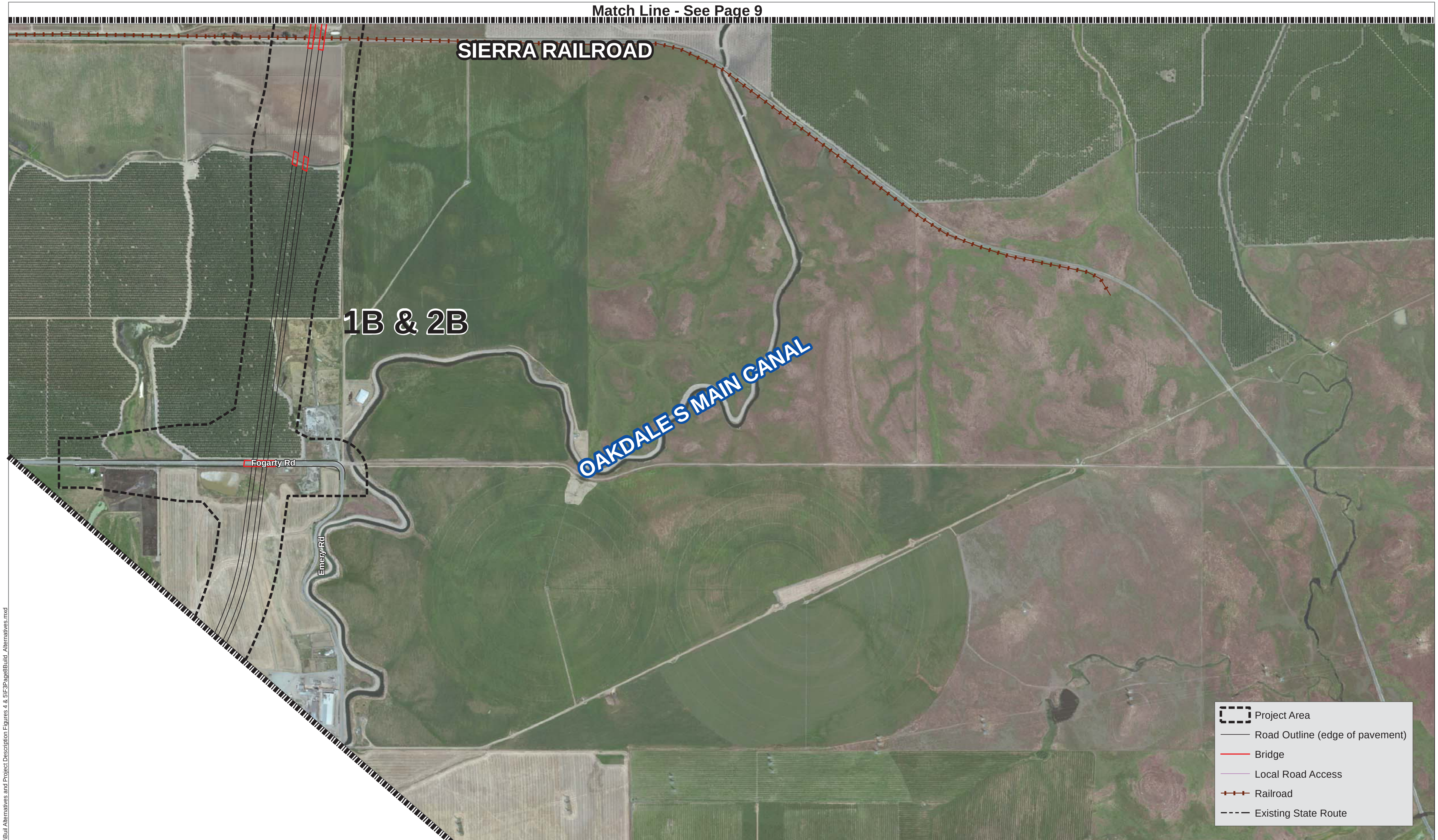

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FIGURE 3
Build Alternative
Page 8 of 14

EA: 10-0S8000, Project ID # 1000000263
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Stanislaus County, California

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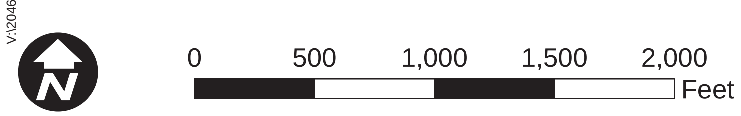

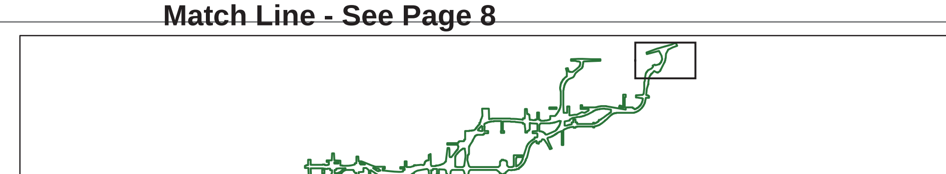

FIGURE 3
Build Alternatives
Page 9 of 14

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

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Match Line - See Page 12

Match Line - See Page 4

Source: ESRI Maps Online March 2011; Dokken Engineering 6/23/2014; Created By: cameronb

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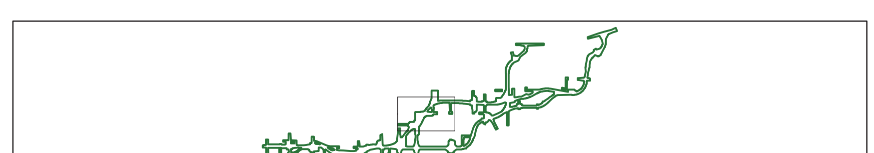

FIGURE 3
Build Alternatives

EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Match Line - See Page 10

Source: ESRI Maps Online March 2011; Dokken Engineering 6/23/2014; Created By: cameronb

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FIGURE 3
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North County Corridor New State Route 108 Project
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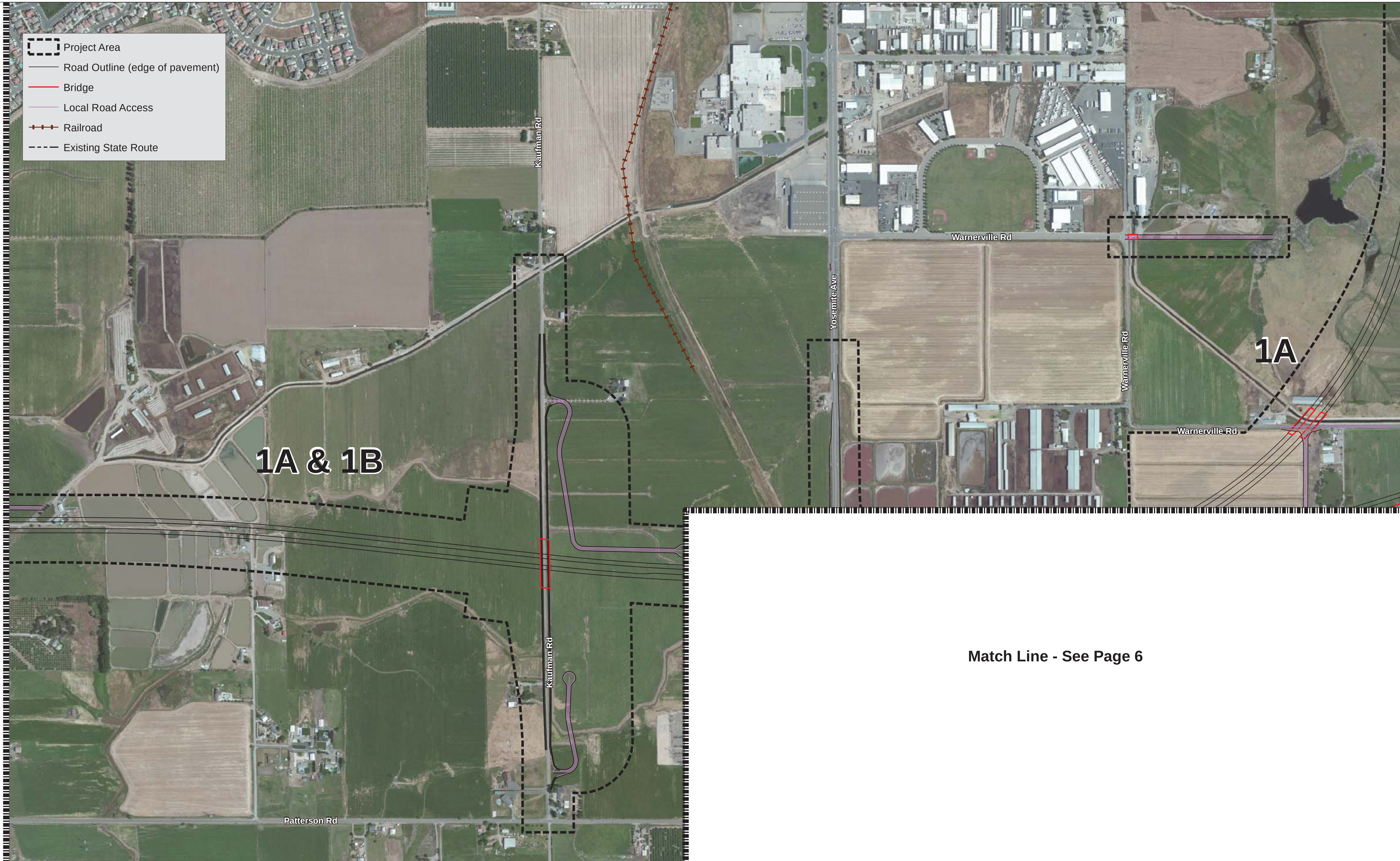
Match Line - See Page 10



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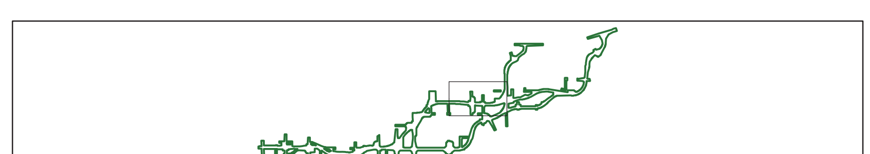

FIGURE 3
Build Alternatives
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EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

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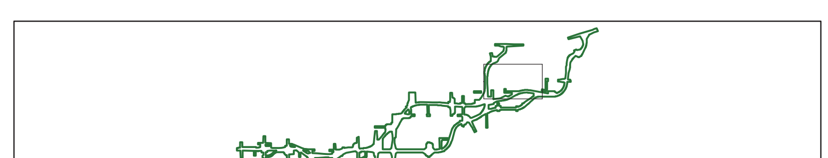

FIGURE 3
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EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

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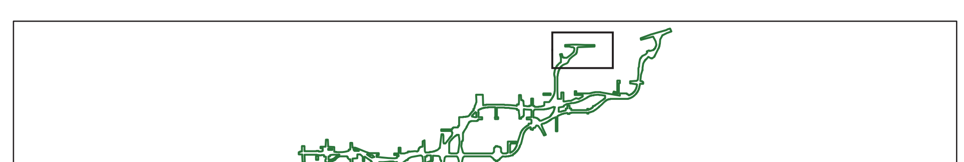

FIGURE 3
Build Alternatives
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EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Chapter 2. Regulatory Setting

2.1 Regulatory Setting

The Federal Clean Air Act (FCAA) as amended is the primary federal law that governs air quality while the California Clean Air Act is its companion state law. These laws and related regulations by the United States Environmental Protection Agency (EPA) and California Air Resources Board (CARB) set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards (see Table 1) have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb) and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants; some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

Table 1. Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 $\mu g/m^3$)		0.070 ppm (137 $\mu g/m^3$)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	12.0 $\mu g/m^3$	15 $\mu g/m^3$	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 $\mu g/m^3$)	Gas Phase Chemiluminescence	100 ppb (188 $\mu g/m^3$)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 $\mu g/m^3$)	Ultraviolet Fluorescence	75 ppb (196 $\mu g/m^3$)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 $\mu g/m^3$)	
	24 Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 $\mu g/m^3$	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 $\mu g/m^3$ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 $\mu g/m^3$		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

See footnotes on next page …

For more information please call ARB-PIO at (916) 322-2990

California Air Resources Board (5/4/16)

(continued from previous page)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and 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 arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ 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 the U.S. EPA for further clarification and current national 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 measurement method 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 U.S. 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 U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. 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.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

Source: CARB 2016

2.2 Conformity

The conformity requirement is based on Federal Clean Air Act Section 176(c), which prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs or projects that do not conform to the SIP for attainting the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional—or, planning and programming—level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional level conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, PM_{10}, $PM_{2.5}$, and in some areas (although not in California) SO_2. California has attainment or maintenance areas for all of these transportation-related criteria pollutants except SO_2, and also has a nonattainment area for Pb; however, Pb is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emissions analysis of the Regional Transportation Plan (RTP) and Federal Transportation Improvement Program (FTIP) that include all transportation projects planned for a region over a period of at least 20 years for the RTP and 4 years for the FTIP. RTP and FTIP conformity determinations use travel demand and emissions models to determine whether or not the implementation of those projects would conform to emissions budgets or other tests at various analysis years showing that requirements of the Clean Air Act and the SIP are met.

If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA), make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Conformity analysis at the project-level includes verification that the project is included in the regional conformity analysis and a "hot-spot" analysis if an area is "nonattainment" or "maintenance" for CO, PM_{10} and/or $PM_{2.5}$. A region is "nonattainment" if one or more of the monitoring stations in the region measures a violation of the relevant standard and the EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by EPA and are then called "maintenance" areas. "Hot-spot" analysis is essentially the same, for technical purposes, as CO or PM analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot-spot analysis. In general, projects must not cause the "hot-spot" related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or PM violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Chapter 3. Regional Meteorology and Climate

The California Air Resources Board (ARB) has divided California into 15 regional air basins. The air basins generally have similar meteorological and geographic conditions throughout.

The project occurs within the San Joaquin Valley Air Basin (SJVAB), which is approximately 250 miles long and averages 80 miles wide. The SJVAB includes all of seven counties (San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare), as well as the western portion of Kern County. The project is located in Stanislaus County.

The San Joaquin Valley (SJV) has an “inland Mediterranean” climate, which is characterized by hot, dry summers and cool winters. On average, the valley experiences more than 260 sunny days per year. Summer high temperatures often exceed 100 ºF, averaging in the low 90s in the northern valley and high 90s in the south. In the entire SJV, high daily temperature readings in summer average 95 ºF. Over the last 30 years, the SJV averaged 106 days a year 90 ºF or hotter, and 40 days a year 100 ºF or hotter. The daily summer temperature variation can be as high as 30 ºF.

In winter, the high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Thus, winters are mild and humid. Average high temperatures in the winter are in the 50s, but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45 ºF.

3.1 Topography

Air pollution is directly influenced by 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.

Although marine air generally flows into the basin from the San Joaquin River Delta, the region’s topographic features restrict air movement through and out of the basin. The Coastal Range hinders wind access into the SJV from the west, the Tehachapi Mountains 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).

3.2 Wind Speed and Direction

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations. Some pollutants, such as carbon monoxide (CO), dissipate easily and therefore may form highest concentrations when wind speed is low. Concentrations of other pollutants, such as ozone, are less susceptible to local wind speeds in part because of the time required for ozone formation.

The SJVAB experiences differing wind regimes in the summer and winter. During the summer, winds usually originate at the north end of the SJV and flow in a south-southeasterly direction through the SJV, through Tehachapi pass, and into the Southeast Desert Air Basin. During the winter, winds occasionally originate from the south end of the SJV and flow in a north-northwesterly direction. Also during the winter months, the SJV experiences light, variable winds less than 10 mph. Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high CO and PM_{10} concentrations.

Superimposed on this seasonal regime is the diurnal wind cycle. In the SJV, this cycle takes the form of a combination of sea-land and mountain-valley wind regimes. The sea-land regime has a sea breeze flowing into the SJV from the north during the day and a land breeze flowing out of the SJV at night. The mountain-valley regime has an upslope (mountain) flow during the day and a downslope (valley) flow at night. These phenomena add to the complexity of regional wind flow and pollutant transport within the SJVAB.

3.3 Temperature Inversion and Ozone Formation

The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent temperature inversions. Because of expansional cooling of the atmosphere, air temperature usually decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. Inversions can exist at the surface, or at any height above the ground. The height of the base of the inversion is known as the “mixing height”. This is the level to which pollutants can mix vertically.

Air above and below the inversion base does not mix because of differences in air density. Inversion layers are significant in determining ozone formation and CO and PM_{10} concentrations. Ozone and its precursors will react to produce higher concentrations under an inversion, and inversions trap and hold directly emitted pollutants like CO. PM_{10} is both directly emitted and formed in the atmosphere when gaseous pollutants react. Pollutant concentrations can build up substantially under non-convective conditions (inversion).

Temperature and solar radiation are particularly important in the chemistry of ozone formation. Ozone is formed through a photochemical reaction requiring sunlight. Generally, the higher the temperature, the more ozone formed, since reaction rates increase with temperature. However, extremely hot temperatures can "lift" or "break" the inversion layer. Typically, if the inversion layer does not lift, ozone levels will peak in the late afternoon, sometime as late as 7 p.m. If the inversion layer breaks and the resultant afternoon winds occur, ozone concentrations will peak in the early afternoon, and then decline as the contaminants are transported out of the basin.

3.4 Precipitation and Fog

Precipitation and fog tend to reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble so precipitation and fog tend to reduce atmospheric CO concentrations. PM_{10} is also somewhat "washed" from the atmosphere by precipitation.

Precipitation in the SJV is strongly influenced by the position of the semi-permanent subtropical high-pressure belt located off the Pacific coast referred to as the Pacific High. In the winter, this high-pressure system moves southward, allowing Pacific storms to move through the SJV. These storms bring in moist, maritime air that produces considerable precipitation on the western, upslope side of the Coast Ranges. Significant precipitation also occurs on the western side of the Sierra Nevada. On the valley floor, however, there is some downslope flow from the Coast Ranges and the resultant evaporation of moisture from associated warming results in a minimum of precipitation. Nevertheless, the majority of the precipitation falling in the SJV is produced by those storms during the winter. Precipitation during the summer months is in the form of convective rain showers and is rare. Average annual rainfall for the entire SJV is 9.25 inches on the SJV floor.

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

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

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

Chapter 4. Affected Environment

This section provides background information on the existing air quality conditions in the vicinity of the project, the state and federal attainment status of the region, pollutants of concern in the SJVAB, and potential sensitive receptors located adjacent to the project.

4.1 Existing Air Quality Conditions

The California Environmental Protection Agency's (CalEPA) Air Resources Board (ARB) air quality monitoring program collects accurate real-time measurements of ambient level pollutants at over 40 sites located throughout the state. The data generated are used to define the nature and severity of pollution in California, determine which areas of California are in attainment or nonattainment, identify pollution trends in the state, support agricultural burn forecasting, and develop air models and emission inventories.

