Washington Boulevard/Andora Bridge Improvement Project

Air Quality Study Report

Washington Boulevard, City of Roseville, Placer County

03-PLA-25501

CML 5182 (074)

June 2017

CALIFORNIA DEPARTMENT OF TRANSPORTATION

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 the Department under its assumption of responsibility pursuant to 23 U.S. Code 327.

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STATE OF CALIFORNIA
Department of Transportation
District 3

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Acronyms and Abbreviations

$\mu g/m^3$	micrograms per cubic meter
2005	ARB
AADT	annual average daily traffic
AB	Assembly Bill
air toxics	toxic air contaminants
ARB	California Air Resources Board
BAU	business-as-usual
CAAQS	California Ambient Air Quality Standards
California CAA	California Clean Air Act
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
City	City of Roseville
Clean Air Plan	air quality attainment plan
CMPs	corrugated metal pipes
CO Protocol	Transportation Project-Level Carbon Monoxide Protocol
CO	carbon monoxide
CO2	Carbon dioxide
CY	cubic yards
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
F	Fahrenheit
FCAA	Federal Clean Air Act
FHWA	Federal Highway Administration
FTIPs	Federal Transportation Improvement Programs
GHG	greenhouse gas
LOS	level of service
MOVES	Motor Vehicle Emissions Simulator
mph	miles per hour
MPO	Metropolitan Planning Organization
MSAT	Mobile source air toxics
MTIP	Metropolitan Transportation Improvement Program
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NOA	Naturally occurring asbestos
NO_X	nitrogen oxides
O_3	ozone
PCAPCD	Placer County Air Pollution Control District
PG&E	Pacific Gas and Electric
PLCG	Project Level Conformity Group
PM	particulate matter

PM10	particles of 10 micrometers and smaller
PM2.5	particles of 2.5 micrometers and smaller
POAQCs	projects of air quality concern
POM	Polycyclic organic matter
ppm	parts per million
proposed project	Washington Boulevard/Andora Underpass Improvement Project
RCEM	Road Construction Emissions Model
ROG	reactive organic gases
RTPs	Regional Transportation Plans
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District's
SO_2	sulfur dioxide
SR	State Route
SVAB	Sacramento Valley Air Basin
SWPPP	Storm Water Pollution Prevention Plan
TACs	Toxic air contaminants
UPRR	Union Pacific Railroad
USC	United States Code
VMT	vehicle miles travelled

Chapter 1 Introduction

1.1 Purpose of the Air Quality Study Report

This report was prepared for the Washington Boulevard/Andora Bridge Improvement Project (proposed project). The City of Roseville (City) is proposing to improve a 0.85-mile section of Washington Boulevard. The proposed project involves widening a two-lane section of Washington Boulevard between Sawtell Road and Pleasant Grove Boulevard to four lanes and replacing the existing 100-year-old Union Pacific Railroad (UPRR) bridge (referred to in this document as the Andora Underpass or Andora Bridge) on Washington Boulevard. The addition of two new lanes to Washington Boulevard would provide a continuous four-lane thoroughfare between Sawtell Road and Pleasant Grove Boulevard and improve traffic circulation and pedestrian traffic through the area. The Andora Underpass is north of Downtown Roseville at UPRR milepost 108.20 (Figure 1, Regional Location).

The proposed project is subject to state and federal environmental review requirements because the use of federal funds from the Federal Highway Administration (FHWA) is proposed. The California Department of Transportation (Caltrans) is the federal lead agency under FHWA assignment of National Environmental Policy Act (NEPA) responsibilities pursuant to 23 U.S. Code (USC) 327 and the City is the lead agency under the California Environmental Quality Act (CEQA). This report evaluates the effects of the proposed project on air quality resources and climate change, based on system-wide measures of effectiveness and intersection traffic volumes under existing (2016) and design year (2035) conditions as reported in the traffic analysis report for this project (Fehr & Peers 2017). This report also supports efforts to obtain agreements, permits, and concurrence needed to construct the proposed project.

Two Build Alternatives (which includes Alternative 1 and Alternative 2) and the No Project Alternative are analyzed in this document. The proposed project is included in the Sacramento Area Council of Governments' (SACOG) *2016 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) (Sacramento Area Council of Governments 2016a). Engineering for the project is also programmed in the SACOG *2017-2020 Metropolitan Transportation Improvement Program* (MTIP) (Sacramento Area Council of Governments 2016b).

1.2 Scope and Content of the Report

This report describes the proposed project's regulatory and environmental setting, the environmental consequences of the project, and measures to avoid, minimize, or mitigate adverse impacts of the project on air quality resources. This report is organized as described here.

- Chapter 1, *Introduction*, introduces the report and describes the purpose, scope, and content of the report, as well as provides a summary of the project impacts; avoidance, minimization and/or mitigation measures; and significance conclusions that are discussed later in the report.

- Chapter 2, *Project Description*, describes the project's characteristics, including location, purpose, need, and the alternatives associated with the project.
- Chapter 3, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, describes the regulatory and physical setting, discloses the environmental effects of the Build Alternatives and the methods used to evaluate them, and identifies measures to avoid, minimize, or mitigate adverse effects associated with the Build Alternatives .
- Chapter 4, *Air Quality Impacts under CEQA*, discloses the environmental impacts of the Build Alternatives based on Appendix G of the State CEQA Guidelines to support the project-level CEQA document.
- Chapter 5, *References Cited*, describes the printed references and personal communications used to prepare this report.

1.3 Summary

Table 1 provides a summary of the impacts, significance conclusions, and avoidance, minimization, or mitigation measures discussed in this report.