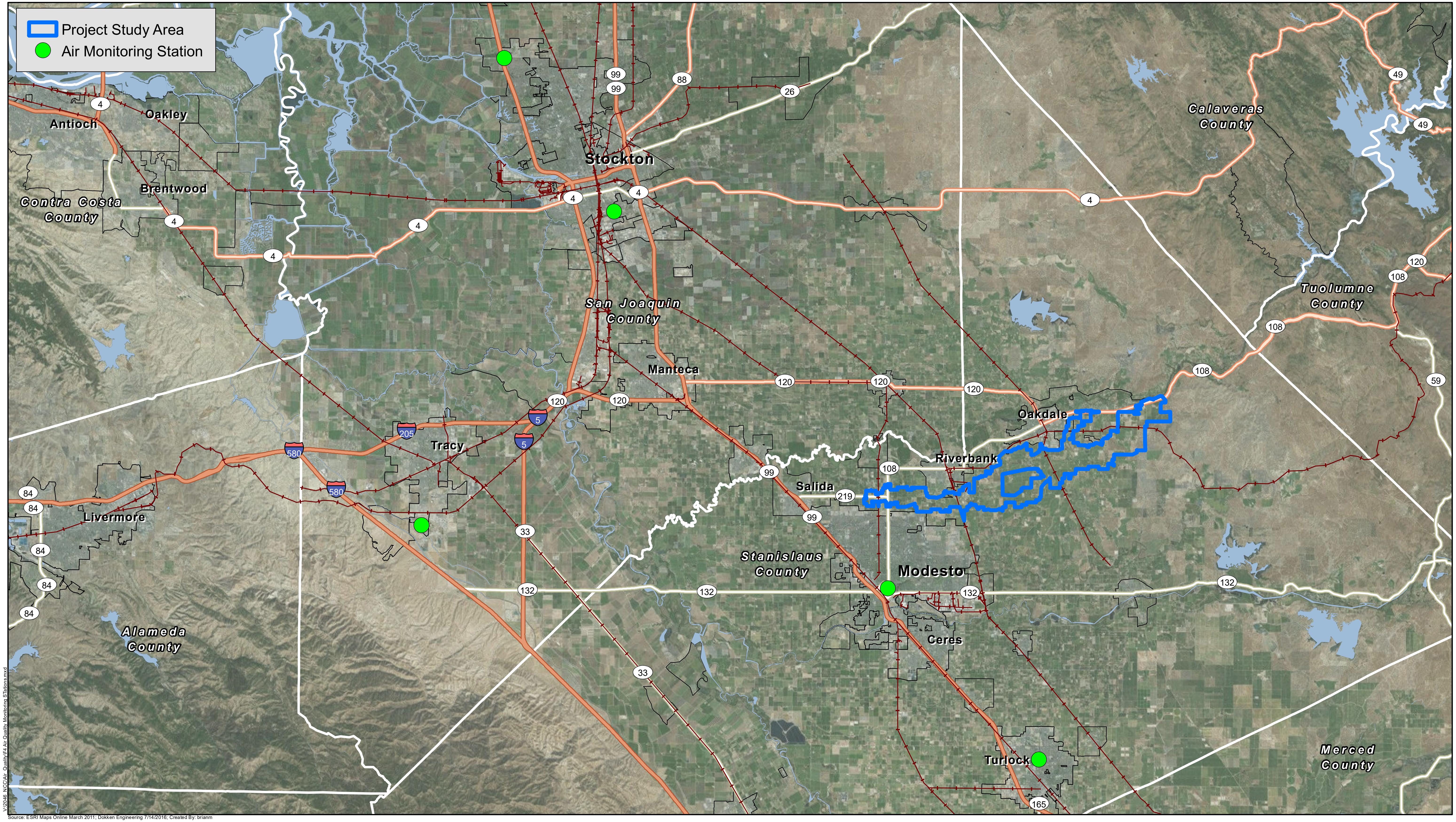
The closest ARB air quality monitoring station to the project is located on 14th Street in Modesto. A summary of 2011-2015 monitoring data from this station is included in Table 2. Ambient nitrogen dioxide concentration is not monitored at the Modesto station. The nearest station that monitors nitrogen dioxide is in Turlock. Nitrogen dioxide data from the Turlock station is shown in Table 2. Ambient sulfur dioxide concentration is not monitored at the Modesto station. The nearest station that monitors sulfur dioxide is located in Fresno, which is not near the affected area of the project. Accordingly, Table 2 does not include sulfur dioxide data. The data in Table 2 were compiled from the California Air Resources Board's *iADAM: Air Quality Data Statistics* (CARB 2016b).

As shown in Table 2, the area surrounding the project did not exceed the state or federal standards for nitrogen dioxide or 8-hour carbon monoxide in the period 2010–2014. Levels of ozone exceeded the state and federal 8-hour standards on multiple days in all five years. Levels of PM_{10} exceeded the state 24-hour standard on multiple days in the years for which data are available, and exceeded the state annual mean standard in those years as well. Levels of $PM_{2.5}$ exceeded federal annual mean standard in multiple years and exceeded the federal 24-hour standard on multiple days in all years in which data was available. Levels of $PM_{2.5}$ also exceeded the state standard in 2012 and 2013.

Table 2. Ambient Air Quality Data

Criteria Pollutant	Ambient Air Quality Standard	2011	2012	2013	2014	2015
Ozone (O_3)						
Maximum 1 Hour Concentration (ppm)	State	0.091	0.104	0.088	0.103	0.111
	Federal: N/A	--	--	--	--	--
Number of Days Exceeded	State: > 0.09	0	2	0	1	5
	Federal: N/A	--	--	--	--	--
Maximum 8 Hour Concentration (ppm)	State:	0.078	0.091	0.082	0.091	0.093
	Federal:	0.078	0.091	0.082	0.090	0.093
Number of Days Exceeded	Federal: >0.07	7	12	13	24	16
	Federal: >0.075	3	6	2	12	24
Respirable particulate Matter (PM10)						
Maximum 24-Hour Concentration (µg/m^3)	State	73.5	74.6	77.5	N/D	90.3
	National	69.4	74.1	73.0	122.5	85.6
Number of Days Exceeded (Estimated)	State: >50	N/D	30.9	57.7	N/D	31.1
	Federal: >150	0	0	0	0	0
Annual Arithmetic Mean Concentration						
Exceeded for the Year	State: >20	N/D	25.6	30.9	N/D	277
	Federal: N/A	--	--	--	--	--
Fine Particulate Matter (PM2.5)						
Maximum 24-hour Concentration (µg/m^3)	State	71.7	62.3	83.2	58.2	46.4
	Federal	71.7	62.3	83.2	58.2	44.0
Number of Days Exceeded Standard	State: >12	N/D	30.9	57.7	N/D	N/D
	Federal: >12	25.0	13.0	37.6	17.0	N/D
Carbon Monoxide (CO)						
Maximum 1 hour Concentration (ppm)		N/D	N/D	N/D	N/A	N/A
Number of Days Exceeded Standard	State: >20	N/D	N/D	N/D	N/A	N/A
	Federal: >35	N/D	N/D	N/D	N/A	N/A
Maximum 8-Hour Concentration (ppm)		2.71	2.10	N/D	N/A	N/A
	State: >9	0	0	0	N/A	N/A
Number of Days Exceeded	Federal: >9	0	0	0	N/A	N/A
Nitrogen Dioxide (NO2)						
Maximum 1 Hour Concentration (ppb)		54	61	54	N/D	N/D
Number of Days Exceeded Standard	State: >180	0	0	0	N/A	N/A
	Federal: >100	0	0	0	N/A	N/A
Annual Arithmetic Mean Concentration		N/D	N/D	11	N/A	N/A
Exceeded for the Year	State: >30	N/D	N/D	11	N/D	N/D
	Federal:>53	N/D	N/D	N/D	N/D	N/D

Source: CARB 2016b
N/D: No Data
N/A: Not Available



1 inch = 25,000 feet

0 2 4 6 8 10 Miles

FIGURE 4
Air Quality Monitoring Stations
EA: 10-0S8000, Project ID # 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

4.2 Attainment Status

State law requires the ARB to designate areas of the state as attainment, nonattainment, nonattainment-transitional, or unclassified for each California Ambient Air Quality Standard (CAAQS). An area is designated attainment for a given criteria pollutant if the state standard for that pollutant was not violated at any site in the area during a three-year period. An area is designated nonattainment for a given pollutant if there was at least one violation of a state standard for that pollutant in the area. A pollutant is designated nonattainment-transitional if the area is close to attaining the standard for that pollutant. A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment. To identify the severity of the problem and the extent of planning required, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe, extreme).

The size of the CAAQS designated areas may vary depending on the pollutant, the location of contributing emission sources, the meteorology, and the topographic features. Currently, areas for ozone, nitrogen dioxide, PM_{10}, sulfates, and visibility reducing particles are designated at the air basin level. Areas for carbon monoxide, sulfur dioxide, lead, and hydrogen sulfide are designated at the county level. Each year, the Board reviews the area designations and updates them as appropriate, based on the three most recent complete and validated calendar years of air quality data.

The Federal Clean Air Act requires the EPA to designate areas as attainment, nonattainment, or unclassified for the National Ambient Air Quality Standards (NAAQS). These designations are similar to their state-level counterparts. Areas that were nonattainment but have recently achieved attainment are referred to as maintenance areas. Table 3 provides a summary of the NAAQS and CAAQS attainment status in the vicinity of the project. The SJVAB is in nonattainment for federal ozone (Figure 5) and $PM_{2.5}$ (Figure 6) standards.

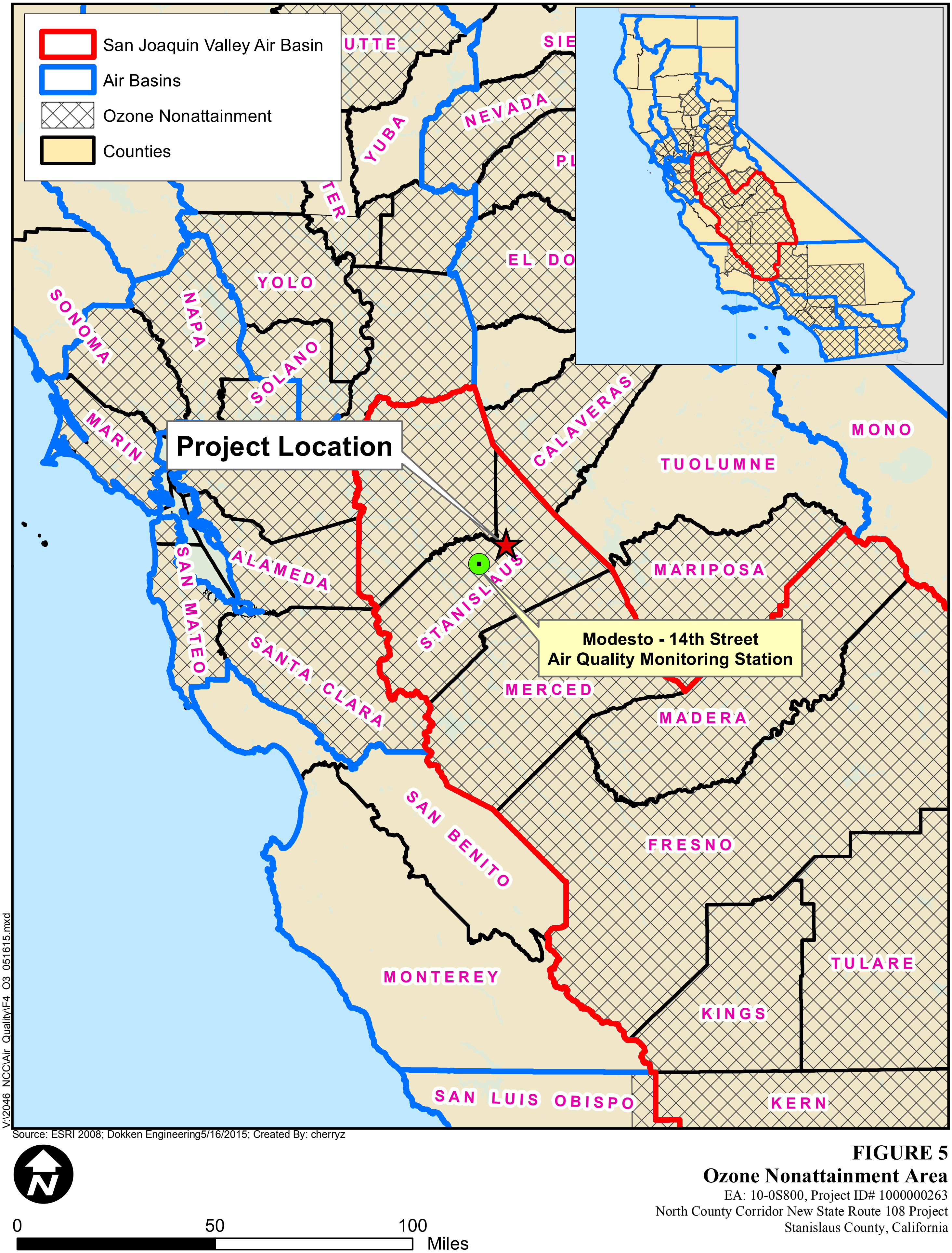
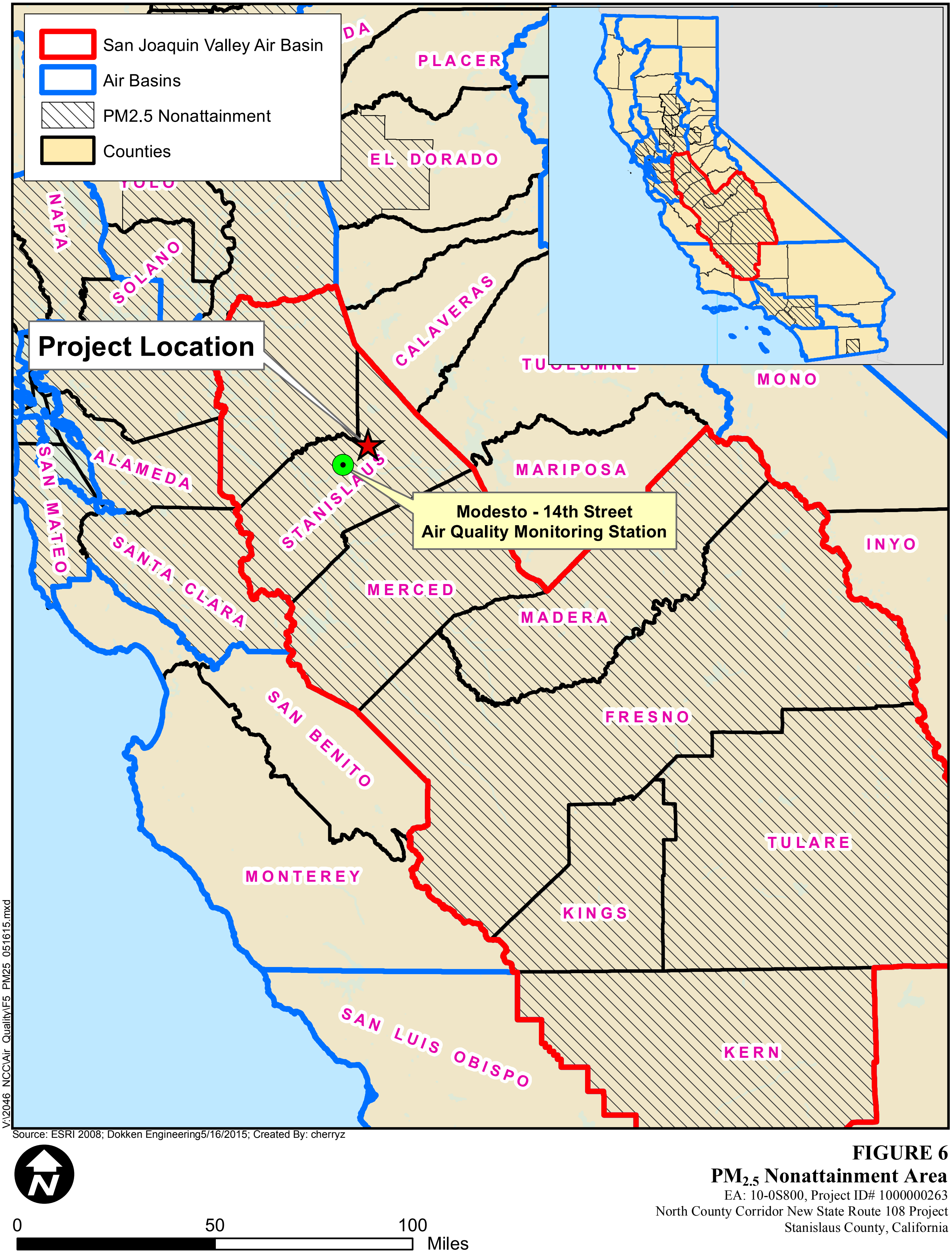


FIGURE 5

Ozone Nonattainment Area

EA: 10-0S800, Project ID# 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California



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Source: ESRI 2008; Dokken Engineering5/16/2015; Created By: cherryz

FIGURE 6
$PM_{2.5}$ Nonattainment Area
EA: 10-0S800, Project ID# 1000000263
North County Corridor New State Route 108 Project
Stanislaus County, California

Table 3. NAAQS and CAAQS Attainment Status

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – 8-Hour	Extreme Nonattainment	Nonattainment*
Ozone – 1-Hour	Not Applicable	Severe Nonattainment*
PM_{10}	Attainment (Maintenance)	Nonattainment
$PM_{2.5}$	Nonattainment (Moderate)	Nonattainment
Carbon Monoxide	Attainment (Maintenance)	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified/Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Lead	Unclassified/Attainment	Attainment
Sources: CARB 2013, EPA 2014a		

4.3 Air Pollutant Properties, Effects, and Sources

The following section describes the pollutants of greatest importance in the San Joaquin Valley. It provides a description of the physical properties, the health and other effects of the pollutant, and the sources of the pollutant.

Ozone (O_3)

Ozone is a photochemical pollutant: it is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between reactive organic gases (ROG), NO_x, and sunlight. ROG and NO_x are emitted from automobiles, solvents, and fuel combustion, the sources of which are widespread throughout the SJV. In order to reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind.

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels.

Reactive Organic Gases (ROG)

Reactive organic gases, also known as volatile organic compounds, are photochemically reactive hydrocarbons that are important for ozone formation. This definition excludes methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, methylene chloride, methyl chloroform and various chlorofluorocarbons (CFCs).

There are no health standards for ROG separately. The main concern with ROG is its role in photochemical ozone formation. In addition, some compounds that make up ROG are also toxic. An example is benzene, which is a carcinogen. The primary sources of ROG are mobile sources, solvents, farming operations and other area sources, and oil & gas production.

Nitrogen Oxides (NO_x)

NO_x is a family of gaseous nitrogen compounds and are precursors to ozone formation. The major component of NO_x, nitrogen dioxide (NO_2), is a reddish-brown gas that is toxic at high concentrations. NO_x results primarily from the combustion of fossil fuels under high temperature and pressure.

Health effects associated with NO_x are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. Airborne NO_x can also impair visibility. NO_x is a major contributor to acid deposition in California. Motor vehicles and fuel combustion are the major sources of this air pollutant.

Carbon Monoxide (CO)

CO is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels and is emitted directly into the air. Under most conditions, CO does not persist in the atmosphere and is rapidly dispersed. CO exceedances are most likely to occur in the winter, when relatively low inversion levels trap pollutants near the ground and concentrate the CO. Since CO is somewhat soluble in water, normal winter conditions of rainfall and fog can suppress CO concentrations.

CO binds strongly to hemoglobin, the oxygen-carrying protein in blood, and thus reduces the blood’s capacity for carrying oxygen to the heart, brain, and other parts of the body. The primary source of CO in the SJV is on-road motor vehicles. Other CO sources in the SJV include other mobile sources and waste burning. Because most of these CO sources are the indirect result of urban development, most emissions and unhealthful CO levels occur in major urban areas.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Suspended particulate matter (airborne dust) consists of particles small enough to remain suspended in the air for long periods. Respirable particulate matter (PM_{10} and $PM_{2.5}$) includes particulates of 10 microns or less in diameter—those which are small enough to be inhaled, pass through the respiratory system, and lodge in the lungs, with resultant health effects. PM_{10} and $PM_{2.5}$ are comprised of dust, sand, salt spray, metallic, and mineral particles, pollen, smoke, mist, and acid fumes. Also of importance are sulfate and nitrates, which are secondary particles formed as precipitates from photochemical reactions of gaseous sulfur dioxide (SO_2) and NO_x in the atmosphere. The actual composition of PM_{10} and $PM_{2.5}$ varies greatly with time and location. It depends on the sources of the material and meteorological conditions.

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Generally speaking, $PM_{2.5}$ sources tend to be combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include these same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent sources of airborne dust in the SJVAB.