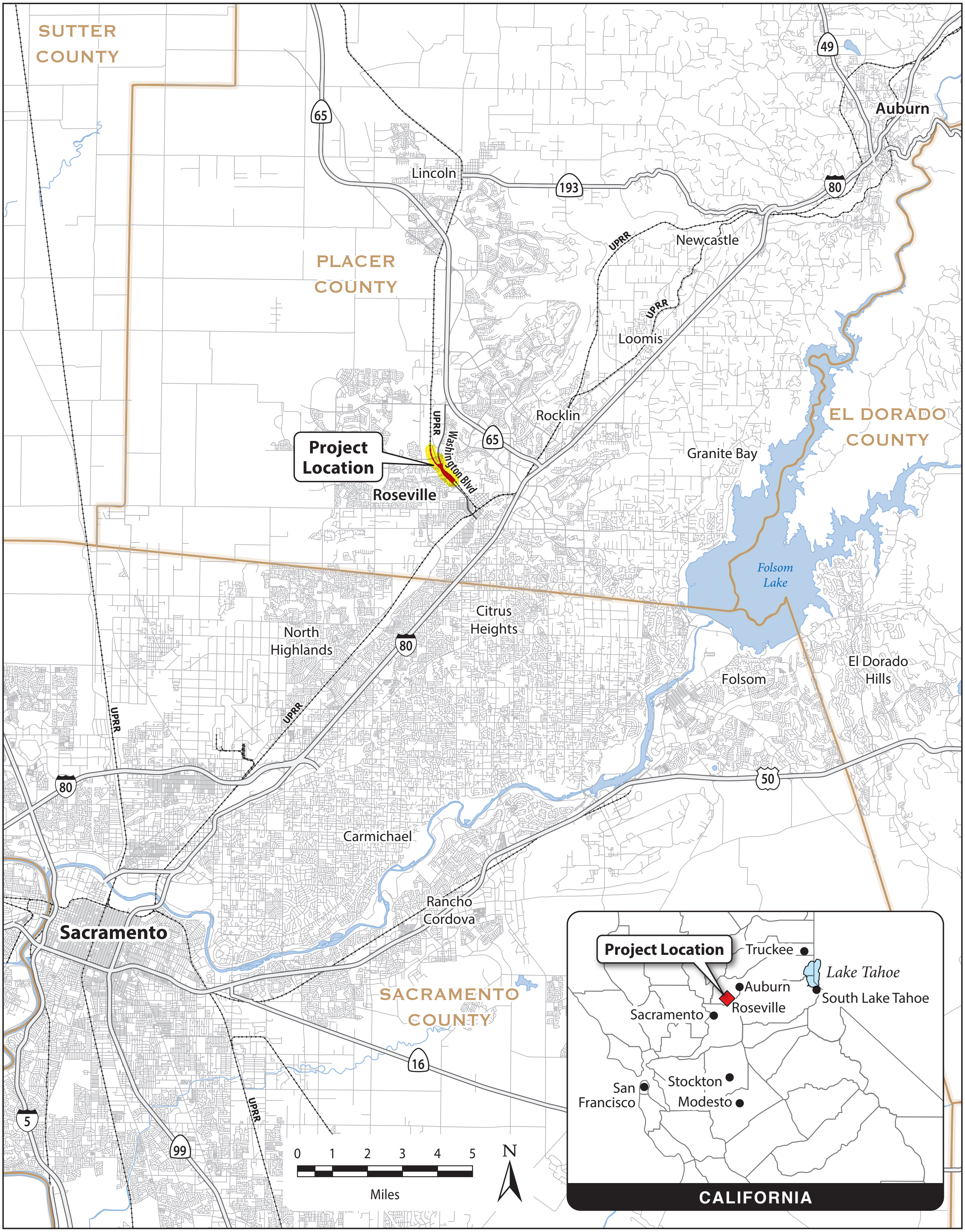


Figure 1
Regional Location

Table 1. Summary of Impacts, Conclusions, and Avoidance, Minimization, or Mitigation Measures Associated with the Project

Impact	Conclusions	Avoidance, Minimization, or Mitigation Measures
AQ-1: Conformity of the Regional Transportation Plan with the State Implementation Plan	The project is included in the regional emissions and conformity analysis for the 2016 MTP/SCS and 2017-2020 MTIP (PLA25501).	None Required
AQ-2: Potential Violations of Carbon Monoxide NAAQS or CAAQS	Neither Build Alternative is anticipated to exceed 1- or 8-hour CO NAAQS or CAAQS.	None Required
AQ-3: Potential Violations of PM2.5 NAAQS or CAAQS	Placer County is currently classified as a nonattainment area with regards to the federal PM2.5 NAAQS. Because predicted AADT and truck volumes would be less than the EPA's guidance criterion, the project is determined not be a Project of Air Quality Concern. SACOG's PLCG issued concurrence that the project is not a Project of Air Quality Concern on May 4, 2017.	None Required
AQ-4: Potential for Generation of Mobile Source Air Toxics (MSAT) Emissions	Based on FHWA's 2016 MSAT guidance and a maximum AADT of 60,000 in the project area under the Build Alternatives, this project is considered to have low potential MSAT effects, and a quantitative analysis of MSAT emissions is not required.	None Required
AQ-5: Generation of Operation-Related Emissions of O3 Precursors, Carbon Monoxide, and Particulate Matter	The project would result in decreases in ROG, NO_X, and CO but minor increases in PM10 and PM2.5 between existing (2016) and design year (2035) conditions. The project would also result in increases in ROG and PM emissions between the No Project Alternative and Build Alternatives, but decreases of NO_X and CO.	None Required
AQ-6: Potential Temporary Increase in O_3 Precursors (ROG and NO_X), CO, and Particulate Matter Emissions during Grading and Construction Activities	The project would result in temporary increases in O_3 precursors, CO, PM10, and PM2.5 during construction.	Addressed by construction-related PM10 emission minimization measures in Caltrans Standard Specifications Section 14
AQ-7: Potential for Generation of Greenhouse Gas Contaminant Emissions	The project would result in minor increases in GHG emissions during construction and long-term operation. Operational emissions increases are a result of increased VMT between the No Project) and Build Alternatives.	Please review the section Greenhouse Gas Reduction Strategies in Chapter 3

AADT = annual average daily traffic
CAAQS = California's ambient air quality standards
Caltrans = California Department of Transportation
CO = carbon monoxide
GHG = Greenhouse Gas
MTIP = Metropolitan Transportation Improvement Program
MTP = Metropolitan Transportation Plan
NAAQS = National Ambient Air Quality Standards
NOX = nitrogen oxides
O3 = Ozone
PLCG = Project Level Conformity Group
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
SACOG = Sacramento Area Council of Governments
SCS = Sustainable Communities Strategy
VMT = vehicle miles travelled

Chapter 2 Project Description

The proposed project would involve improving a 0.85-mile section of Washington Boulevard (Figure 1). The project would widen a two-lane section of Washington Boulevard between Sawtell Road and Pleasant Grove Boulevard to four lanes and replace the existing 100-year-old Andora Underpass on Washington Boulevard. The addition of two new lanes to Washington Boulevard would provide a continuous four-lane thoroughfare between Sawtell Road and Pleasant Grove Boulevard and improve traffic circulation and pedestrian traffic through the area.