Toxic Air Contaminants (TAC)

TACs include air pollutants that may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. ARB regulates emissions of TACs through the California Air Toxics Program. For transportation projects, TACs are primarily analyzed as Mobile Source Air Toxics (MSAT).

Motor vehicles and their fuels are the largest source of toxic air emissions, with particulate matter from diesel-fueled engines (diesel PM) contributing over 70% of the known risk from air toxics today. Diesel PM has the potential to cause cancer, premature death, and other health problems. Those most vulnerable are children whose lungs are still developing and the elderly who may have other serious health problems. Diesel engines also contribute to California's fine particulate matter ($PM_{2.5}$) air quality problems.

Naturally occurring asbestos (NOA) is a designated TAC. When rock containing asbestos is broken or crushed, asbestos fibers may be released and become airborne. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma, and asbestosis.

Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

Odors

While offensive odors rarely cause physical harm, they can be unpleasant, leading to considerable annoyance and distress among the public and can generate citizen complaints to local governments and air districts. Odors can be generated from a variety of source types, including both construction and operational activities.

4.4 Potential Sensitive Receptors

Sensitive receptors are facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. Air quality problems arise when sources of air pollutants and sensitive receptors are located near one another.

The project is not located within 1,000 ft of a hospital, school, or convalescent facility. Land use within and around the project area includes commercial, industrial, residential, and open land/agricultural.

Chapter 5. Impacts

5.1 Study Methods

This study was conducted in accordance with the air quality analysis guidance provided in the Caltrans *Standard Environmental Reference* and the San Joaquin Valley Air Pollution Control District (SJVAPCD) *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2002). Data and background information for air pollutants of concern in the San Joaquin Valley were retrieved from the websites of the SJVAPCD, ARB, Caltrans, FHWA, and USEPA. Federal guidance and protocol documents were used to evaluate the project's potential air quality impacts, in accordance with federal transportation conformity guidelines. Sacramento AQMD's Roadway Construction Emissions Model was used to calculate estimated construction emissions.

Estimated project-related air pollutant emissions were compared to standard SJVAPCD significance thresholds to understand the relative severity of potential impacts. Proposed avoidance, minimization, and/or mitigation measures are in accordance with the referenced guidance documents and SJVAPCD rules.

5.2 Construction Impacts

Construction air quality impacts are generally attributable to dust generated by equipment and vehicles. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Clearing and earth moving activities do comprise major sources of construction dust emissions, but traffic and general disturbances of soil surfaces also generate substantial dust emissions. Further, dust generation is dependent on soil type and soil moisture.

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

The project's construction is anticipated to take 2 years. The project's construction emissions were estimated using the Roadway Construction Emissions Model by the Sacramento Metropolitan Air Quality Management District (SMAQMD 2013), which is the accepted model for all CEQA roadway projects throughout California. As summarized in Table 4, construction activities from the project are similar between all Build alternatives. The model printout is also included in Appendix C. .

Table 4. Construction Emissions and Local Level

	Project Construction Emissions (tons/yr)				SJVAPCD AQ Significance Thresholds (tons/yr)
	1A	1B	2A	2B	
NO_x	19.8	21.3	19.3	22.1	10
ROG	2.0	2.2	2.0	2.2	10
PM_{10}	12.1	12.2	12.1	12.2	15
$PM_{2.5}$	3.1	3.1	3.1	3.1	15
CO	13.4	14.7	13.5	14.7	100
SO_x	not available	not available	not available	not available	27
Source: SMAQMD 2013, SJVAPCD 2014					

Due to the scale of this project, construction emissions of NO_x are expected to exceed the levels established by the SJVAPCD. Furthermore, any transportation project within the SJVAB which is expected to generate construction emissions of greater than or equal to 2.0 tons of NO_x or 2.0 tons of PM_{10} is subject to SJVAPCD Rule 9510. This project is therefore subject to SJVAPCD Rule 9510 and as such, will be subject to Indirect Source Review (ISR) and an Air Impact Assessment (AIA). The results of the ISR-AIA will determine the appropriate mitigation for construction emissions. Measure AQ-4 will be required to ensure compliance with SJVAPCD Rule 9510.

Naturally Occurring Asbestos (NOA)

Based on review of the map, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (California Department of Conservation, Division of Mines and Geology, 2000), ultramafic rock is not mapped in north-central Stanislaus County and therefore NOA is not expected to occur at the project site.

Construction Measures

The following measures would be implemented as part of the project to minimize short-term construction related air quality emissions:

AQ-1: The construction contractor shall comply with Caltrans' Standard Specifications Section 14-9.03 Dust Control of Caltrans' Standard Specifications (2010).

AQ-2: The construction contractor shall comply with Section 7-1.02 Emissions Reduction and Section 18 Dust Palliative of Caltrans' Standard Specifications (2010).

AQ-3: The Wind Erosion Control BMP (WE-1) from Caltrans' *Construction Site Best Management Practices Manual* will be implemented as follows:

- Water shall be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment shall be equipped with a positive means of shutoff.
- In order to ensure compliance with AQ-1 and AQ-2, unless water is applied by means of pipelines, a sufficient number of mobile units shall be available at all times to apply water or dust palliative to the project.
- If reclaimed water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. Non-potable water shall not be conveyed in tanks or drain pipes that will be used to convey potable water and there shall be no connection between potable and non-potable supplies. Non-potable tanks, pipes and other conveyances shall be marked "NON-POTABLE WATER – DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders will also provide wind erosion control benefits.

AQ-4: Per SJVAPCD Rule 9510, an ISR application will be submitted prior to seeking final discretionary approval for the project.

5.3 Long-term Emissions

The proposed project is located in an area designated nonattainment for federal ozone and $PM_{2.5}$ standards. The area is also designated maintenance for CO and PM_{10}. As such, the project is not exempt from conformity per 40 CFR 93.126 or 40 CFR 93.128. It is exempt from regional conformity per 40 CFR 93.127.

Regional Conformity

The proposed project is listed in the Stanislaus Council of Governments (StanCOG) financially constrained 2014 Regional Transportation Plan (RTP). The project is also included in the StanCOG financially constrained 2015 Federal Transportation Improvement Program (FTIP). The StanCOG 2014 RTP and 2015 FTIP were found to conform by StanCOG on June 18, 2014, and FHWA and FTA completed the regional conformity determination on December 15, 2014 (see Appendix A). The design concept and scope of the proposed project is consistent with the project description in the 2014 RTP, 2015 FTIP, and the “open to traffic” assumptions of the StanCOG 2014 Air Quality Conformity Analysis (StanCOG 2014a).

The North County Corridor New State Route 108 Project was included in the regional emissions analysis conducted by StanCOG for the conforming 2014 Regional Transportation Plan (StanCOG 2014b). The plan is in conformity, and therefore, the individual projects contained in the plan are conforming projects and will have air quality impacts consistent with those identified in the state implementation plans (SIPs) for achieving the National Ambient Air Quality Standards (NAAQS).

Once the aforementioned conformity determinations are issued, the project will meet the regional conformity requirements established by the federal Clean Air Act.

Project-Level Conformity

Particulate Matter

The project is subject to PM conformity analysis because it is located within a $PM_{2.5}$ nonattainment area. As the first step in demonstrating $PM_{2.5}$/PM_{10} conformity, Interagency Consultation has been conducted to determine if it is a Project of Air Quality Concern (POAQC) as defined in 40 CFR 93.116 and 93.123 and U.S.EPA’s Hot-Spot Guidance. Concurrence was received from the EPA and FHWA on January 29, 2015 that the project is not a POAQC. Caltrans also provided concurrence that the project is not a POAQC on January 22, 2015. The concurrence letters and e-mail correspondence is included in Appendix D of this Air Quality Report.

Table 5. Projects of Air Quality Concern

EPA Definition of POAQC		Proposed Project
(i)	New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;	While the project is a new highway project, it does not involve a significant number of or significant increase in diesel vehicles. The most heavily traveled segment has a projected design year (2042) ADT of 49,700, of which a projected 11% are trucks. This segment is thereby projected to have a truck ADT of 5,467, which is well below the general threshold of 10,000 diesel trucks.
(ii)	Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;	The anticipated number of diesel vehicles is not significant (see above).
(iii)	New bus and rail terminals and transfer points than have a significant number of diesel vehicles congregating at a single location;	Bus and rail terminals and transfer points are not part of this project.
(iv)	Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and	Expanded bus and rail terminals and transfer points are not part of this project.
(v)	Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.	The project is not in, nor will it affect, a location of violation or possible violation
Source: Traffic information from Fehr & Peers 2014.		

Table 5 explains why the project does not meet the definition of a Project of Air Quality Concern (POAQC).

Table 6 details the estimated emissions of the Existing, No-Build, and Build Alternatives. Alternatives 1A, 1B, 2A, and 2B would result in lower PM10 and PM2.5 emissions than the No-Build and the Existing condition. Alternative 1A is estimated to have the lowest PM10 and PM2.5 emissions from the Build Alternatives.

Table 6. Estimated PM10 and PM2.5 Emissions (lbs/year)

Criteria Pollutant	Existing	Year 2022					Year 2042				
		No-Build	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B	No-Build	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B
PM10	2,710	2,947	2,985	3,018	2,982	3,020	1,184	961	984	1,025	1,067
PM2.5	2,508	2,717	2,752	2,782	2,749	2,783	1,089	884	906	943	981
Source: Fehr & Peers 2014b; EMFAC 2014											

Carbon Monoxide Hot-Spot Analysis

The Transportation Project-Level Carbon Monoxide Protocol (University of California, Davis, Institute of Transportation Studies (UCD ITS) (1997) was used to determine the analysis needed regarding potential project-level CO impacts. The guidelines in the Protocol comply with the Clean Air Act, federal and state conformity rules, NEPA, and CEQA.

Two conformity-requirement decision flow charts are provided in the Protocol and are attached (see Appendix B). An explanatory discussion of the steps (as identified in Figure 1 of the Protocol, Requirements for New Projects) used to determine the conformity requirements that apply to new projects is provided below.

3.1.1 Is the project exempt from all emissions analyses? (See Table 1 of Protocol.) **NO.** The proposed project is not exempt from all emissions analyses.

3.1.2 Is the project exempt from regional emissions analysis? (See Table 2 of Protocol.) **NO.** The proposed project is a roadway construction project, which is not exempt from regional emissions analysis per CFR 93.127.

3.1.3 Is the project locally defined as regionally significant? **YES.** The proposed project will construct a new 2-6 lane expressway. The project was listed as a capacity enhancing project in the StanCOG Air Quality Conformity Analysis for the 2014 RTP. As such, the project is locally defined as regionally significant in accordance with 40 CFR 93.101.

3.1.4 Is the project in a federal attainment area? **NO.** The project is located within an attainment/maintenance area for the federal CO standard.

3.1.5 Are there a currently conforming Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP)? **YES.** The current RTP and TIP have been found to conform by StanCOG, and a conformity determination from FHWA and FTA was completed on December 15, 2014 (see Appendix A).

3.1.6 Is the project included in the regional emissions analysis supporting the currently conforming RTP and TIP? **YES.** The project is included in the StanCOG 2014 RTP and 2015 FTIP (Project ID: SC03; Description: North County Corridor, Tully Road to SR-120/108, Construct 2-6 lane expressway).

3.1.7 Has the project design/concept and/or scope changed significantly from that in the regional analysis? **NO.** The proposed Build Alternatives are consistent with the project description in the 2014 RTP/2015 FTIP.

3.1.9 Examine local impacts. (Proceed to Section 4.)

Section 4 of the Protocol assesses local analysis. Assessment of the project's effect on localized ambient air quality is based on analysis of CO and PM_{10} emissions, with the focus on CO. Localized emissions of CO and PM_{10} may increase with implementation of the proposed project. CO is used as an indicator of a project's direct and indirect impact on local air quality, because CO does not readily disperse in the local environment in cool weather when the wind is fairly still. As stated in the Protocol, the determination of project-level CO impacts should be carried out according to the Local Analysis flow chart shown in Figure 2 of the Protocol. The following discussion provides explanatory remarks for every step of the local analysis in Figure 2 of the protocol.

Level 1: Is the project in a CO nonattainment area? **NO.** The project site is located in a federal attainment/maintenance area.

Level 1 (Continued): Was the area redesignated as "attainment" after the 1990 Clean Air Act? **YES.** EPA approved the maintenance plans and redesignation request in 1998.

Level 1 (Continued): Has "continued attainment" been verified with the local Air District, if appropriate? **YES.** The project area continues to be in attainment for CO. (Proceed to Level 7).

Level 7: Does the project worsen air quality? **YES.** The proposed project will construct a new roadway. Therefore, the proposed project would potentially worsen air quality:

a. Does the project significantly increase the percentage of vehicles operating in cold start mode? Increasing the number of vehicles operating in cold start mode by as little as 2% should be considered potentially significant.

No, the project does not significantly increase the percentage of vehicles operating in cold start. It is anticipated that all vehicles in the project intersections are in a fully warmed-up mode.

b. Does the project significantly increase traffic volumes? Increases in traffic volumes in excess of 5% should be considered potentially significant. Increasing the traffic volume by less than 5% may still be potentially significant if there is a corresponding reduction in average speeds.

Yes, as indicated in Tables 7 through 10, the proposed project would significantly increase traffic volumes along Claribel Road and the proposed North County Corridor.

c. *Does the project worsen traffic flow? For uninterrupted roadway segments, higher average speeds (up to 50 mph) should be regarded as an improvement in traffic flow. For intersection segments, higher average speeds and a decrease in average delay should be considered an improvement in traffic flow.*

No, as shown in Tables 11 and 12, the project would improve the level of service (LOS) at the majority of intersections in the project area.

Level 7 (Continued): Is the project suspected of resulting in higher CO concentrations than those existing within the region at the time of attainment demonstration? **NO.** The 2004 Revision to the California State Implementation Plan for Carbon Monoxide (ARB, July 22, 2004) shows that the 8-hour CO concentration in Modesto was 3.7 parts per million (ppm) in 2003, 61 percent below the federal standard. Between 2010 and 2012, the maximum 8-hour CO concentration measured in Modesto was 2.7 ppm, 71 percent below the federal standard. Therefore, it is unlikely that the proposed project would result in a new exceedance of the CO standards. However, to demonstrate that the proposed project would not result in any new exceedances the CO concentrations at the most congested intersections in the project area were modeled. Tables 13 through 16 list the 1-hour and 8-hour CO concentrations under the build-out year (2042) conditions. As shown, none of the intersections would result in any concentrations exceeding the 1-hour or 8-hour CO standards.

Table 7. 2022 Traffic Data (ADT/Truck ADT) for Alternatives 1A and 1B

Roadway Segment	Without Project	With Project Alternative 1A	Project Related Increase in Traffic	With Project Alternative 1B	Project Related Increase in Traffic
Patterson Road between SR-108 and Oakdale Road	17,300 / 1,211	15,400 / 1,078	-1,900 / -133	15,700 / 1,099	-1,600 / -112
Atchison Street West of 1st Street	22,600 / 1,582	19,700 / 1,379	-2,900 / -203	20,200 / 1,414	-2,400 / -168
Atchison Street between 1st Street and Claus Road	18,700 / 1,309	13,800 / 966	-4,900 / -343	14,300 / 1,001	-4,400 / -308
SR-108 between Langworth Road and Crane Road	19,400 / 1,358	11,400 / 798	-8,000 / -560	12,500 / 875	-6,900 / -483
F Street East of Crane Road	19,100 / 1,337	15,100 / 1,057	-4,000 / -280	16,300 / 1,141	-2,800 / -196
F Street West of Yosemite Avenue	18,500 / 1,295	14,300 / 1,001	-4,200 / -294	15,500 / 1,085	-3,000 / -210
F Street East of Yosemite Avenue	25,600 / 1,792	14,600 / 1,022	-11,000 / -770	17,600 / 1,232	-8,000 / -560
SR-108 West of Wamble Road	18,200 / 1,274	18,200 / 1,274	0 / 0	11,700 / 819	-6,500 / -455
Claribel Road West of McHenry Avenue	20,900 / 1,463	23,600 / 1,652	2,700 / 189	23,600 / 1,652	2,700 / 189
Claribel Road between McHenry Avenue and Coffee Road	16,600 / 1,162	30,800 / 2,156	14,200 / 994	30,800 / 2,156	14,200 / 994
Claribel Road between Coffee Road and Oakdale Road	14,800 / 1,036	28,700 / 2,009	13,900 / 973	28,300 / 1,981	13,500 / 945
Claribel Road between Oakdale Road and Roselle Avenue	17,000 / 1,190	27,200 / 1,904	10,200 / 714	26,800 / 1,876	9,800 / 686
Claribel Road between Roselle Avenue and Claus Road	17,000 / 1,190	27,100 / 1,904	10,200 / 714	26,800 / 1,876	9,800 / 686
Claribel Road West of Langworth Road	11,300 / 791	6,400 / 448	-4,900 / -343	6,400 / 448	-4,900 / -343
Claribel Road West of Albers Road	8,000 / 560	4,900 / 343	-3,100 / -217	4,900 / 343	-3,100 / -217
North County Corridor between Claus Road and Langworth Road	N/A	25,500 / 2,805	25,500 / 2,805	24,600 / 2,706	24,600 / 2,706
North County Corridor between Langworth Road and Albers Road	N/A	18,400 / 2,024	18,400 / 2,024	16,700 / 1,837	16,700 / 1,837
North County Corridor East of Albers Road	N/A	12,200 / 1,342	12,200 / 1,342	9,000 / 990	9,000 / 990
North County Corridor South of SR-108	N/A	7,100 / 781	7,100 / 781	5,100 / 561	5,100 / 561

Source: Fehr & Peers, Traffic Operations Report, March 2015.

Note: Daily trucks on existing roadways were based on 7 percent of the average daily traffic and daily trucks on the North County Corridor were based on the projected 11 percent of the average daily traffic.

Table 8. 2022 Traffic Data (ADT/Truck ADT) for Alternatives 2A and 2B

Roadway Segment	Without Project	With Project Alternative 2A	Project Related Increase in Traffic	With Project Alternative 2B	Project Related Increase in Traffic
Patterson Road between SR-108 and Oakdale Road	17,300 / 1,211	16,700 / 1,169	-600 / -42	17,000 / 1,190	-300 / -21
Atchison Street West of 1st Street	22,600 / 1,582	22,400 / 1,568	-200 / -14	22,900 / 1,603	300 / 21
Atchison Street between 1st Street and Claus Road	18,700 / 1,309	16,800 / 1,176	-1,900 / -133	17,400 / 1,218	-1,300 / -91
SR-108 between Langworth Road and Crane Road	19,400 / 1,358	18,200 / 1,274	-1,200 / -84	19,500 / 1,365	100 / 7
F Street East of Crane Road	19,100 / 1,337	15,000 / 1,050	-4,100 / -287	16,200 / 1,134	-2,900 / -203
F Street West of Yosemite Avenue	18,500 / 1,295	13,400 / 938	-5,100 / -357	14,600 / 1,022	-3,900 / -273
F Street East of Yosemite Avenue	25,600 / 1,792	15,200 / 1,064	-10,400 / -728	19,000 / 1,330	-6,600 / -462
SR-108 West of Wamble Road	18,200 / 1,274	18,200 / 1,274	0 / 0	13,100 / 917	-5,100 / -357
Claribel Road West of McHenry Avenue	20,900 / 1,463	22,700 / 1,589	1,800 / 126	22,700 / 1,589	1,800 / 126
Claribel Road between McHenry Avenue and Coffee Road	16,600 / 1,162	28,200 / 1,974	11,600 / 812	28,200 / 1,974	11,600 / 812
Claribel Road between Coffee Road and Oakdale Road	14,800 / 1,036	24,200 / 1,694	9,400 / 658	24,000 / 1,680	9,200 / 644
Claribel Road between Oakdale Road and Roselle Avenue	17,000 / 1,190	25,100 / 1,757	8,100 / 567	24,600 / 1,722	7,600 / 532
Claribel Road between Roselle Avenue and Claus Road	17,000 / 1,190	24,800 / 1,736	7,800 / 546	24,300 / 1,701	7,300 / 511
Claribel Road West of Langworth Road	11,300 / 791	20,600 / 1,442	9,300 / 651	19,200 / 1,344	7,900 / 553
Claribel Road West of Albers Road	8,000 / 560	20,600 / 1,442	12,600 / 882	19,200 / 1,344	11,200 / 784
North County Corridor between Albers Road and Oakdale Waterford Highway	N/A	17,700 / 1,947	17,700 / 1,947	15,300 / 1,683	15,300 / 1,683
North County Corridor East of Oakdale Waterford Highway	N/A	9,200 / 1,012	9,200 / 1,012	5,100 / 561	5,100 / 561
North County Corridor South of SR-108	N/A	5,300 / 583	5,300 / 583	3,500 / 385	3,500 / 385

Source: Fehr & Peers, Traffic Operations Report, March 2015.
Note: Daily trucks on existing roadways were based on 7 percent of the average daily traffic and daily trucks on the North County Corridor were based on the projected 11 percent of the average daily traffic.