2.1 Project Location

The proposed project is in the City of Roseville, Placer County, along Washington Boulevard between Sawtell Road and Pleasant Grove Boulevard (Figure 2). At the southern end of the project area, the UPRR line runs along the east side of Washington Boulevard, crosses over the road just south of the South Branch of Pleasant Grove Creek, and continues along the west side of the road toward Pleasant Grove Boulevard. The southern end of the project area is surrounded by commercial development to the east and residential areas to the west. The Diamond Oaks and Kaseberg-Kingswood neighborhoods are adjacent to the central and northern portions of the project area. City general open space and preserve open space lands occupy the area immediately west of the Andora Underpass. Residential development is present on both sides of Washington Boulevard between the Andora Underpass and Pleasant Grove Boulevard. An existing Class 1 (i.e., off street) bike path along the east side of Washington Boulevard connects Diamond Oaks Road to Derek Place.

2.2 Project Background

Washington Boulevard generally runs north-south and begins in downtown Roseville, at its junction with Oak Street, and ends at State Route (SR) 65. The boulevard provides an important local connection between downtown Roseville and North Central Roseville, Northwest Roseville, and North Industrial through its connections with other major local thoroughfares, including Foothills Boulevard, Pleasant Grove Boulevard, Roseville Parkway, Industrial Boulevard, and Blue Oaks Boulevard. Washington Boulevard provides a vital economic link from residential areas to shopping and employment centers in downtown Roseville.

Washington Boulevard was constructed as a two-lane road as part of the State Highway System approximately 100 years ago. The City decided to widen Washington Boulevard to improve the level of service (LOS) and other traffic performance measures and to accommodate increasing traffic volumes. The City elected to delay improvements to the 0.85-mile segment of Washington Boulevard associated with the proposed project because of the extensive coordination necessary with UPRR and the costs associated with widening the Andora Underpass.

The City of Roseville's Transportation System 2035 Capital Improvement Program (CIP) identifies improvements to Washington Boulevard, including the widening of Washington

Boulevard between Sawtell Road and Pleasant Grove Boulevard, to improve traffic circulation and pedestrian traffic through the area. Approximately 18,000 vehicles per day presently travel through this segment, and the road improvements would enhance accessibility for motorists, pedestrians, and cyclists along Washington Boulevard and nearby intersections. To enable roadway widening at the narrow Andora Underpass, the existing structure must be removed and replaced. The Andora Underpass would need to remain open and accessible to rail traffic during project construction because approximately 25 trains travel over it each day.

2.3 Purpose and Need

The purpose of the proposed project is to improve existing and future traffic; enhance access and safety for motorists, pedestrians, and cyclists; and meet railroad clearance requirements. The proposed project would also provide better connectivity between the existing two-lane, 0.85-mile segment of Washington Boulevard and the existing four-lane segments of Washington Boulevard and provides a future emergency evacuation route. The improvements would also offer a better and more continuous route for pedestrians and bicyclists, who are currently forced to detour off Washington Boulevard onto Derek Place.

The project is needed because recurring morning and evening peak-period demand exceeds the current design capacity of Washington Boulevard, creating traffic operation and safety issues for motorists, pedestrians, and cyclists. These issues result in moderate delays and wasted fuel, which are expected to be exacerbated by anticipated increases in traffic from future population and employment growth.

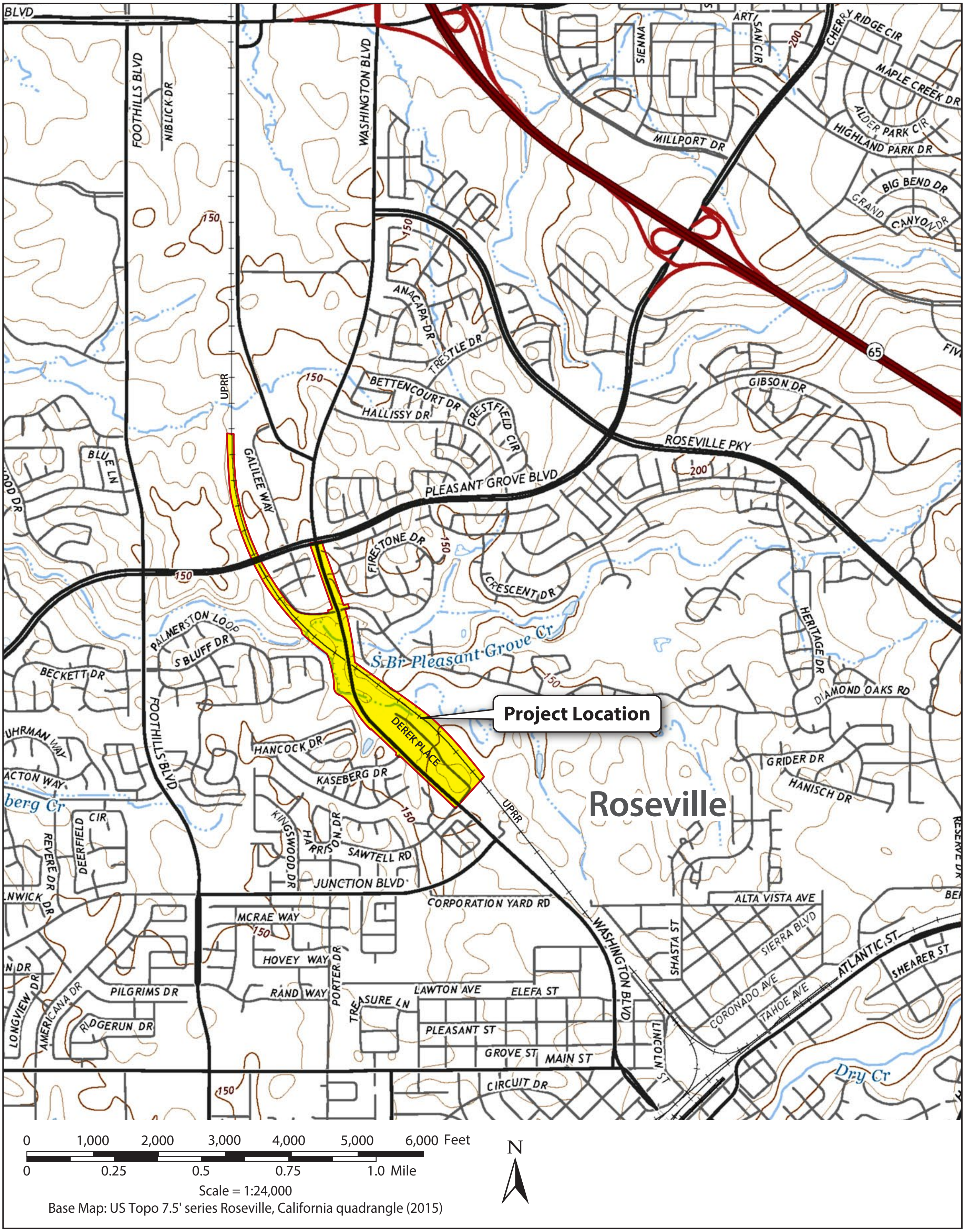
2.4 Project Alternatives

Two Build Alternatives (Alternative 1 and Alternative 2) and a No Project Alternative are being considered for this project. The assessment of alternatives is based on design year (2035) conditions.

After extensive engineering and traffic analysis efforts, and review and screening of design concepts, two Build Alternatives that would meet the project’s purpose and need and objectives surfaced for consideration and analysis. Alternatives 1 and 2 involve the same project components described above. The primary differences between the Build Alternatives are the construction access and traffic diversion options and the associated staging and duration of construction. Alternative 1 involves complete road closure and rerouting of traffic for a period of 5 months and an estimated construction duration of 13 months; Alternative 2 would leave one lane open during construction and would require an estimated 20 months of construction.