Table 9. 2042 Traffic Data (ADT/Truck ADT) for Alternatives 1A and 1B

Roadway Segment	Without Project	With Project Alternative 1A	Project Related Increase in Traffic	With Project Alternative 1B	Project Related Increase in Traffic
Patterson Road between SR-108 and Oakdale Road	19,200 / 1,344	17,100 / 1,197	-2,100 / -147	17,400 / 1,218	-1,800 / -126
Atchison Street West of 1st Street	25,000 / 1,750	21,800 / 1,526	-3,200 / -224	22,400 / 1,568	-2,600 / -182
Atchison Street between 1st Street and Claus Road	21,400 / 1,498	15,800 / 1,106	-5,600 / -392	16,400 / 1,148	-5,000 / -350
SR-108 between Langworth Road and Crane Road	22,400 / 1,568	13,200 / 924	-9,200 / -644	14,500 / 1,015	-7,900 / -553
F Street East of Crane Road	21,200 / 1,484	16,800 / 1,176	-4,400 / -308	18,100 / 1,267	-3,100 / -217
F Street West of Yosemite Avenue	20,900 / 1,463	16,100 / 1,127	-4,800 / -336	17,500 / 1,225	-3,400 / -238
F Street East of Yosemite Avenue	31,200 / 2,184	17,800 / 1,246	-13,400 / -938	21,500 / 1,505	-9,700 / -679
SR-108 West of Wamble Road	23,400 / 1,638	23,400 / 1,638	0 / 0	15,100 / 1,057	-8,300 / -581
Claribel Road West of McHenry Avenue	35,200 / 2,464	40,200 / 2,814	5,000 / 350	40,200 / 2,814	5,000 / 350
Claribel Road between McHenry Avenue and Coffee Road	28,200 / 1,974	49,700 / 3,479	21,500 / 1,505	49,500 / 3,465	21,300 / 1,491
Claribel Road between Coffee Road and Oakdale Road	18,600 / 1,302	46,100 / 3,227	27,500 / 1,925	45,600 / 3,192	27,000 / 1,890
Claribel Road between Oakdale Road and Roselle Avenue	21,000 / 1,470	36,700 / 2,569	15,700 / 1,099	35,900 / 2,513	14,900 / 1,043
Claribel Road between Roselle Avenue and Claus Road	21,000 / 1,470	36,700 / 2,569	15,700 / 1,099	35,900 / 2,513	14,900 / 1,043
Claribel Road West of Langworth Road	18,700 / 1,309	10,600 / 742	-8,100 / -567	10,600 / 742	-8,100 / -567
Claribel Road West of Albers Road	11,000 / 770	6,700 / 469	-4,300 / -301	6,700 / 469	-4,300 / -301
North County Corridor between Claus Road and Langworth Road	N/A	34,300 / 3,773	34,300 / 3,773	33,100 / 3,641	33,100 / 3,641
North County Corridor between Langworth Road and Albers Road	N/A	24,700 / 2,717	24,700 / 2,717	23,800 / 2,618	23,800 / 2,618
North County Corridor East of Albers Road	N/A	16,400 / 1,804	16,400 / 1,804	12,300 / 1,353	12,300 / 1,353
North County Corridor South of SR-108	N/A	9,600 / 1,056	9,600 / 1,056	7,200 / 792	7,200 / 792

Source: Fehr & Peers, Traffic Operations Report, March 2015.

Note: Daily trucks on existing roadways were based on 7 percent of the average daily traffic and daily trucks on the North County Corridor were based on the projected 11 percent of the average daily traffic.

Table 10. 2042 Traffic Data (ADT/Truck ADT) for Alternatives 2A and 2B

Roadway Segment	Without Project	With Project Alternative 2A	Project Related Increase in Traffic	With Project Alternative 2B	Project Related Increase in Traffic
Patterson Road between SR-108 and Oakdale Road	19,200 / 1,344	18,500 / 1,295	-700 / -49	18,800 / 1,316	-400 / -28
Atchison Street West of 1st Street	25,000 / 1,750	24,800 / 1,736	-200 / -14	25,300 / 1,771	300 / 21
Atchison Street between 1st Street and Claus Road	21,400 / 1,498	19,200 / 1,344	-2,200 / -154	19,900 / 1,393	-1,500 / -105
SR-108 between Langworth Road and Crane Road	22,400 / 1,568	21,000 / 1,470	-1,400 / -98	22,500 / 1,575	100 / 7
F Street East of Crane Road	21,200 / 1,484	16,600 / 1,162	-4,600 / -322	17,900 / 1,253	-3,300 / -231
F Street West of Yosemite Avenue	20,900 / 1,463	15,100 / 1,057	-5,800 / -406	16,500 / 1,155	-4,400 / -308
F Street East of Yosemite Avenue	31,200 / 2,184	18,500 / 1,295	-12,700 / -889	23,100 / 1,617	-8,100 / -567
SR-108 West of Wamble Road	23,400 / 1,638	23,400 / 1,638	0 / 0	16,800 / 1,176	-6,600 / -462
Claribel Road West of McHenry Avenue	35,200 / 2,464	38,200 / 2,674	3,000 / 210	38,200 / 2,674	3,000 / 210
Claribel Road between McHenry Avenue and Coffee Road	38,200 / 2,674	48,400 / 3,388	10,200 / 714	48,400 / 3,388	10,200 / 714
Claribel Road between Coffee Road and Oakdale Road	18,600 / 1,302	40,600 / 2,842	22,000 / 1,540	40,300 / 2,821	21,700 / 1,519
Claribel Road between Oakdale Road and Roselle Avenue	21,000 / 1,470	31,100 / 2,177	10,100 / 707	29,900 / 2,093	8,900 / 623
Claribel Road between Roselle Avenue and Claus Road	21,000 / 1,470	31,000 / 2,170	10,000 / 700	29,800 / 2,086	8,800 / 616
Claribel Road West of Langworth Road	18,700 / 1,309	25,500 / 1,785	6,800 / 476	24,100 / 1,687	5,400 / 378
Claribel Road West of Albers Road	11,000 / 770	25,500 / 1,785	14,500 / 1,015	24,100 / 1,687	13,100 / 917
North County Corridor between Albers Road and Oakdale Waterford Highway	N/A	21,100 / 2,321	21,100 / 2,321	19,300 / 2,123	19,300 / 2,123
North County Corridor East of Oakdale Waterford Highway	N/A	16,200 / 1,782	16,200 / 1,782	10,300 / 1,133	10,300 / 1,133
North County Corridor South of SR-108	N/A	8,800 / 968	8,800 / 968	6,700 / 737	6,700 / 737

Source: Fehr & Peers, Traffic Operations Report, March 2015.

Note: Daily trucks on existing roadways were based on 7 percent of the average daily traffic and daily trucks on the North County Corridor were based on the projected 11 percent of the average daily traffic.

Table 11. Intersection Analysis – Year 2022 Conditions

Intersection	Peak Hour	No Build		Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
3. McHenry Avenue/Ladd Road	AM	34	C	29	C	29	C	32	C	30	C
	PM	39	D	41	D	44	D	40	D	40	D
5. SR-108/Patterson Road	AM	10	A	8	A	8	A	9	A	8	A
	PM	14	B	12	B	12	B	14	B	13	B
6. McHenry Avenue/Kiernan Avenue	AM	26	C	14	B	14	B	14	B	14	B
	PM	28	C	15	B	14	B	15	B	14	B
7. McHenry Avenue/Claratina Avenue	AM	33	C	30	C	30	C	31	C	29	C
	PM	53	D	39	D	42	D	36	D	37	D
9. Coffee Road/Claratina Avenue	AM	24	C	23	C	23	C	25	C	23	C
	PM	25	C	23	C	23	C	23	C	23	C
13. 1st Street/SR-108	AM	48	D	23	C	23	C	27	C	30	C
	PM	**56**	**E**	31	C	32	C	37	D	38	D
16. Claus Road/Claribel Road	AM	31	C	20	C	20	C	18	B	17	B
	PM	38	D	25	C	27	C	19	B	21	C
17. Crane Road/Patterson Road	AM	5	A	3	A	3	A	3	A	3	A
	PM	14	B	3	A	3	A	4	A	9	A
20. SR-120/SR-108	AM	**56**	**E**	28	C	28	C	28	C	35	C
	PM	**74**	**E**	32	C	36	D	32	C	36	D
22. Albers Road/Patterson Road	AM	28	C	18	B	18	B	23	C	23	C
	PM	26	C	25	C	25	C	26	C	25	C
27. Albers Road/NCC	AM	--[1]	--	19	B	19	B	20	C	20	B
	PM	--	--	35	C	18	B	18	B	17	B
31. McHenry Ave/Galaxy Way	AM	--	--	5	A	5	A	6	A	6	A
	PM	--	--	29	C	10	A	10	A	10	A
38. Claus Road/Claribel Realigned (S)	AM	--	--	7	A	7	A	2	A	2	A
	PM	--	--	19	B	2	A	2	A	4	A

Source: Fehr & Peers, Traffic Operations Report, March 2015.
Notes: Results in bold represent unacceptable levels of service as determined based on applicable standards of relevant jurisdictions.
[1] Not applicable under No Build conditions.

Table 12. Intersection Analysis – Year 2042 Conditions

Intersection	Peak Hour	No Build		Alternative 1A		Alternative 1B		Alternative 2A		Alternative 2B	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
3. McHenry Avenue/Ladd Road	AM	**60**	**E**	51	D	52	D	54	D	**55**	**E**
	PM	**>100**	**F**	**>100**	**F**	**>100**	**F**	**>100**	**F**	**>100**	**F**
5. SR-108/Patterson Road	AM	**>100**	**F**	**>100**	**F**	**>100**	**F**	**>100**	**F**	**>100**	**F**
	PM	**>100**	**F**	16	B	17	B	55	D	41	D
6. McHenry Avenue/Kiernan Avenue	AM	**>100**	**F**	16	B	16	B	16	B	16	B
	PM	**58**	**E**	19	B	20	B	17	B	18	B
7. McHenry Avenue/Claratina Avenue	AM	**> 100**	**F**	**89**	**F**	**100**	**F**	**>100**	**F**	**90**	**F**
	PM	**> 100**	**F**	**>100**	**F**	**>100**	**F**	**>100**	**F**	**>100**	**F**
9. Coffee Road/Claratina Avenue	AM	**>100**	**F**	39	D	40	D	47	D	47	D
	PM	**>100**	**F**	**79**	**E**	**71**	**E**	47	D	50	D
13. 1st Street/SR-108	AM	**>100**	**F**	32	C	33	C	39	D	51	D
	PM	**>100**	**F**	**59**	**E**	**55**	**E**	**73**	**E**	**>100**	**F**
16. Claus Road/Claribel Road	AM	**61**	**E**	33	C	35	D	27	C	28	C
	PM	**59**	**E**	51	D	47	D	37	D	37	D
17. Crane Road/Patterson Road	AM	17	B	13	B	13	B	11	B	11	B
	PM	**>100**	**F**	14	B	14	B	20	C	21	C
20. SR-120/SR-108	AM	**>100**	**F**	36	D	**100**	**F**	36	D	48	D
	PM	**>100**	**F**	46	D	**98**	**F**	52	D	**72**	**E**
22. Albers Road/Patterson Road	AM	**52**	**D**	25	C	25	C	**36**	**D**	**39**	**D**
	PM	**37**	**D**	35	C	34	C	**38**	**D**	**41**	**D**
27. Albers Road/NCC	AM	--[1]	--	40	D	35	C	37	D	35	D
	PM	--	--	35	C	30	C	29	C	29	C
31. McHenry Ave/Galaxy Way	AM	--	--	12	B	12	B	12	B	12	B
	PM	--	--	29	C	28	C	25	C	25	C
38. Claus Road/Claribel Realigned (S)	AM	--	--	12	B	12	B	8	A	8	A
	PM	--	--	19	B	27	C	9	A	9	A

Source: Fehr & Peers, Traffic Operations Report, March 2015.
Notes: Results in bold represent unacceptable levels of service as determined based on applicable standards of relevant jurisdictions.
[1] Not applicable under No Build conditions.

Table 13. 2042 CO Concentrations, Alternative 1A

Intersection	Receptor Distance to Road Centerline (meters)	Project Related Increase 1-hr/8-hr (ppm)	Without/With Project One-Hour CO Concentration (ppm)[1]	Without/With Project Eight-Hour CO Concentration (ppm)[1]	Exceeds State Standards?	
					1-Hr (20 ppm)	8-Hr (9.0 ppm)
SR-108 and Patterson	12 / 12	0.0 / 0.0	3.3 / 3.3	3.0 / 3.0	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 14	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	14 / 14	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
McHenry and Claratina	17 / 17	0.0 / 0.0	3.9 / 3.9	3.4 / 3.4	No	No
	17 / 17	-0.1 / -0.1	3.9 / 3.8	3.4 / 3.3	No	No
	17 / 17	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	17 / 17	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
Coffee and Claratina	14 / 14	0.0 / 0.0	3.8 / 3.8	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
1st and Atchison	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
Claus and Claribel	14 / 14	0.4 / 0.2	3.4 / 3.8	3.1 / 3.3	No	No
	14 / 14	0.3 / 0.2	3.4 / 3.7	3.1 / 3.3	No	No
	14 / 14	0.3 / 0.2	3.4 / 3.7	3.1 / 3.3	No	No
	14 / 14	0.3 / 0.2	3.4 / 3.7	3.1 / 3.3	No	No
Yosemite and F	13 / 13	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	8 / 8	-0.2 / -0.2	3.4 / 3.2	3.1 / 2.9	No	No
	8 / 8	-0.2 / -0.2	3.4 / 3.2	3.1 / 2.9	No	No
	12 / 12	-0.2 / -0.2	3.4 / 3.2	3.1 / 2.9	No	No

Source: LSA Associates, Inc., June 2014.

[1] Includes ambient one-hour concentration of 2.9 ppm and ambient eight-hour concentration of 2.7 ppm. Measured at the 14th Street, Modesto, CA AQ Station in Stanislaus County.

Table 14. 2042 CO Concentrations, Alternative 1B

Intersection	Receptor Distance to Road Centerline (meters)	Project Related Increase 1-hr/8-hr (ppm)	Without/With Project One-Hour CO Concentration (ppm)[1]	Without/With Project Eight-Hour CO Concentration (ppm)[1]	Exceeds State Standards?	
					1-Hr (20 ppm)	8-Hr (9.0 ppm)
SR-108 and Patterson	12 / 12	0.0 / 0.0	3.3 / 3.3	3.0 / 3.0	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 14	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	14 / 14	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
McHenry and Claratina	17 / 17	0.0 / 0.0	3.9 / 3.9	3.4 / 3.4	No	No
	17 / 17	-0.1 / -0.1	3.9 / 3.8	3.4 / 3.3	No	No
	17 / 17	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	17 / 17	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
Coffee and Claratina	14 / 14	0.0 / 0.0	3.8 / 3.8	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
1st and Atchison	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
Claus and Claribel	14 / 14	0.4 / 0.2	3.4 / 3.8	3.1 / 3.3	No	No
	14 / 14	0.3 / 0.2	3.4 / 3.7	3.1 / 3.3	No	No
	14 / 14	0.3 / 0.2	3.4 / 3.7	3.1 / 3.3	No	No
	14 / 14	0.2 / 0.1	3.4 / 3.6	3.1 / 3.2	No	No
Yosemite and F	13 / 13	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	8 / 8	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	8 / 8	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	12 / 12	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No

Source: LSA Associates, Inc., June 2014.

[1] Includes ambient one-hour concentration of 2.9 ppm and ambient eight-hour concentration of 2.7 ppm. Measured at the 14th Street, Modesto, CA AQ Station in Stanislaus County.

Table 15. 2042 CO Concentrations, Alternative 2A

Intersection	Receptor Distance to Road Centerline (meters)	Project Related Increase 1-hr/8-hr (ppm)	Without/With Project One-Hour CO Concentration (ppm)[1]	Without/With Project Eight-Hour CO Concentration (ppm)[1]	Exceeds State Standards?	
					1-Hr (20 ppm)	8-Hr (9.0 ppm)
SR-108 and Patterson	12 / 12	0.0 / 0.0	3.3 / 3.3	3.0 / 3.0	No	No
	12 / 12	0.0 / 0.0	3.3 / 3.2	3.0 / 3.0	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	14 / 14	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
McHenry and Claratina	17 / 17	-0.1 / -0.1	3.9 / 3.9	3.4 / 3.3	No	No
	17 / 17	-0.1 / -0.1	3.9 / 3.8	3.4 / 3.3	No	No
	17 / 17	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	17 / 17	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
Coffee and Claratina	14 / 14	0.0 / 0.0	3.8 / 3.8	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
1st and Atchison	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
Claus and Claribel	14 / 14	0.2 / 0.1	3.4 / 3.8	3.1 / 3.2	No	No
	14 / 14	0.2 / 0.1	3.4 / 3.7	3.1 / 3.2	No	No
	14 / 14	0.2 / 0.1	3.4 / 3.7	3.1 / 3.2	No	No
	14 / 14	0.2 / 0.1	3.4 / 3.7	3.1 / 3.2	No	No
Yosemite and F	13 / 13	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	8 / 8	-0.1 / -0.1	3.4 / 3.2	3.1 / 3.0	No	No
	8 / 8	-0.1 / -0.1	3.4 / 3.2	3.1 / 3.0	No	No
	12 / 12	-0.2 / -0.2	3.4 / 3.2	3.1 / 2.9	No	No

Source: LSA Associates, Inc., June 2014.

[1] Includes ambient one-hour concentration of 2.9 ppm and ambient eight-hour concentration of 2.7 ppm. Measured at the 14th Street, Modesto, CA AQ Station in Stanislaus County.

Table 16. 2042 CO Concentrations, Alternative 2B

Intersection	Receptor Distance to Road Centerline (meters)	Project Related Increase 1-hr/8-hr (ppm)	Without/With Project One-Hour CO Concentration (ppm)[1]	Without/With Project Eight-Hour CO Concentration (ppm)[1]	Exceeds State Standards?	
					1-Hr (20 ppm)	8-Hr (9.0 ppm)
SR-108 and Patterson	12 / 12	0.0 / 0.0	3.3 / 3.3	3.0 / 3.0	No	No
	12 / 12	0.0 / 0.0	3.3 / 3.3	3.0 / 3.0	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	14 / 14	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
McHenry and Claratina	17 / 17	-0.1 / -0.1	3.9 / 3.8	3.4 / 3.3	No	No
	17 / 17	-0.1 / -0.1	3.9 / 3.8	3.4 / 3.3	No	No
	17 / 17	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	17 / 17	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
Coffee and Claratina	14 / 14	0.0 / 0.0	3.8 / 3.8	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	-0.1 / 0.0	3.8 / 3.7	3.3 / 3.3	No	No
	14 / 14	0.0 / 0.0	3.7 / 3.7	3.3 / 3.3	No	No
1st and Atchison	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	-0.1 / -0.1	3.3 / 3.2	3.0 / 2.9	No	No
	12 / 12	0.0 / 0.0	3.2 / 3.2	2.9 / 2.9	No	No
Claus and Claribel	14 / 14	0.2 / 0.1	3.4 / 3.6	3.1 / 3.2	No	No
	14 / 14	0.2 / 0.1	3.4 / 3.6	3.1 / 3.2	No	No
	14 / 14	0.2 / 0.1	3.4 / 3.6	3.1 / 3.2	No	No
	14 / 14	0.1 / 0.0	3.4 / 3.5	3.1 / 3.1	No	No
Yosemite and F	13 / 13	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	8 / 8	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	8 / 8	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No
	12 / 12	-0.1 / -0.1	3.4 / 3.3	3.1 / 3.0	No	No

Source: LSA Associates, Inc., June 2014.

[1] Includes ambient one-hour concentration of 2.9 ppm and ambient eight-hour concentration of 2.7 ppm. Measured at the 14th Street, Modesto, CA AQ Station in Stanislaus County.

5.4 Mobile Source Air Toxics (MSAT)

The following discussion is based on the FHWA Memorandum, Subject: INFORMATION: Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, issued October 18, 2016. The purpose of the memorandum is to update the September 2009 and December 2012 interim guidance that advised FHWA Division offices on when and how to analyze mobile source air toxics (MSAT) under the NEPA review process for highway projects. This guidance is interim because MSAT science is rapidly evolving – as the science progresses, FHWA updates the guidance.

Background

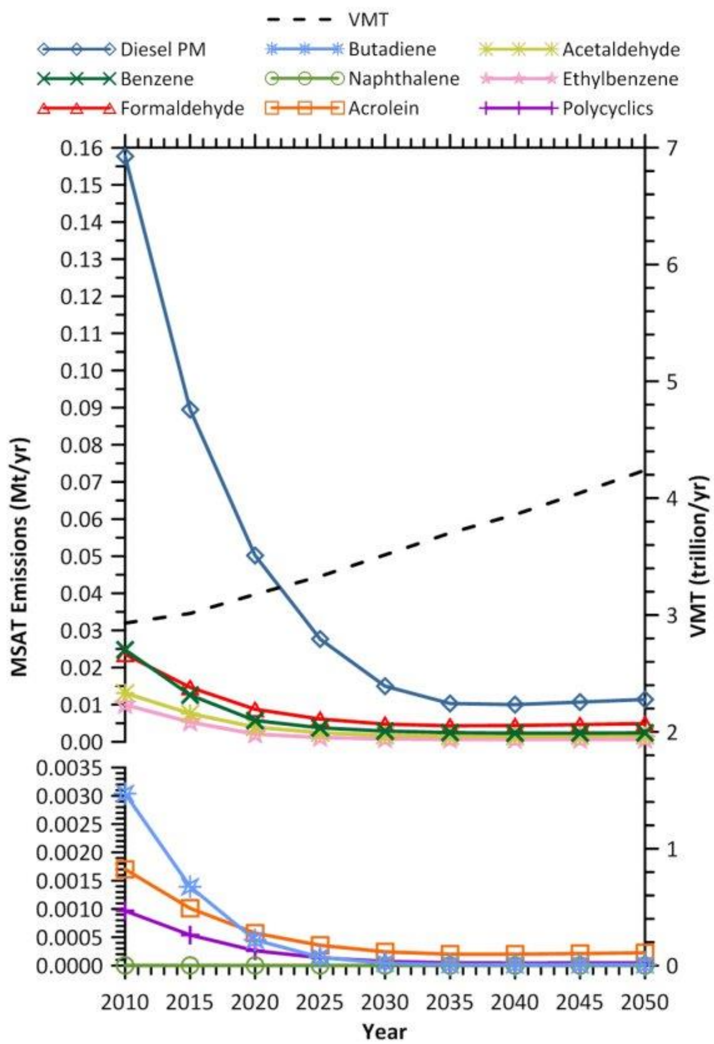
Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://cfcpub.epa.gov/ncea/iris/index.cfm). In addition, the EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are *acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter.* While FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data. MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide (https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100NNR0.txt), EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using EPA's MOVES2014a model, as shown in Figure 7, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Figure 7. National MSAT Emissions Trends



Source: FHWA 2016

Note, the MOVES2014 discussion is from the FHWA Memorandum, Subject: INFORMATION: Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, issued October 18, 2016. EMFAC is to be used for emission analysis in California, not MOVES. For air quality conformity analysis, projects are to use EMFAC 2014 as documented in the latest EPA quantitative hot spot analysis guidance.

MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies to address MSAT impacts in our environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

NEPA Context

The NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals. The NEPA also requires Federal agencies to use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment. The NEPA requires and FHWA is committed to the examination and avoidance of potential impacts to the natural and human environment when considering approval of proposed transportation projects. In addition to evaluating the potential environmental effects, we must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest. The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

Consideration of MSAT in NEPA Documents

The FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

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

Category 1

Includes projects that:

- qualify as a categorical exclusion under 23 CFR 771.117(c);
- are exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or
- have no meaningful impacts on traffic volumes or vehicle mix

The proposed North County Corridor New State Route 108 Project does not meet the Category 1 requirements.

Category 2

The types of projects included in this category are those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects.

FHWA anticipates that most highway projects that need an MSAT assessment will fall into this category. Any projects not meeting the criteria in category (1) or category (3) below should be included in this category. Examples of these types of projects are minor widening projects; new interchanges, replacing a signalized intersection on a surface street; or projects where design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT).

For these projects, a qualitative assessment of emissions projections should be conducted. This qualitative assessment would compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives, including no-build, based on VMT, vehicle mix, and speed. It would also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by the EPA. Because the emission effects of these projects typically are low, we expect there would be no appreciable difference in overall MSAT emissions among the various alternatives.

Category 3

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. We expect a limited number of projects to meet this two-pronged test. To fall into this category, a project should:

- 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, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or

- Create new capacity 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 or greater by the design year;

And also

- Proposed to be located in proximity to populated areas.

Projects falling within Category 3 should be more rigorously assessed for impacts.

Qualitative Analysis

Given that design-year traffic volume is predicted to be 49,700 ADT or less (Fehr & Peers 2014), the proposed project falls within Category 2, a project with low potential MSAT effects. As such, a qualitative MSAT analysis is appropriate.

For each alternative, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher (approximately 2.5%) than that for the No-Build Alternative, because the new facility attracts re-routed trips that would not otherwise occur in the area. This increased VMT means MSAT, under the Build Alternatives, would probably be higher than the No-Build Alternative in the study area. There could also be localized differences in MSAT from indirect effects of the project such as associated access traffic. Travel to other destinations would be reduced with corresponding reductions in emissions at those locations.

Because the estimated VMT under each of the Build Alternatives is nearly the same, varying by less than 0.5 percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various Build Alternatives. Regardless of which alternative is selected, emissions are virtually certain to be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future than they are today.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, http://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on MSAT Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (2007) (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (2007) (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld the EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

MSAT Conclusion

What we know about mobile source air toxics is still evolving. As the science progresses FHWA will continue to revise and update the guidance on MSAT analysis in NEPA. FHWA is working with Stakeholders, the EPA and others to better understand the strengths and weaknesses of developing analysis tools and the applicability on the project level decision documentation process.

5.5 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World

Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: “Greenhouse Gas Mitigation” and “Adaptation.” "Greenhouse Gas Mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. “Adaptation" refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)[1].

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower GHG-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively.[2]

Project Analysis

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its incremental change in emissions when combined with the contributions of all other sources of GHG.[3] In assessing

[1] http://climatechange.transportation.org/ghg_mitigation/

[2] http://www.fhwa.dot.gov/environment/climate_change/mitigation/

[3] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA

cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

Guide, April 2011) and the U.S. Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

Quantitative Analysis

Using CT-EMFAC 2014 Version 6.0 and project-specific traffic data from the *Traffic Operations Report for the North County Corridor* (2014), Existing, No-Build, and Build Alternative CO_2 emissions were estimated. The CT-EMFAC model outputs are included in Appendix E. Table 17 gives projected CO_2 emissions for existing, design year No-Build, and design year Build conditions. Daily CO_2 emissions in the design year are expected to be approximately 40% higher than existing conditions, whether or not the project is implemented. This large increase in CO_2 emissions can be attributed to the large projected increases in traffic volume and VMT resulting from future growth in the area.

Under Build conditions, CO_2 emissions will be only slightly higher than under No-Build conditions, from 0.07 to 1.4 percent, depending on the alternative. The build alternatives are each projected to have higher VMT than the No-Build, but the expected corresponding increases in CO_2 emissions are offset by LOS improvements. In other words, implementing the project will result in such a substantial reduction in congestion and VHD, that the added capacity will not have a discernable effect on greenhouse gas emissions.

Table 17. Existing and 2042 CO_2 Emissions (tons/day)

Existing	No-Build	Build Alternatives			
		1A	1B	2A	2B
958	1,344	1,345	1,346	1,358	1,363
Increase over No-Build:		0.07%	0.14%	1.0%	1.4%
*Based on CT-EMFAC 2014 v6.0 and the *Traffic Operations Report For The North County Corridor* (2014).					

It should be noted that while these emission numbers are useful for comparing alternatives, they do not necessarily accurately reflect what the true CO_2 emissions will be because CO_2 emissions are dependent on other factors that are not part of the model, such as the fuel mix (EMFAC model emission rates are only for direct engine-out CO_2 emissions, not full fuel cycle; fuel cycle emission rates can vary dramatically depending on the amount of additives like ethanol and the source of the fuel components), rate of acceleration, and the aerodynamics and efficiency of the vehicles. The relative magnitudes however, as used for the comparison above, can be assumed to be reasonably accurate.

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Per measure CC-2 and Department standards, construction activities will be in compliance with the SJVAPCD.

Using the Roadway Construction Emissions Model, Version 7.1.5.1 (SMAQMD 2013), construction-related CO2 emissions were estimated. The model output is included in Appendix C and the results are summarized in Table 18.

Table 18. Estimated CO_2 Emissions During Construction

	Project Construction Emissions (tons/yr)				SJVAPCD AQ Significance Thresholds (tons/yr)
	1A	1B	2A	2B	
CO_2	4,307	4,648	4,126	4,588	N/A
Source: SMAQMD 2013, SJVAPCD 2014. Note: Model output shown in total tons for a two-year construction period. Table reflects one year.					

CEQA Conclusion

While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are CC-1 and CC-2.

The following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

CC-1: The project would incorporate the use of energy-efficient lighting, such as LED traffic signals. LED bulbs cost $60 to $70 each, but last five to six years, compared to the one-year average lifespan of the incandescent bulbs previously used. The LED bulbs themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO2 emissions.[4]

CC-2: According to the Department's Standard Specifications, the contractor must comply with all local Air Quality Management District rules, ordinances, and regulations for air quality restrictions.

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[4] Knoxville Business Journal, "LED Lights Pay for Themselves," May 19, 2008 at http://www.knoxnews.com/news/2008/may/19/led-traffic-lights-pay-themselves/.

Chapter 6. Avoidance, Minimization, and/or Mitigation Measures

The following measures would be implemented to minimize effects on air quality.

AQ-1: The construction contractor shall comply with Caltrans' Standard Specifications Section 14-9.03 Dust Control of Caltrans' Standard Specifications (2010).

AQ-2: The construction contractor shall comply with Section 7-1.02 Emissions Reduction and Section 18 Dust Palliative of Caltrans' Standard Specifications (2010).

AQ-3: The Wind Erosion Control BMP (WE-1) from Caltrans' *Construction Site Best Management Practices Manual* (Caltrans 2003) will be implemented as follows:

- Water shall be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment shall be equipped with a positive means of shutoff
- Unless water is applied by means of pipelines, at least one mobile unit shall be available at all times to apply water or dust palliative to the project.
- If reclaimed water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. Non-potable water shall not be conveyed in tanks or drain pipes that will be used to convey potable water and there shall be no connection between potable and non-potable supplies. Non-potable tanks, pipes and other conveyances shall be marked "NON-POTABLE WATER – DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders will also provide wind erosion control benefits.

AQ-4: Per SJVAPCD Rule 9510, an ISR application will be submitted prior to seeking final discretionary approval for the project.

CC-1: The project would incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals. LED bulbs cost $60 to $70 each, but last five to six years, compared to the one-year average lifespan of the incandescent bulbs previously used. The LED bulbs themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO_2 emissions.

CC-2: According to the Department's Standard Specifications, the contractor must comply with all local Air Quality Management District rules, ordinances, and regulations for air quality restrictions.

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Appendix A 2014 RTP/2015 FTIP Project Listing and FHWA Regional Conformity Determination

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	Project Details						Purpose/Need				
	Location	Project Limits	Description	Total Cost	Construction Year	Funding Source	System Preserv.	Capacity Enhance.	Safety	Oper.	Alt. Mode
T08	N. Olive Ave	Tuolumne Rd to Tornell Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility	$757,600	2020	Dev. Fees		x			
T09	N. Olive Ave	Canal Dr to Wayside Rd	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	$852,600	2020	Dev. Fees		x			
T10	N. Olive Ave	Wayside Dr to North Ave	Widen from 2-lane to 4-lane Arterial with Class II bike facility and transit	$888,100	2020	Dev. Fees		x			
T11	W. Linwood Ave	Walnut Rd to Lander Ave	Widen from 2-lane to 3-lane Collector with Class II bike facility and transit (West Ave. South to Lander)	$615,700	2020	Dev. Fees, RSTP		x			
T12	W. Linwood Ave	Walnut Rd to Washington Rd	Widen from 2-lane to 3-lane Collector with Class II bike facility	$4,207,400	2025	Dev. Fees, RSTP		x			
T13	W. Canal Dr	Washington Rd to Kilroy Rd	Construct new 2-lane Collector with Class I bike facility	$2,507,600	2018	Dev. Fees, RSTP		x			
T14	East Ave	Golden State Blvd to Daubenberger Rd	Widen from 2-lane to 4-lane Arterial with Class III bike facility from Minaret to S. Berkeley/Class II from S. Berkeley to Daubenberger and transit from Oak to S. Johnson	$5,958,600	2030	Dev. Fees, RSTP		x			
T15	Golden State Blvd	Taylor Rd to Monte Vista Ave	Complete 6-lane Boulevard with Class II bike facility and transit from Christoffersen to Monte Vista	$3,310,100	2020	Dev. Fees, RSTP		x			
T16	Golden State Blvd	Monte Vista Ave to Fulkerth Rd	Complete 6-lane Boulevard with Class II bike facility	$2,869,300	2020	Dev. Fees, RSTP		x			
T17	N. Kilroy Ave	W. Main St to W. Canal Dr	Construct new Collector	$743,100	2025	Dev. Fees, RSTP		x			
T18	Tegner Rd	Monte Vista Ave to Fulkerth Rd	Complete 2-lane Industrial Collector	$674,300	2015	Dev. Fees, RSTP		x			
T19	Tegner Rd	Fulkerth Rd to north of Pedretti Park	Construct new 2-lane Industrial Collector	$995,700	2020	Dev. Fees, RSTP		x			
T20	Taylor Rd	Tegner Rd to Golden State Blvd	Widen from 2-lane to 4-lane Collector with Class II bike facility	$505,500	2020	Dev. Fees, RSTP		x			
T21	S. Kilroy Ave	Spengler Way to W. Linwood Ave	Construct new Industrial Collector	$934,000	2025	Dev. Fees, RSTP		x			
T22	Taylor Rd	Golden State Blvd to SR-99	Widen from 2-lane to 4-lane Arterial with Class II bike facility	$139,600	2025	Dev. Fees, RSTP		x			
T23	Tegner Rd	W. Main St to Fulkerth Rd	Construct new 2-lane Industrial Collector with Class II bike facility	$2,795,800	2020	Dev. Fees, RSTP		x			
T24	Various Locations	Various Locations	Install Traffic Signals and Various Intersection and Synchronization Improvements and other Transportation Enhancements	$4,105,100	2014 - 2025	CMAQ, HSIP, Dev. Fees			x	x	
T25	SR-99	Lander Ave (SR-165) to S. City Limits	Construct New Interchange	$35,785,000	2028	CMAQ, Dev. Fees, STIP		x			
T26	SR-99	W. Main St	Construct New Interchange	$19,091,000	2025	CMAQ, Dev. Fees, STIP		x			
T27	SR-99	Taylor Rd	Reconstruct existing Interchange	$7,693,700	2025	CMAQ, Dev. Fees, STIP	x	x			
T28	SR-99	Tuolumne Rd	Construct New Overpass	$9,693,400	2018	CMAQ, Dev. Fees, STIP		x			
T29	Washington Rd	Fulkerth Rd to Monte Vista Ave	Construct 4-lane Expressway with Class II bike facility and transit	$2,674,000	2025	Dev. Fees, RSTP		x			
T30	Golden State Blvd	Golden State Blvd & Taylor Rd	Widen Intersection from 2 to 4 lanes with bike improvements	$2,690,400	2025	Dev. Fees, RSTP		x			
T31	Various Locations	Various Locations	Roadway Rehabilitation and equipment	$40,502,000	2014-2040	RSTP, CMAQ	x				
			Total City of Turlock (Roadway)	**$173,651,500**							
	City of Waterford										
W01	Various Locations	Various Locations	Traffic Signals, intersection improvements and other transportation enhancements	$4,769,300	2014-2040	CMAQ, RSTP, HSIP			x	x	
W02	Various Locations	Various Locations	Roadway Rehabilitation	$14,158,800	2014-2040	RSTP	x				
			Total City of Waterford (Roadway)	**$18,928,100**							
	Stanislaus County										
SC01	Various Locations	Various Locations	Roadway Rehabilitation, Traffic Signals, Intersection Improvements and other Transportation Enhancements	$65,993,400	2014 - 2040	RSTP, CMAQ, HSIP	x				
SC02	SR-99	SR-99 & Hammett Rd	Interchange Replacement	$95,524,200	2015	STIP, PFF		x			
SC03	North County Corridor	Tully Rd to SR 120/108	Construct 2-6 Lane Expressway	$380,031,100	2020	STIP, IIP, ITIP, PFF, Section 190		x			
SC04	McHenry Ave	McHenry Ave @ Stanislaus River Bridge	Seismic Bridge Replacement	$21,493,000	2015	HBP, PFF	x	x	x		
SC05	Crows Landing Rd	Crows Landing Rd. & Grayson Rd	Install Traffic Signal	$2,740,100	2018	CMAQ, PFF			x	x	
SC06	Santa Fe Ave & Terminal Ave	BNSF Railroad	Upgrade Railroad Crossings	$656,800	2015	Section 130			x	x	
SC07	Geer-Albers	Milnes to Claribel	Widen to 3 lanes	$4,111,900	2022	PFF		x			
SC08	McHenry Ave	Ladd Rd to Hogue Rd	Widen to 5 lanes	$5,349,600	2018	STIP, PFF		x			
SC09	Crows Landing Rd	San Joaquin River Bridge	Seismic Bridge Replacement - 3-lane Bridge	$17,653,500	2014	HBP/LSSRP, PFF	x	x	x		
SC10	Geer Rd	Geer Rd @ Tuolumne River Bridge	Seismic Bridge Retrofit	$1,688,300	2014	HBP/LSSRP	x		x		