2.4.1 Alternative 1 (Both Lanes Closed During Construction)

Alternative 1 (the proposed project) would include the following elements:



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Base Map: US Topo 7.5' series Roseville, California quadrangle (2015)

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Figure 2
Project Location

- Widening approximately 0.85 mile of Washington Boulevard from two to four lanes with a raised or painted median separating northbound and southbound traffic.
- Widening the Andora Underpass to a two-span bridge with columns located in the roadway median island to accommodate the additional two lanes.
- Adding 8-foot-wide Class 2 (i.e., on-street with appropriate signing and striping) bike lanes along both sides of Washington Boulevard.
- Expanding the existing Class 1 bike path on the east side of Washington Boulevard from Diamond Oaks Road to Derek Place with a 10- to 12-foot-wide path parallel to Washington Boulevard and connecting it to Sawtell Road.
- Removing the existing bicycle/pedestrian crossing under UPRR and provide a new connection to the Class 1 bike path on the east side of Washington Boulevard.
- Adding a new 8- to 12-foot-wide multiuse path on the west side of Washington Boulevard between Emerald Oaks Road and Kaseberg Drive. Portions of the proposed multiuse path may be deferred until additional construction funding is available.
- Providing traffic signal modifications. The existing traffic signal at Diamond Oaks Road would be modified to conform to the new four-lane roadway.
- Installation of sound walls.
- Conducting floodplain, water quality, and drainage improvements.
- Relocating existing utilities, including sewer, water, telecommunications, and natural gas.
- Temporally restriping Foothills Boulevard at Junction Boulevard to provide two left-turn lanes from southbound Foothills Boulevard to eastbound Junction Boulevard.

The proposed project would not alter the existing bus turnout adjacent to southbound Washington Boulevard and south of Pleasant Grove Boulevard. Each of the major proposed project components is described in greater detail below. Figure 3 provides an overview of these components.

2.4.1.1 Washington Boulevard Widening

The proposed project would consist of widening Washington Boulevard to allow two through lanes in each direction with a raised or painted median separating the northbound and southbound traffic. Concrete curbs would define the new edge of roadway and separate the vehicular traffic from the pedestrians.

2.4.1.2 Andora Underpass and Bridge Widening

The existing Andora Underpass has substandard vertical clearance. To provide standard vertical clearance, the profile grade of Washington Boulevard would be lowered approximately 3 feet. The lowering of the roadway would also require removal and replacement of two drainage culvert crossings (described below under 2.4.5 Floodplain and Drainage Improvements).

Widening the Andora Underpass would involve broadening the existing bridge structure to a two-span bridge with columns located in the roadway median island. The existing roadway crosses beneath the UPRR tracks at a 45-degree angle. Because UPRR limits bridge skews to a maximum of 30 degrees, the proposed bridge median columns would be slightly skewed, by approximately 15 degrees. The existing Andora Underpass can accommodate two railroad tracks, although only one track currently exists at this location. Therefore, the project would be designed to accommodate two UPRR tracks; the proposed bridge structure may be constructed in stages to include a second track at a future date.

The Andora Underpass would have concrete abutments and wingwalls. The concrete would have some relief to mimic the appearance of an old style Works Progress Administration bridge. There is also the potential for incorporating architectural enhancements, color, and features into the concrete facade to provide additional visual interest and character for the structure. The concrete may be stained a rock-like color to provide additional visual interest. The superstructure would consist of painted steel girders with painted steel hand railings extending above the track level. The bottom of the structure (soffit) would show the individual steel girders and not be smooth like a normal concrete highway bridge.

No second track is proposed as part of this project; however, the ability to easily add a second track to the structure without needing to widen the concrete abutments is a project requirement. According to UPRR, there are no reasonably foreseeable plans to install a second track.

2.4.1.3 Railroad Shoofly

During the 5- to 6-month construction period, railroad traffic would be maintained except for short time periods allowed by UPRR. During removal of the existing Andora Underpass, the railroad would be detoured to a temporary track, known as a shoofly. An estimated 25 trains would use the track per day. During the transition from the old track to the shoofly and then back again, the rail line would be shut down to train traffic for about 4 hours. No trains would be diverted around the project site to other rail lines.

The shoofly would be within UPRR- and City-owned rights of way (as shown in Figure 3). The shoofly would be approximately 6,500 feet long (1.25 miles), would extend up to 0.75 mile north and 0.5 mile south of the Andora Underpass, and could shift up to 65 feet westerly. Temporary fill would be placed within the portion of the Sierra View Tributary (an estimated 600 feet) that runs along the tracks to accommodate the temporary shoofly alignment.

The temporary railroad shoofly would be constructed using soil excavated from the project site for the roadway widening and reconstruction of the existing roadway structural section. No imported fill is expected to be needed. Approximately 13,500 cubic yards (CY) of fill would be placed east of Washington Boulevard and 22,500 CY would be placed west of Washington Boulevard to create the shoofly.

The temporary shoofly fill would be removed and disposed at permitted soil disposal sites. Railroad slopes would be restored using the appropriate seed mix and in accordance with the project Storm Water Pollution Prevention Plan (SWPPP) and any permit conditions.