Jurisdiction/Agency	TIP/RTP Project ID	CTIPs Project ID (if available)	Description: Facility Name/Route	Description: Type of Improvement	Description: Project Limits	Estimated Cost	Conformity Analysis Year (project open to traffic) 2014	2017	2020	2023	2025	2032	2035	2040
Turlock	T29		Washington Rd	Construct 4-lane Expressway with Class II bike facility and transit	Fulkerth Rd to Monte Vista Ave	$2,674,000					X	X	X	X
Turlock	T30		Golden State Blvd	Widen Intersection from 2 to 4 lanes with bike improvements	Golden State Blvd & Taylor Rd	$2,690,400					X	X	X	X
Stanislaus County	SC03		North County Corridor	Construct 2-6 Lane Expressway	Tully Rd to SR 120/108	$380,031,100			X	X	X	X	X	X
Stanislaus County	SC07		Geer-Albers	Widen to 3 lanes	Milnes to Claribel	$4,111,900				X	X	X	X	X
Stanislaus County	SC08		McHenry Ave	Widen to 5 lanes	Ladd Rd to Hogue Rd	$5,349,600			X	X	X	X	X	X
Stanislaus County	SC15		Seventh St	Seismic Bridge Replacement; 4 lane bridge with pedestrian access	Seventh St @ Tuolumne River Bridge	$35,666,400		X	X	X	X	X	X	X
Stanislaus County	SC20		Claribel Rd	Widen to 5 lanes	McHenry Ave to Oakdale Rd	$15,875,400	X	X	X	X	X	X	X	X
Stanislaus County	SC39		Carpenter Rd	Widen to 3 lanes	Whitmore Ave to Keyes Rd	$5,534,500		X	X	X	X	X	X	X
Stanislaus County	SC40		Carpenter Rd	Widen to 3 lanes	Keyes Rd to Monte Vista Ave	$3,783,900			X	X	X	X	X	X
Stanislaus County	SC41		Carpenter Rd	Widen to 3 lanes	Monte Vista Ave to W. Main St	$3,737,500			X	X	X	X	X	X
Stanislaus County	SC42		Claus Rd	Widen to 3 lanes	Terminal Ave to Claribel Rd	$2,648,600					X	X	X	X
Stanislaus County	SC43		Crows Landing Rd	Widen to 3 lanes	Keyes Rd to Monte Vista Ave	$2,459,800		X	X	X	X	X	X	X
Stanislaus County	SC44		Crows Landing Rd	Widen to 3 lanes	Monte Vista Ave to W. Main St	$2,459,800		X	X	X	X	X	X	X
Stanislaus County	SC45		Crows Landing Rd	Widen to 3 lanes	W. Main St to Harding Rd	$2,533,600		X	X	X	X	X	X	X
Stanislaus County	SC46		Crows Landing Rd	Widen to 3 lanes	Harding Rd to Carpenter Rd	$3,091,100			X	X	X	X	X	X
Stanislaus County	SC47		Crows Landing Rd	Widen to 3 lanes	Carpenter Rd to River Rd/ Marshall Rd	$1,425,800				X	X	X	X	X
Stanislaus County	SC48		Crows Landing Rd	Widen to 3 lanes	River Rd/Marshall Rd to SR-33	$15,112,300					X	X	X	X
Stanislaus County	SC49		Geer-Albers	Widen to 3 lanes	Taylor Rd to Santa Fe Ave	$4,550,600		X	X	X	X	X	X	X
Stanislaus County	SC50		Geer-Albers	Widen to 3 lanes	Santa Fe Ave to Hatch Rd	$3,927,000		X	X	X	X	X	X	X
Stanislaus County	SC51		Geer-Albers	Widen to 3 lanes	Hatch Rd to SR-132	$3,628,600			X	X	X	X	X	X
Stanislaus County	SC52		Geer-Albers	Widen to 3 lanes	SR-132 to Milnes Rd	$10,696,400						X	X	X
Stanislaus County	SC53		McHenry Ave	Widen to 5 lanes	Hogue Rd to San Joaquin County Line	$8,891,600	X	X	X	X	X	X	X	X
Stanislaus County	SC54		Santa Fe Ave	Widen to 3 lanes	Keyes Rd to Geer Rd	$4,405,700				X	X	X	X	X
Stanislaus County	SC55		Santa Fe Ave	Widen to 3 lanes	Geer Rd to Hatch Rd	$3,116,000					X	X	X	X
Stanislaus County	SC56		Santa Fe Ave	Widen to 3 lanes	Hatch to Tuolumne River	$2,809,900						X	X	X
Stanislaus County	SC57		W. Main St	Widen to 3 lanes	San Joaquin River to Carpenter Rd	$5,398,600			X	X	X	X	X	X
Stanislaus County	SC58		W. Main St	Widen to 3 lanes	Carpenter Rd to Crows Landing Rd	$3,443,700		X	X	X	X	X	X	X
Stanislaus County	SC59		W. Main St	Widen to 3 lanes	Crows Landing Rd to Mitchell Rd	$5,288,500		X	X	X	X	X	X	X
Stanislaus County	SC60		W. Main St	Widen to 3 lanes	Mitchell Rd to Washington Rd	$3,783,900			X	X	X	X	X	X
Stanislaus County	SC61		SR-219	Widen to 6-lanes	SR-99 to McHenry Ave	$41,527,100			X	X	X	X	X	X
Stanislaus County	SC62		SR-132 West	Construct new 2-lane alignment on existing Right of Way	Dakota to Gates	$55,369,400			X	X	X	X	X	X
Stanislaus County	SC75		Faith Home Rd	Construct new 4-lane Expressway	Keyes Rd to Faith Home Rd Interchange	$18,820,300					X	X	X	X
Stanislaus County	SC76		Faith Home Rd	Construct new 4-lane Expressway	Faith Home Rd Interchange to Service Rd including FHRD overcrossing of SR-99	$19,630,400					X	X	X	X
Stanislaus County	SC77		Faith Home Rd	Construct new 4-lane Expressway	Service Rd to Hatch Rd	$25,332,600					X	X	X	X
Stanislaus County	SC78		Faith Home Rd	Construct new 4-lane Expressway	Hatch Rd to Garner Viaduct	$47,798,500					X	X	X	X
Stanislaus County	SC79		Faith Home Rd	Construct new 4-lane Expressway	Garner Rd to SR-132	$12,463,800					X	X	X	X
Turlock	T25		SR-99	Construct New Interchange	Lander Ave (SR-165) to S. City Limits	$35,785,000						X	X	X
Turlock	T26		SR-99	Construct New Interchange	W. Main St	$19,091,000					X	X	X	X

U.S. Department of Transportation
Federal Highway Administration

California Division

650 Capitol Mall, Suite 4-100
Sacramento, CA 95814
(916) 498-5001
(916) 498-5008

December 15, 2014

In Reply Refer To:
HAD-CA

Ms. Rachel Falsetti
Chief, Division of Transportation Programming
California Department of Transportation
1120 N Street
Sacramento, CA 95814

SUBJECT: Approval of the 2015 Federal Statewide Transportation Improvement Program

Dear Ms. Falsetti:

We have completed our review of California's proposed 2014/15 - 2018/19 Federal Statewide Transportation Improvement Program (2015 FSTIP) and Statewide and Metropolitan Planning Certifications and related supporting documentation submitted by the California Department of Transportation (Caltrans) on November 15, 2014. The Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) approve the 2015 FSTIP and and this approval supersedes California's 2013 FSTIP and all subsequent amendments to the 2013 FSTIP that were approved by the FHWA and FTA on or after December 14, 2012.

Section 450.218 of Title 23, Code of Federal Regulations, requires the State to submit the updated FSTIP concurrently to the FTA and the FHWA at least every four years for joint approval. California's proposed 2015 FSTIP includes the project and project phase listings for proposed transportation projects located outside the planning area boundaries of the the State's designated Metropolitan Planning Organizations (MPOs). California's proposed 2015 FSTIP also incorporates, by reference, those projects included in 2015 Federal Transportation Improvements Programs (FTIPs) that were adopted in 2014 by the eighteen designated MPOs in California. This approval includes the eight MPO 2015 FTIP Amendments adopted prior to the FSTIP public review period.

The FHWA and the FTA have completed the air quality conformity determinations required by 23 CFR 450.216(b) for the MPO FTIPs in areas of the State designated as nonattainment or maintenance for national ambient air quality standards (NAAQS).

Based on our review of the information submitted with the State's proposed 2015 FSTIP, including revenue and proposed project funding information required to demonstrate financial constraint, and documentation for statewide and metropolitan planning process in support of California's Statewide Planning Certification, we are approving the 2015 FSTIP as proposed.

Any project or project phase listed in a MPO FTIP that is not included in the MPO's Regional Transportation Plan, is not approved for inclusion in the FSTIP pursuant to 23 CFR §§450.216(k) and 450.324(g).

Our FSTIP approval action includes project listings that indicate no funds are proposed for obligation during the four-year program period from 2014/15 to 2018/19. These projects and project phases cannot be advanced to implementation without an action by the FHWA and the FTA on the FSTIP pursuant to 23 CFR 450.216(l) and 450.328(e). Further, project or project phase funding included in the 2015 FSTIP that is listed/proposed for obligation outside the four year program cycle is accepted by the FHWA and the FTA as 'informational' in accord with 23 CFR §§450.216(a) and 450.324(a).

We are approving the 2015 FSTIP with the understanding that the eligibility of individual projects for funding is subject to the applicant's satisfaction of all FHWA and FTA funding requirements. This joint FHWA and FTA approval of the FSTIP does not constitute an eligibility determination for the federal funds proposed for obligation on the listed projects. If you have questions or need additional information concerning our approval of the 2015 FSTIP, please contact Wade Hobbs in the FHWA California Division office at (916) 498-5027, or by email at Wade.Hobbs@dot.gov; or Ted Matley in the FTA Region IX office at (415) 744-2590, or by email at Ted.Matley@dot.gov.

Sincerely,

Leslie T. Rogers
Regional Administrator
Federal Transit Administration

For
Vincent P. Mammano
Division Administrator
Federal Highway Administration

cc: (email)
Ray Sukys, FTA Region IX
Ted Matley, FTA Region IX
Karina O'Connor, EPA Region IX (OConnor.Karina@epa.gov)
Cari Anderson, CARB (Cari.Anderson@arb.ca.gov)
Muhaned Aljabiry, Caltrans OFTMP (Muhaned.Aljabiry@dot.ca.gov)
Fardad Falakfarsa, Federal Resources Office (Fardad.Falakfarsa@dot.ca.gov)
Garth Hopkins, Caltrans ORIP (Garth.Hopkins@dot.ca.gov)
Bureau of Indian Affairs, Pacific Region Roads Engineer
All California MPOs (18)
Jack Lord, FHWA
Jermaine Hannon, FHWA CADO
Christina Leach, FHWA NVDO

cc:
2015 FSTIP Binder

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Appendix B CO Protocol Flowcharts

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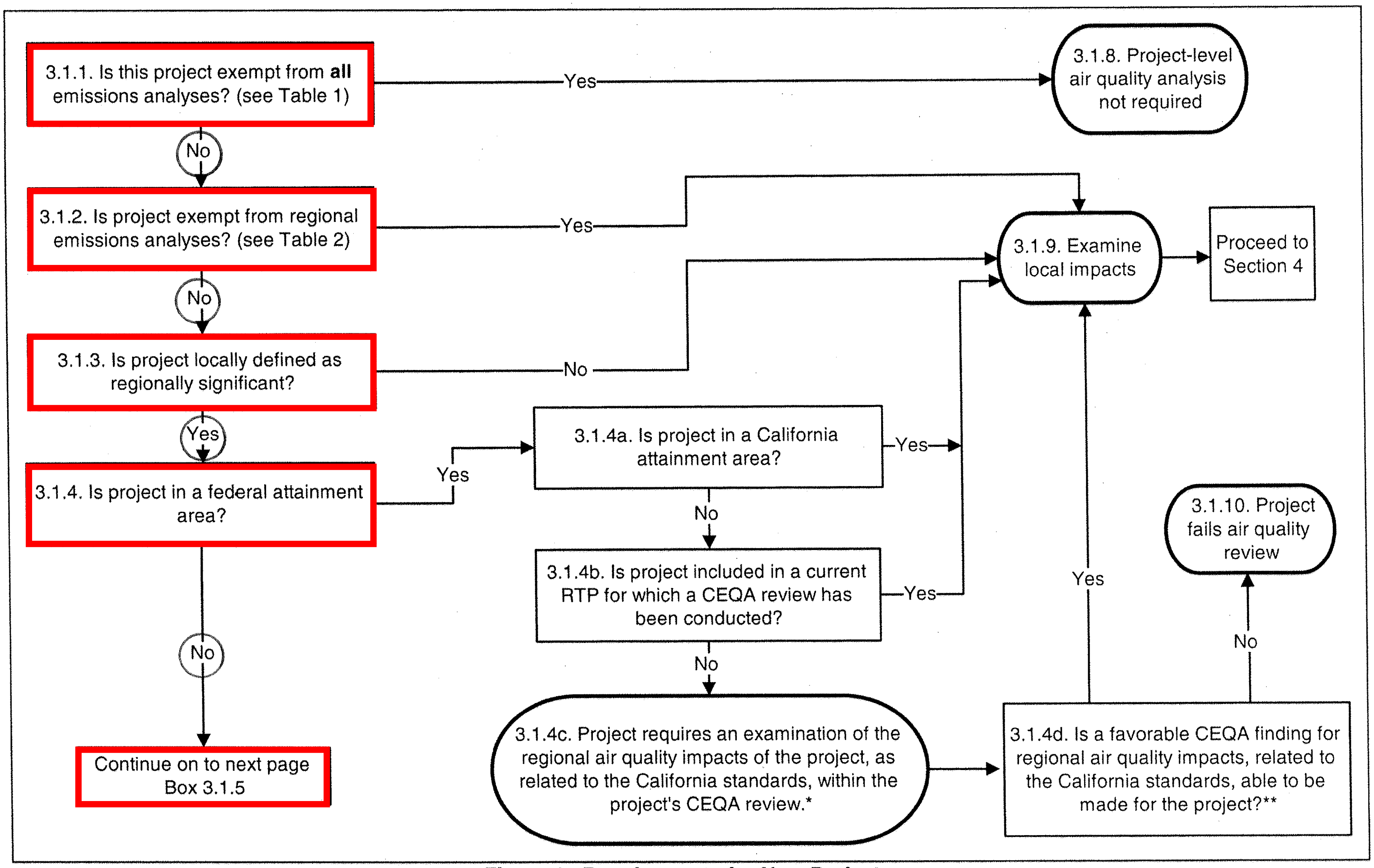


Figure 1. Requirements for New Projects

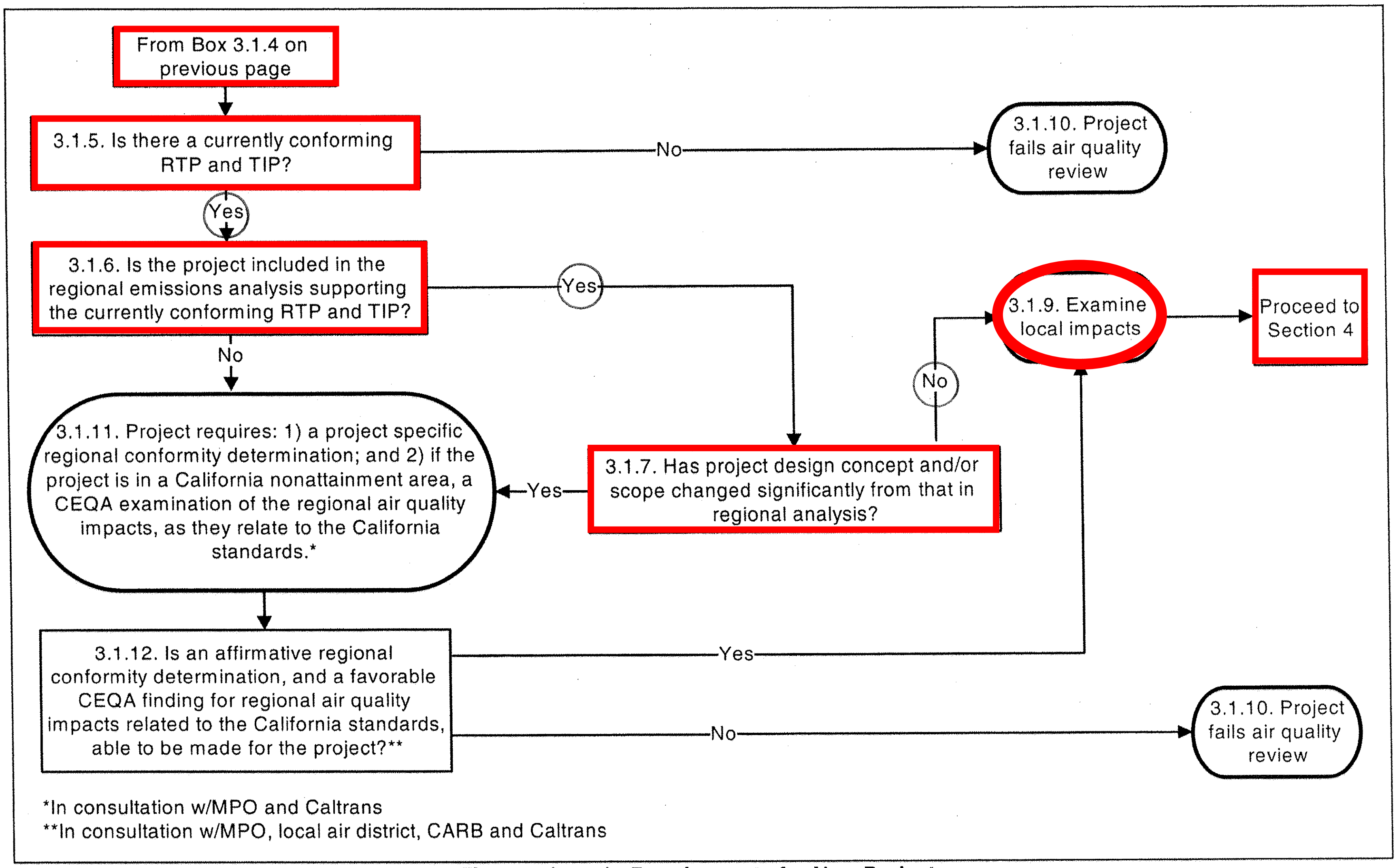


Figure 1 (cont.). Requirements for New Projects

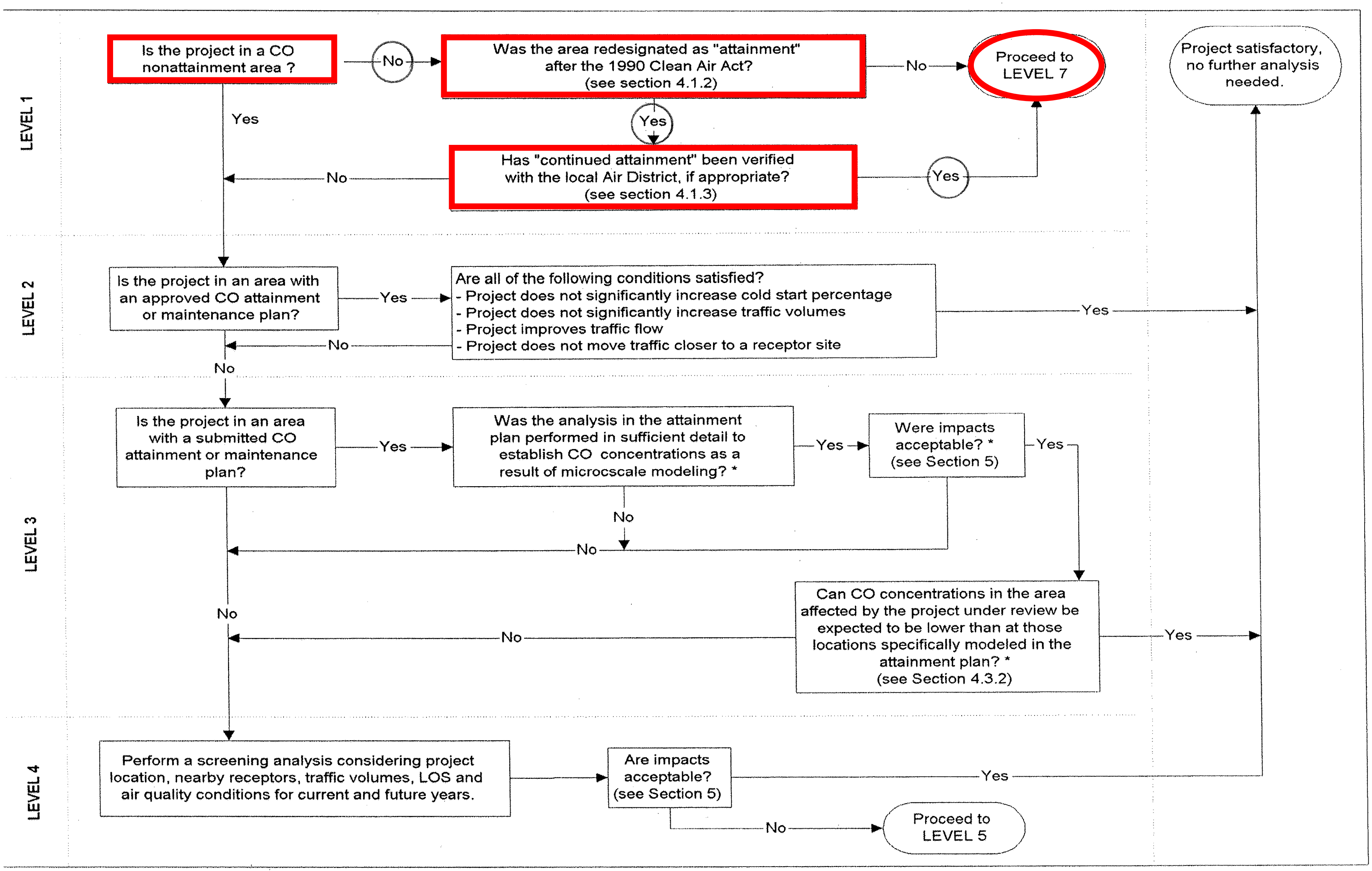
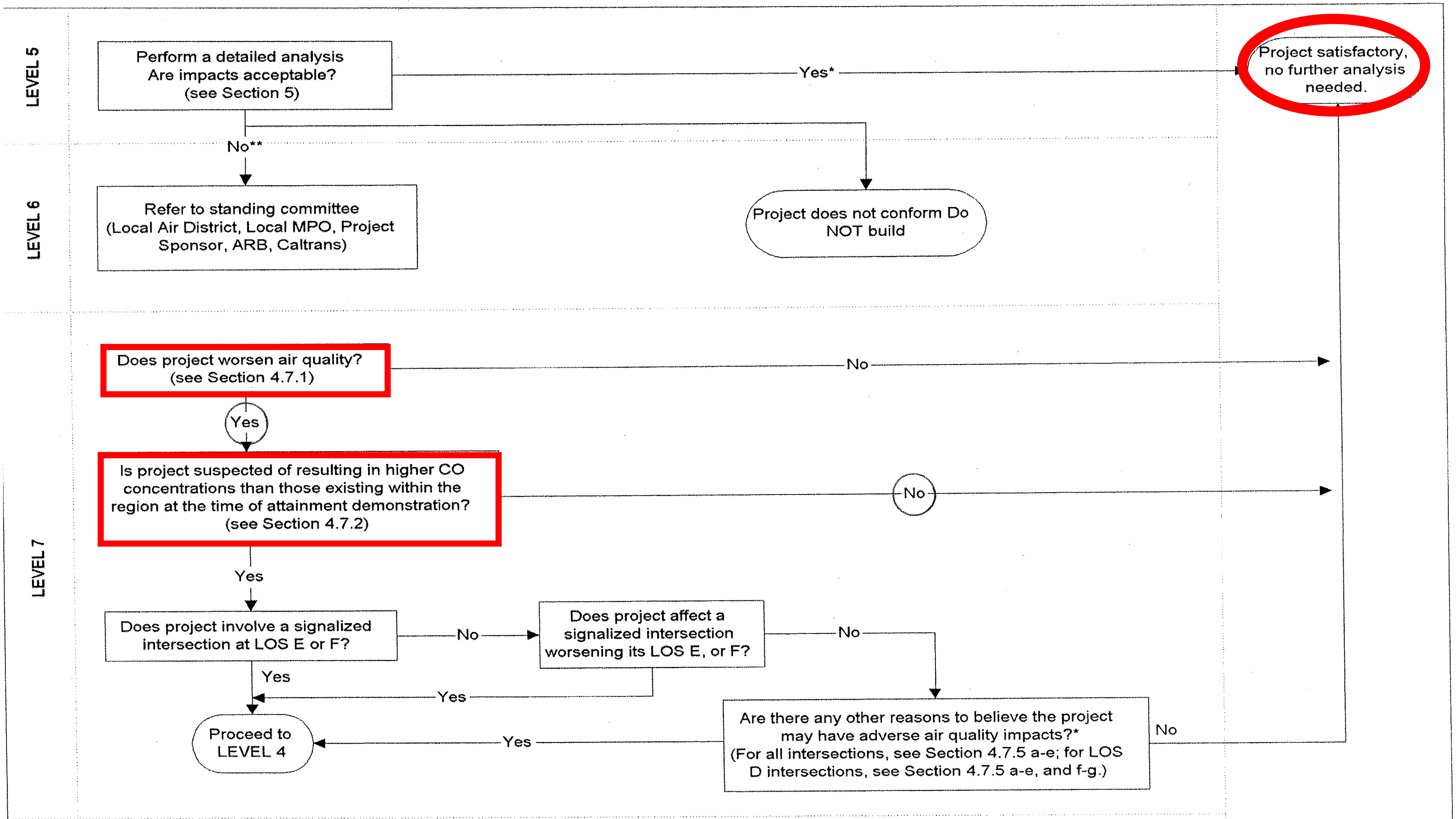


Figure 3. Local CO Analysis



*Consultation with MPO and Local Air District required in addition to normal NEPA/CEQA requirements
**Consultation with MPO, Local Air District, CARB and Caltrans (District & Headquarters) required in addition to normal NEPA/CEQA requirements

Figure 3 (cont.). Local CO Analysis

Appendix C Road Construction Emissions Model

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Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> 1A NCC New SR 108				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**CO2 (lbs/day)**
Grubbing/Land Clearing	8.8	56.7	56.1	102.7	2.7	100.0	23.2	2.4	20.8	9,739.2
Grading/Excavation	20.5	129.1	249.9	110.3	10.3	100.0	28.8	8.0	20.8	59,406.7
Drainage/Utilities/Sub-Grade	13.6	98.1	102.6	105.0	5.0	100.0	25.3	4.5	20.8	17,982.7
Paving	8.7	63.9	55.9	2.9	2.9	-	2.6	2.6	-	10,678.1
Maximum (pounds/day)	20.5	129.1	249.9	110.3	10.3	100.0	28.8	8.0	20.8	59,406.7
Total (tons/construction project)	4.0	26.7	39.6	24.2	1.7	22.4	6.1	1.4	4.7	8,614.9

Notes: Project Start Year -> 2020
Project Length (months) -> 24
Total Project Area (acres) -> 1096
Maximum Area Disturbed/Day (acres) -> 10
Total Soil Imported/Exported (yd^3/day)-> 9178

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> 1A NCC New SR 108				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	**ROG (kgs/day)**	**CO (kgs/day)**	**NOx (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM10 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**PM2.5 (kgs/day)**	**CO2 (kgs/day)**
Grubbing/Land Clearing	4.0	25.8	25.5	46.7	1.2	45.5	10.5	1.1	9.5	4,426.9
Grading/Excavation	9.3	58.7	113.6	50.1	4.7	45.5	13.1	3.6	9.5	27,003.0
Drainage/Utilities/Sub-Grade	6.2	44.6	46.6	47.7	2.3	45.5	11.5	2.0	9.5	8,173.9
Paving	4.0	29.0	25.4	1.3	1.3	-	1.2	1.2	-	4,853.7
Maximum (kilograms/day)	9.3	58.7	113.6	50.1	4.7	45.5	13.1	3.6	9.5	27,003.0
Total (megagrams/construction project)	3.6	24.2	35.9	21.9	1.6	20.4	5.5	1.3	4.2	7,814.0

Notes: Project Start Year -> 2020
Project Length (months) -> 24
Total Project Area (hectares) -> 444
Maximum Area Disturbed/Day (hectares) -> 4
Total Soil Imported/Exported ($meters^3$/day)-> 7017

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> 1B NCC New SR 108

Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	10.4	66.4	64.2	103.2	3.2	100.0	23.6	2.8	20.8	11,185.6
Grading/Excavation	22.4	140.1	266.5	111.0	11.0	100.0	29.3	8.5	20.8	63,675.0
Drainage/Utilities/Sub-Grade	15.1	107.5	110.4	105.4	5.4	100.0	25.6	4.8	20.8	19,429.0
Paving	10.2	73.3	63.8	3.3	3.3	-	2.9	2.9	-	12,124.4
Maximum (pounds/day)	22.4	140.1	266.5	111.0	11.0	100.0	29.3	8.5	20.8	63,675.0
Total (tons/construction project)	4.4	29.4	42.6	24.3	1.9	22.4	6.2	1.5	4.7	9,294.8

Notes:

Project Start Year ->	2020
Project Length (months) ->	24
Total Project Area (acres) ->	1320
Maximum Area Disturbed/Day (acres) ->	10
Total Soil Imported/Exported (yd^3/day)->	9863

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> 1B NCC New SR 108

Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	4.7	30.2	29.2	46.9	1.4	45.5	10.7	1.3	9.5	5,084.4
Grading/Excavation	10.2	63.7	121.1	50.4	5.0	45.5	13.3	3.9	9.5	28,943.2
Drainage/Utilities/Sub-Grade	6.9	48.9	50.2	47.9	2.5	45.5	11.6	2.2	9.5	8,831.4
Paving	4.6	33.3	29.0	1.5	1.5	-	1.3	1.3	-	5,511.1
Maximum (kilograms/day)	10.2	63.7	121.1	50.4	5.0	45.5	13.3	3.9	9.5	28,943.2
Total (megagrams/construction project)	4.0	26.7	38.6	22.1	1.7	20.4	5.6	1.4	4.2	8,430.6

Notes:

Project Start Year ->	2020
Project Length (months) ->	24
Total Project Area (hectares) ->	534
Maximum Area Disturbed/Day (hectares) ->	4
Total Soil Imported/Exported ($meters^3$/day)->	7541

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> 2A NCC New SR 108

Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	9.0	58.1	57.2	102.8	2.8	100.0	23.3	2.5	20.8	9,945.9
Grading/Excavation	20.3	128.7	239.3	109.9	9.9	100.0	28.6	7.8	20.8	55,662.6
Drainage/Utilities/Sub-Grade	13.8	99.4	103.7	105.1	5.1	100.0	25.3	4.5	20.8	18,189.3
Paving	9.0	65.2	57.1	3.0	3.0	-	2.6	2.6	-	10,884.7
Maximum (pounds/day)	20.3	128.7	239.3	109.9	9.9	100.0	28.6	7.8	20.8	55,662.6
Total (tons/construction project)	4.0	26.9	38.6	24.1	1.7	22.4	6.1	1.4	4.7	8,252.3

Notes:

Project Start Year ->	2020
Project Length (months) ->	24
Total Project Area (acres) ->	1111
Maximum Area Disturbed/Day (acres) ->	10
Total Soil Imported/Exported (yd^3/day)->	8219

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> 2A NCC New SR 108

Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	4.1	26.4	26.0	46.7	1.3	45.5	10.6	1.1	9.5	4,520.8
Grading/Excavation	9.2	58.5	108.8	50.0	4.5	45.5	13.0	3.5	9.5	25,301.2
Drainage/Utilities/Sub-Grade	6.3	45.2	47.1	47.8	2.3	45.5	11.5	2.1	9.5	8,267.9
Paving	4.1	29.6	25.9	1.4	1.4	-	1.2	1.2	-	4,947.6
Maximum (kilograms/day)	9.2	58.5	108.8	50.0	4.5	45.5	13.0	3.5	9.5	25,301.2
Total (megagrams/construction project)	3.6	24.4	35.0	21.9	1.6	20.4	5.5	1.3	4.2	7,485.1

Notes:

Project Start Year ->	2020
Project Length (months) ->	24
Total Project Area (hectares) ->	450
Maximum Area Disturbed/Day (hectares) ->	4
Total Soil Imported/Exported ($meters^3$/day)->	6284

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> 2B NCC New SR 108				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	10.4	66.4	64.2	103.2	3.2	100.0	23.6	2.8	20.8	11,185.6
Grading/Excavation	22.3	139.6	263.1	110.9	10.9	100.0	29.3	8.5	20.8	62,546.2
Drainage/Utilities/Sub-Grade	15.1	107.5	110.4	105.4	5.4	100.0	25.6	4.8	20.8	19,429.0
Paving	10.2	73.3	63.8	3.3	3.3	-	2.9	2.9	-	12,124.4
Maximum (pounds/day)	22.3	139.6	263.1	110.9	10.9	100.0	29.3	8.5	20.8	62,546.2
Total (tons/construction project)	4.4	29.3	42.2	24.3	1.9	22.4	6.2	1.5	4.7	9,175.6

Notes:

Project Start Year ->	2020
Project Length (months) ->	24
Total Project Area (acres) ->	1343
Maximum Area Disturbed/Day (acres) ->	10
Total Soil Imported/Exported (yd^3/day)->	9589

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> 2B NCC New SR 108				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	4.7	30.2	29.2	46.9	1.4	45.5	10.7	1.3	9.5	5,084.4
Grading/Excavation	10.1	63.4	119.6	50.4	4.9	45.5	13.3	3.8	9.5	28,430.1
Drainage/Utilities/Sub-Grade	6.9	48.9	50.2	47.9	2.5	45.5	11.6	2.2	9.5	8,831.4
Paving	4.6	33.3	29.0	1.5	1.5	-	1.3	1.3	-	5,511.1
Maximum (kilograms/day)	10.1	63.4	119.6	50.4	4.9	45.5	13.3	3.8	9.5	28,430.1
Total (megagrams/construction project)	4.0	26.6	38.3	22.0	1.7	20.4	5.6	1.4	4.2	8,322.5

Notes:

Project Start Year ->	2020
Project Length (months) ->	24
Total Project Area (hectares) ->	544
Maximum Area Disturbed/Day (hectares) ->	4
Total Soil Imported/Exported ($meters^3$/day)->	7331

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Appendix D EPA and FHWA Concurrence Letters

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StanCOG
Stanislaus Council Of Governments

City of Ceres • City of Hughson • City of Modesto • City of Newman • City of Oakdale • City of Patterson
City of Riverbank • City of Turlock • City of Waterford • County of Stanislaus

Memorandum

To: Keith Lay, LSA Associates, Inc.

From: Arthur Chen, Associate Planner, Stanislaus Council of Governments

Date: February 2, 2015

Subject: Concurrence Received from the EPA, Caltrans, and FHWA Regarding the PM10 and PM2.5 Hot-spot Conformity Assessment for the North County Corridor New SR 108 – SC-03, EIR 327

StanCOG circulated a memo to the Interagency Consultation (IAC) Group requesting concurrence from the Environmental Protection Agency (EPA), the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) that the North County Corridor New SR 108 in Stanislaus County is not a project of air quality concern (POAQC). The circulation period for this review ended on January 26, 2015.

On January 22, 2015, Caltrans provided concurrence that this project is not a POAQC. EPA and FHWA both provided concurrence on January 29^{th}, 2015. Attached is the correspondence from these two agencies indicating their concurrence that the North County Corridor New SR 108 in Stanislaus County is not a POAQC.

If you have any questions regarding this memo or its attachments, please contact Arthur Chen at (209) 525-4643 or by e-mail at achen@stancog.org. Thank you.

Arthur Chen - RE: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATED

From: "Zarzuela, Homer B@DOT" <homer.zarzuela@dot.ca.gov>
To: Arthur Chen <achen@Stancog.org>
Date: 1/22/2015 4:25 PM
Subject: RE: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATED
Attachments: image001.jpg

Arthur,

Apologies for not replying back to you in an efficient manner as I thought I had replied back to you with my concurrence on this.

Due to my inefficiency as it seemed I was inundated with a few things, this e-mail sent to you is intended to close the loop on this task as I know it's well after the fact now.

Again, sorry for the inconvenience.

Caltrans ***Homer Zarzuela, P.E.***
State of California Department of Transportation
District 10 Stockton
Division of Planning & Local Assistance
Travel Forecasting & Project Initiation Branch
office phone (209) 948.7871
cell phone (209) 403.2950
e-mail homer.zarzuela@dot.ca.gov

"Life is too short to deal with hostile or pretentious people. Don't become one of them."

From: Robledo, Pat@DOT
Sent: Monday, December 15, 2014 10:09 AM
To: Zarzuela, Homer B@DOT; Chin, Eric C@DOT
Cc: Tu, Irene@DOT
Subject: FW: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATED

Hi Homer and Eric. This project is assigned to Homer but if you Eric want to review you're welcome.

Irene – Please assign this to Homer for Air Quality Conformity Assessment.

Thanks,

Perfecto 'Pat' Robledo
Chief, Office of Project
Initiation and Travel Forecasting
(209) 948-7071

From: Arthur Chen [mailto:achen@Stancog.org]
Sent: Monday, December 15, 2014 9:13 AM
To: Anderson, Cari@ARB; Crow, Jason@ARB; Gray, Jennifer@ARB; Taylor, Jonathan@ARB; Vanderspek, Sylvia@ARB; Bruce Abanathie; Christina Lehn; Kara Bounds; Bagde, Abhijit J@DOT; Mahaney, Ann@DOT; Ipps, David T@DOT; David Cortez; Jacobs, Dennis J@DOT; Gwyn Reese; Perrault, James R@DOT; Romero, Ken J@DOT; Green, Lilibeth I@DOT; Huy, Lima A@DOT; Evans, Marcus B@DOT; Mortenson, Marilee C@DOT; Navarro, Michael@DOT; Robledo, Pat@DOT; Marquez, Paul Albert@DOT; Ramirez, Pedro@DOT; Tavitas, Rodney A@DOT; Tracey, Stephen R@DOT; Goewert, Terry@DOT; Dumas, Thomas A@DOT; Cecilia Crenshaw; jack.lord@dot.gov; Joseph Vaughn; Scott Carson; KarinaO'Connor; Frances Wicher; Kristine Cai; Kai Han; ldawson@fresnocog.org; Mike Bitner; Melissa Garza; Ted Matley; jstramaglia@kerncog.org; RobBall; Raquel Pacheco; Troy Hightower; Vincent Liu; MikeAronson; Dylan Stone; JeffFindley; Matt Fell; TyPhimmasone; Alexandra Marcucci(AMarcucci@sierraresearch.com); Kim Kloeb; Ridder, Wil@SJCOG; Tanisha Taylor; AnthonyZepeda; Jeanette Fabela; Park, Rosa@DOT; Ben Giuliani; Elizabeth Wright; Mark Hays; Roberto Brady; Chelsea Gonzales; Errol Villegas; Jessica Fierro
Cc: Padilla, Daniel@BAKERSFIELD; Michael D Hollier; terri.king@co.kings.ca.us; tboren@fresnocog.org; ahakimi@kerncog.org; Robert Phipps; patricia@maderactc.org; Marjie.Kirn@mcagov.org; Michael Sigala; chesley@sjcog.org; DianeNguyen; cyamzon@stancog.org; Ted Smalley
Subject: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATED

Good Afternoon Interagency Consultation Partners,

StanCOG, on behalf of the North County Corridor Transportation Expressway Authority (NCCTEA) is providing the following PM2.5 and PM10 Hot-Spot Conformity Assessment for the North County Corridor New State Route 108 Project. As part of the environmental review, it is requested that the Interagency Consultation Partners concur that this project is not a "Project of Air Quality Concern" (POAQC) and will not result in new violations of Federal PM 2.5 and PM 10 air quality standards. Please reply to all with concurrence and/or comments by 5:00 p.m. on **Friday, December 26, 2014.** An interagency conference call will be held upon request.

This project qualifies for an EIR 327 under NEPA. **EPA and FHWA concurrence is requested**.

StanCOG has also attached NCCTEA's responses to some concerns EPA had regarding the first memo that was circulated.

If you have any questions regarding this e-mail or the attached memo, please feel free to contact me directly. Thank you.

Arthur Y. Chen
Associate Planner
Stanislaus Council of Governments
1111 I St. #308
Modesto, CA 95354
T: 209-525-4643
E: achen@stancog.org

Arthur Chen - RE: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATE

From: "OConnor, Karina" <OConnor.Karina@epa.gov>
To: Arthur Chen <achen@Stancog.org>, "Cari@ARB Anderson" <Cari.Anderson@arb....
Date: 1/29/2015 8:20 PM
Subject: RE: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATE
CC: "Daniel@BAKERSFIELD Padilla" <dpadilla@bakersfieldcity.us>, "Michael DHo...

EPA concurs that this is not a project of air quality concern.

Karina OConnor
EPA, Region 9
Air Planning Office (AIR-2)
(775) 434-8176
oconnor.karina@epa.gov

From: Arthur Chen [achen@Stancog.org]
Sent: Tuesday, January 13, 2015 10:43 AM
To: Cari@ARB Anderson; Jason@ARB Crow; Jennifer@ARB Gray; Jonathan@ARB Taylor; Sylvia@ARB Vanderspek; Bruce Abanathie; Christina Lehn; Kara Bounds; AbhijitJ@DOT Bagde; Ann@DOT Mahaney; David T@DOT Ipps; David Cortez; Dennis J@DOT Jacobs; Gwyn Reese; James R@DOT Perrault; Ken J@DOT Romero; Lilibeth I@DOT Green; Lima A@DOT Huy; Marcus B@DOT Evans; Marilee C@DOT Mortenson; Michael@DOT Navarro; Pat@DOT Robledo; Paul Albert@DOT Marquez; Pedro@DOT Ramirez; Rodney A@DOT Tavitas; Stephen R@DOT Tracey; Terry@DOT Goewert; Thomas A@DOT Dumas; Cecilia Crenshaw; jack.lord@dot.gov; Joseph Vaughn; Scott Carson; OConnor, Karina; Wicher, Frances; Kristine Cai; Kai Han; ldawson@fresnocog.org; Mike Bitner; Melissa Garza; Ted Matley; jstramaglia@kerncog.org; RobBall; Raquel Pacheco; Troy Hightower; Vincent Liu; MikeAronson; Dylan Stone; JeffFindley; Matt Fell; TyPhimmasone; Alexandra Marcucci (AMarcucci@sierraresearch.com); Kim Kloeb; Wil@SJCOG Ridder; Tanisha Taylor; AnthonyZepeda; Jeanette Fabela; Rosa Park; Ben Giuliani; Elizabeth Wright; Mark Hays; Roberto Brady; Chelsea Gonzales; Errol Villegas; Jessica Fierro
Cc: Daniel@BAKERSFIELD Padilla; Michael D Hollier; terri.king@co.kings.ca.us; tboren@fresnocog.org; ahakimi@kerncog.org; Robert Phipps; patricia@maderactc.org; Marjie.Kirn@mcagov.org; Michael Sigala; chesley@sjcog.org; DianeNguyen; Carlos Yamzon; Ted Smalley
Subject: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATE

Good Afternoon Interagency Consultation Partners,

StanCOG, on behalf of the North County Corridor Transportation Expressway Authority (NCCTEA) is providing the following PM2.5 and PM10 Hot-Spot Conformity Assessment for the North County Corridor New State Route 108 Project. As part of the environmental review, it is requested that the Interagency Consultation Partners concur that this project is not a "Project of Air Quality Concern" (POAQC) and will not result in new violations of Federal PM 2.5 and PM 10 air quality standards. Please reply to all with concurrence and/or comments by 5:00 p.m. on **Tuesday, January 26, 2014.**

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StanCOG has also attached NCCTEA's responses to some concerns EPA had regarding the first memo that was circulated.

If you have any questions regarding this e-mail or the attached memo, please feel free to contact me directly. Thank you.

Arthur Y. Chen
Associate Planner
Stanislaus Council of Governments
1111 I St. #308
Modesto, CA 95354
T: 209-525-4643
E: achen@stancog.org

Arthur Chen - RE: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATE

From: <Joseph.Vaughn@dot.gov>
To: <achen@Stancog.org>
Date: 1/29/2015 2:41 PM
Subject: RE: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATE
CC: <oconnor.karina@epa.gov>, <rodney.tavitas@dot.ca.gov>, <ken.j.romero@dot...

FHWA concurs that this is not a project of air quality concern.

Joseph Vaughn
Air Quality Specialist/MPO Coordinator
FHWA, CA Division
(916) 498-5346

From: Arthur Chen [achen@Stancog.org]
Sent: Tuesday, January 13, 2015 10:43 AM
To: Cari@ARB Anderson; Jason@ARB Crow; Jennifer@ARB Gray; Jonathan@ARB Taylor; Sylvia@ARB Vanderspek; Bruce Abanathie; Christina Lehn; Kara Bounds; AbhijitJ@DOT Bagde; Ann@DOT Mahaney; David T@DOT Ipps; David Cortez; Dennis J@DOT Jacobs; Gwyn Reese; James R@DOT Perrault; Ken J@DOT Romero; Lilibeth I@DOT Green; Lima A@DOT Huy; Marcus B@DOT Evans; Marilee C@DOT Mortenson; Michael@DOT Navarro; Pat@DOT Robledo; Paul Albert@DOT Marquez; Pedro@DOT Ramirez; Rodney A@DOT Tavitas; Stephen R@DOT Tracey; Terry@DOT Goewert; Thomas A@DOT Dumas; Crenshaw, Cecilia (FHWA); Lord, Jack (FHWA); Vaughn, Joseph (FHWA); Carson, Scott (FHWA); KarinaO'Connor; Frances Wicher; Kristine Cai; Kai Han; ldawson@fresnocog.org; Mike Bitner; Melissa Garza; Matley, Ted (FTA); jstramaglia@kerncog.org; RobBall; Raquel Pacheco; Troy Hightower; Vincent Liu; MikeAronson; Dylan Stone; JeffFindley; Matt Fell; TyPhimmasone; Alexandra Marcucci(AMarcucci@sierraresearch.com); Kim Kloeb; Wil@SJCOG Ridder; Tanisha Taylor; AnthonyZepeda; Jeanette Fabela; Rosa Park; Ben Giuliani; Elizabeth Wright; Mark Hays; Roberto Brady; Chelsea Gonzales; Errol Villegas; Jessica Fierro
Cc: Daniel@BAKERSFIELD Padilla; Michael D Hollier; terri.king@co.kings.ca.us; tboren@fresnocog.org; ahakimi@kerncog.org; Robert Phipps; patricia@maderactc.org; Marjie.Kirn@mcagov.org; Michael Sigala; chesley@sjcog.org; DianeNguyen; Carlos Yamzon; Ted Smalley
Subject: North County Corridor New SR 108 IAC Memo for PM10 and PM2.5 Hot Spot Conformity Assessment - SC-03, EIR 327 UPDATE

Good Afternoon Interagency Consultation Partners,

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StanCOG has also attached NCCTEA's responses to some concerns EPA had regarding the first memo that was circulated.

If you have any questions regarding this e-mail or the attached memo, please feel free to contact me directly. Thank you.

Arthur Y. Chen
Associate Planner
Stanislaus Council of Governments
1111 I St. #308
Modesto, CA 95354
T: 209-525-4643
E: achen@stancog.org

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Appendix E EMFAC 2014 and CT-EMFAC Model Output

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EMFAC 2014 OUTPUT

calendar_year	season_month	sub_area	vehicle_class	temperature	relative_humidity	process	speed_time	pollutant	emission_rate
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	CO2	1014.853187
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	PM10	0.012788737
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	PM2_5	0.011805847
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	CO2	753.2202747
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	PM10	0.008218935
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	PM2_5	0.007590125
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	CO2	580.0870708
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	PM10	0.005568504
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	PM2_5	0.005144351
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	CO2	463.5752961
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	PM10	0.00397533
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	PM2_5	0.003673812
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	CO2	384.4691873
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	PM10	0.002988945
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	PM2_5	0.002763156
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	CO2	330.9396737
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	PM10	0.002366192
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	PM2_5	0.002188134
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	CO2	295.6688555
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	PM10	0.00197131
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	PM2_5	0.001823496
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	CO2	274.1648497
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	PM10	0.001727709
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	PM2_5	0.001598575
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	CO2	263.8504498
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	PM10	0.001592542
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	PM2_5	0.00147384
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	CO2	263.5478954
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	PM10	0.001543738
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	PM2_5	0.001428938
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	CO2	273.2335425
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	PM10	0.001573764
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	PM2_5	0.00145694
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	CO2	294.0076002
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	PM10	0.001687942
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	PM2_5	0.001562813
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	CO2	328.3497545
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	PM10	0.001905038
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	PM2_5	0.00176394
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	CO2	351.8825092
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	PM10	0.002062903
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	PM2_5	0.001910148
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	CO2	351.8825092
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	PM10	0.002062903
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	PM2_5	0.001910148
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	CO2	351.8825092
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	PM10	0.002062903
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	PM2_5	0.001910148
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	CO2	351.8825092
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	PM10	0.002062903
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	PM2_5	0.001910148
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	CO2	351.8825092
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	PM10	0.002062903
2015	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	PM2_5	0.001910148
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	5	CO2	11.55733966
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	5	PM10	0.000487645
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	5	PM2_5	0.000455997
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	10	CO2	13.33247743

2015	Annual	San Joaquin (SJV)	LDA	62		STREX	10	PM10	0.000714253
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	10	PM2_5	0.000663537
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	20	CO2	17.31023291
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	20	PM10	0.001149854
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	20	PM2_5	0.001062619
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	30	CO2	21.85796164
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	30	PM10	0.001561971
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	30	PM2_5	0.001440373
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	40	CO2	26.97566363
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	40	PM10	0.001950603
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	40	PM2_5	0.001796797
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	50	CO2	32.66333886
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	50	PM10	0.002315751
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	50	PM2_5	0.002131893
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	60	CO2	38.92098734
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	60	PM10	0.002657414
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	60	PM2_5	0.00244566
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	120	CO2	86.71547079
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	120	PM10	0.004096363
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	120	PM2_5	0.003771927
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	180	CO2	98.67006972
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	180	PM10	0.004498442
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	180	PM2_5	0.004144437
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	240	CO2	110.5169276
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	240	PM10	0.004863382
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	240	PM2_5	0.004482502
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	300	CO2	122.2560444
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	300	PM10	0.005191182
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	300	PM2_5	0.004786123
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	360	CO2	133.8874202
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	360	PM10	0.005481842
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	360	PM2_5	0.0050553
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	420	CO2	145.4110549
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	420	PM10	0.005735362
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	420	PM2_5	0.005290033
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	480	CO2	156.8269486
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	480	PM10	0.005951742
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	480	PM2_5	0.005490322
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	540	CO2	168.1351012
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	540	PM10	0.006130982
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	540	PM2_5	0.005656167
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	600	CO2	179.3355128
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	600	PM10	0.006273083
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	600	PM2_5	0.005787568
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	660	CO2	190.4281833
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	660	PM10	0.006378043
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	660	PM2_5	0.005884524
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	720	CO2	201.4591044
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	720	PM10	0.006448051
2015	Annual	San Joaquin (SJV)	LDA	62		STREX	720	PM2_5	0.005949049
2015	Annual	San Joaquin (SJV)	LDA			PMTW		PM10	0.008
2015	Annual	San Joaquin (SJV)	LDA			PMTW		PM2_5	0.002
2015	Annual	San Joaquin (SJV)	LDA			PMBW		PM10	0.03675
2015	Annual	San Joaquin (SJV)	LDA			PMBW		PM2_5	0.01575
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	CO2	802.194162
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	PM10	0.011521768
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	PM2_5	0.01060749
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	CO2	595.6103504
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	PM10	0.00731237

2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	PM2_5	0.006733569
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	CO2	458.8128182
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	PM10	0.004894488
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	PM2_5	0.004508008
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	CO2	366.6951352
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	PM10	0.00345433
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	PM2_5	0.003182191
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	CO2	304.1333481
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	PM10	0.002570086
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	PM2_5	0.00236804
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	CO2	261.7952742
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	PM10	0.002016045
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	PM2_5	0.001857881
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	CO2	233.90437
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	PM10	0.001666562
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	PM2_5	0.001536053
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	CO2	216.9002591
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	PM10	0.001451285
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	PM2_5	0.001337799
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	CO2	208.7432461
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	PM10	0.001331018
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	PM2_5	0.001227038
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	CO2	208.5069278
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	PM10	0.001285495
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	PM2_5	0.001185117
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	CO2	216.1777608
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	PM10	0.001307488
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	PM2_5	0.001205386
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	CO2	232.6208438
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	PM10	0.001401428
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	PM2_5	0.001291956
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	CO2	259.7995308
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	PM10	0.001583106
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	PM2_5	0.001459371
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	CO2	278.4279239
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	PM10	0.001715911
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	PM2_5	0.001581739
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	CO2	278.4279239
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	PM10	0.001715911
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	PM2_5	0.001581739
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	CO2	278.4279239
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	PM10	0.001715911
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	PM2_5	0.001581739
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	CO2	278.4279239
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	PM10	0.001715911
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	PM2_5	0.001581739
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	CO2	278.4279239
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	PM10	0.001715911
2022	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	PM2_5	0.001581739
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	5	CO2	9.825379346
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	5	PM10	0.000202002
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	5	PM2_5	0.000185751
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	10	CO2	11.06830039
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	10	PM10	0.000396801
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	10	PM2_5	0.000364873
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	20	CO2	13.95382974
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	20	PM10	0.000772628
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	20	PM2_5	0.000710453
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	30	CO2	17.37227548

2022	Annual	San Joaquin (SJV)	LDA	62		STREX	30	PM10	0.001130094
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	30	PM2_5	0.001039148
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	40	CO2	21.32363758
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	40	PM10	0.001469197
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	40	PM2_5	0.001350958
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	50	CO2	25.80791606
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	50	PM10	0.001789939
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	50	PM2_5	0.001645883
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	60	CO2	30.82511091
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	60	PM10	0.002092319
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	60	PM2_5	0.001923924
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	120	CO2	71.49880393
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	120	PM10	0.003370435
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	120	PM2_5	0.003099148
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	180	CO2	81.19589042
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	180	PM10	0.003735754
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	180	PM2_5	0.003435052
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	240	CO2	90.868494
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	240	PM10	0.004062166
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	240	PM2_5	0.003735182
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	300	CO2	100.5166147
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	300	PM10	0.004349669
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	300	PM2_5	0.003999538
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	360	CO2	110.1402525
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	360	PM10	0.004598265
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	360	PM2_5	0.004228119
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	420	CO2	119.7394074
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	420	PM10	0.004807953
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	420	PM2_5	0.004420926
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	480	CO2	129.3140793
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	480	PM10	0.004978734
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	480	PM2_5	0.004577958
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	540	CO2	138.8642684
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	540	PM10	0.005110606
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	540	PM2_5	0.004699217
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	600	CO2	148.3899746
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	600	PM10	0.005203571
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	600	PM2_5	0.0047847
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	660	CO2	157.8911979
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	660	PM10	0.005257628
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	660	PM2_5	0.00483441
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	720	CO2	167.3784088
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	720	PM10	0.005273369
2022	Annual	San Joaquin (SJV)	LDA	62		STREX	720	PM2_5	0.004848889
2022	Annual	San Joaquin (SJV)	LDA			PMTW		PM10	0.008
2022	Annual	San Joaquin (SJV)	LDA			PMTW		PM2_5	0.002
2022	Annual	San Joaquin (SJV)	LDA			PMBW		PM10	0.03675
2022	Annual	San Joaquin (SJV)	LDA			PMBW		PM2_5	0.01575
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	CO2	512.6275634
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	PM10	0.004176146
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	5	PM2_5	0.003840553
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	CO2	380.7331916
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	PM10	0.002633586
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	10	PM2_5	0.002422174
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	CO2	293.3450308
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	PM10	0.001751874
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	15	PM2_5	0.00161138
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	CO2	234.4680018
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	PM10	0.001229175

2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	20	PM2_5	0.001130689
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	CO2	194.4720081
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	PM10	0.000909638
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	25	PM2_5	0.000836813
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	CO2	167.4031141
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	PM10	0.000710146
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	30	PM2_5	0.000653337
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	CO2	149.5741235
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	PM10	0.000584699
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	35	PM2_5	0.000537957
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	CO2	138.7046696
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	PM10	0.000507606
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	40	PM2_5	0.000467044
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	CO2	133.4899782
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	PM10	0.00046458
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	45	PM2_5	0.000427459
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	CO2	133.3404681
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	PM10	0.000448233
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	50	PM2_5	0.000412411
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	CO2	138.250214
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	PM10	0.000455908
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	55	PM2_5	0.000419452
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	CO2	148.7696201
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	PM10	0.000489098
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	60	PM2_5	0.000449963
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	CO2	166.1550703
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	PM10	0.000553441
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	65	PM2_5	0.000509125
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	CO2	178.073446
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	PM10	0.000600559
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	70	PM2_5	0.000552449
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	CO2	178.073446
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	PM10	0.000600559
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	75	PM2_5	0.000552449
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	CO2	178.073446
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	PM10	0.000600559
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	80	PM2_5	0.000552449
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	CO2	178.073446
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	PM10	0.000600559
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	85	PM2_5	0.000552449
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	CO2	178.073446
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	PM10	0.000600559
2042	Annual	San Joaquin (SJV)	LDA	62	80	RUNEX	90	PM2_5	0.000552449
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	5	CO2	6.11401136
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	5	PM10	7.60E-05
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	5	PM2_5	6.99E-05
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	10	CO2	6.825420821
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	10	PM10	0.000150597
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	10	PM2_5	0.000138468
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	20	CO2	8.501217478
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	20	PM10	0.000295402
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	20	PM2_5	0.000271611
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	30	CO2	10.51431778
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	30	PM10	0.000434416
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	30	PM2_5	0.00039943
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	40	CO2	12.86472173
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	40	PM10	0.000567639
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	40	PM2_5	0.000521923
2042	Annual	San Joaquin (SJV)	LDA	62		STREX	50	CO2	15.55242932

2042	Annual	San Joaquin (SJV)	LDA	62	STREX	50	PM10	0.000695071
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	50	PM2_5	0.000639092
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	60	CO2	18.57744055
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	60	PM10	0.000816711
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	60	PM2_5	0.000750936
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	120	CO2	43.61224987
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	120	PM10	0.001354566
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	120	PM2_5	0.001245474
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	180	CO2	49.46348449
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	180	PM10	0.001518812
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	180	PM2_5	0.001396492
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	240	CO2	55.31447389
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	240	PM10	0.001664651
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	240	PM2_5	0.001530585
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	300	CO2	61.16521807
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	300	PM10	0.001792082
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	300	PM2_5	0.001647753
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	360	CO2	67.01571704
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	360	PM10	0.001901106
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	360	PM2_5	0.001747997
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	420	CO2	72.86597079
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	420	PM10	0.001991723
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	420	PM2_5	0.001831316
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	480	CO2	78.71597932
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	480	PM10	0.002063932
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	480	PM2_5	0.00189771
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	540	CO2	84.56574264
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	540	PM10	0.002117734
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	540	PM2_5	0.001947179
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	600	CO2	90.41526074
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	600	PM10	0.002153129
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	600	PM2_5	0.001979723
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	660	CO2	96.26453362
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	660	PM10	0.002170117
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	660	PM2_5	0.001995342
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	720	CO2	102.1136822
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	720	PM10	0.002168695
2042	Annual	San Joaquin (SJV)	LDA	62	STREX	720	PM2_5	0.001994035
2042	Annual	San Joaquin (SJV)	LDA		PMTW		PM10	0.008
2042	Annual	San Joaquin (SJV)	LDA		PMTW		PM2_5	0.002
2042	Annual	San Joaquin (SJV)	LDA		PMBW		PM10	0.03675
2042	Annual	San Joaquin (SJV)	LDA		PMBW		PM2_5	0.01575