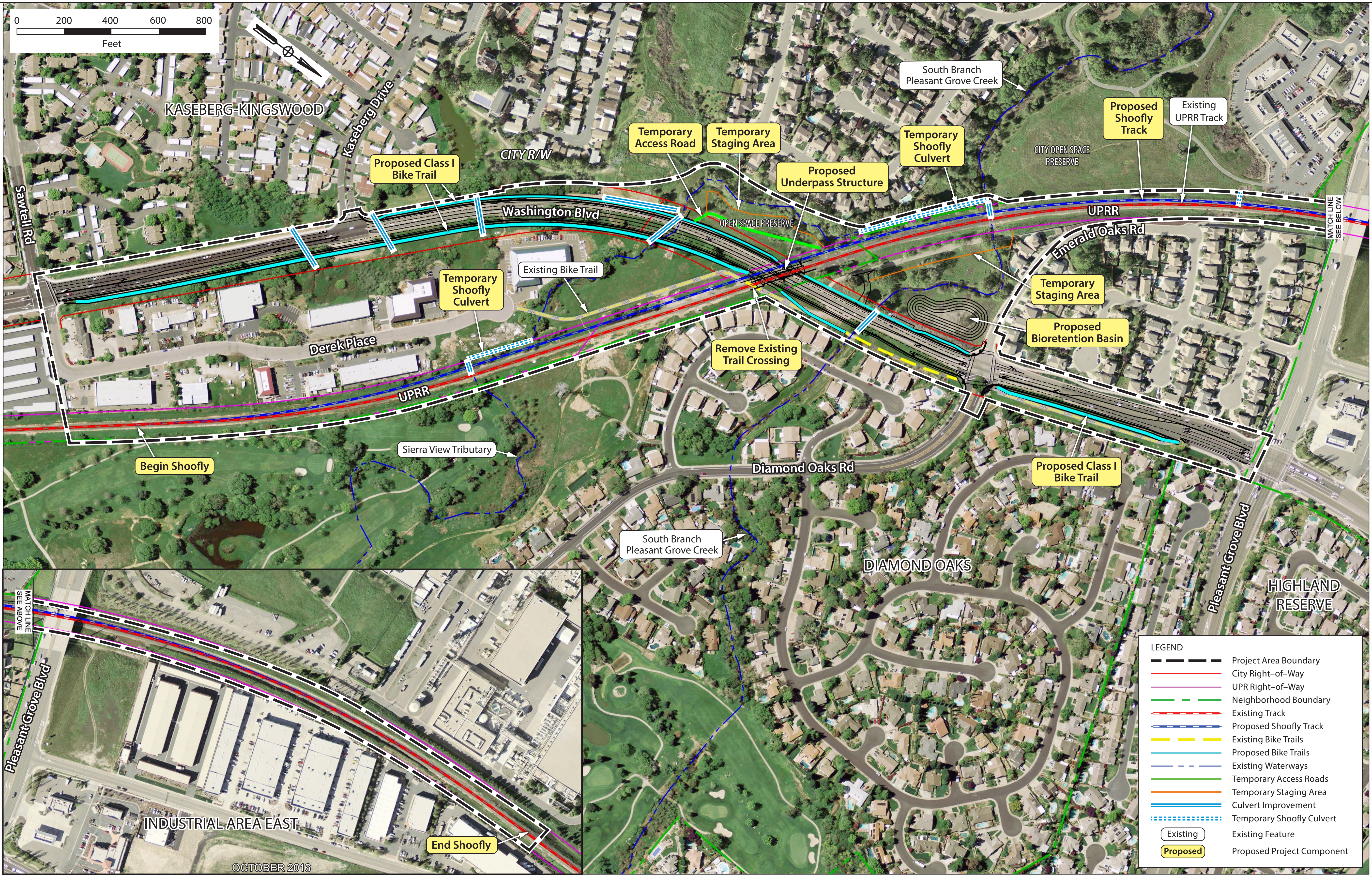

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Figure 3
Project Components

2.4.1.4 Bike Trail Improvements

Eight-foot-wide Class 2 bike lanes would also be included along both sides of the roadway. The existing Class 1 bike path on the east side of Washington Boulevard from Diamond Oaks Road to Derek Place would be connected to a 10-foot-wide Class 1 bike trail parallel to Washington Boulevard to connect to Sawtell Drive. The existing pedestrian underpass approximately 100 feet east of Washington Boulevard would be abandoned. A new 10-foot-wide multiuse path on the west side of Washington Boulevard between Emerald Oaks Road and Kaseberg Drive is also proposed; however, the construction of this path may be deferred until additional construction funding is available.

2.4.1.5 Floodplain, Water Quality, and Drainage Improvements

The lowering of Washington Boulevard under the Andora Underpass requires a variety of drainage and floodplain improvements because the low point of Washington Boulevard would be below the 100-year flood elevation. These improvement include the following (shown in Figure 3):

- Regrading ditches and adding a drainage pump station to drain the Andora Underpass.
- Constructing a bioretention basin to treat existing stormwater and comply with current stormwater quality requirements (Water Quality Order No. 2013-0001-DWQ). The new bioretention basin would be used to treat stormwater runoff that originates from the northern portion of the project and an area tributary to the intersection of Washington Boulevard and Pleasant Grove Boulevard. The bioretention basin (shown in Figure 3) would be constructed on the City-owned parcel bordered by Emerald Oaks Road, the South Branch of Pleasant Grove Creek, and Washington Boulevard. This parcel currently supports an open annual grassland. The basin would be created by excavation, construction of a berm along the east side of the South Branch of Pleasant Grove Creek, and placement of imported drain rock and sand-compost mix to support runoff retention, water quality treatment and specialized planting.
- Replacing and extending corrugated metal pipes (CMPs) in four crossings of unnamed tributaries of Sierra View Tributary to support widening of Washington Boulevard.
- Replacing and extending two box culvert replacements (Sierra View Tributary and South Branch Pleasant Grove Creek).

2.4.1.6 Traffic Signal Improvements

No new traffic signals are proposed as part of the project; however, the existing traffic signal at Diamond Oaks Road would be modified to conform to the new four-lane roadway and the traffic signal at Pleasant Grove Boulevard would have signal re-timing only.

2.4.1.7 Utility Relocations

The lowering of the roadway would necessitate relocation of City-owned sewer and water lines, underground telecommunication lines, and potential adjustments to underground Pacific Gas and Electric (PG&E) gas lines.

2.4.2 Alternative 2 (One Lane Closure during Construction)

Alternative 2 is designed to satisfy the project objectives identified in Section 1.4, *Purpose and Need*, while avoiding or minimizing environmental impacts associated with the project. The alignment and associated project components for Alternative 2 are the same as described for Alternative 1and involve the same improvements to Washington Boulevard; however, it differs in its construction approach, including traffic diversion and schedule. The main difference from the proposed project is that Alternative 2 would leave one lane open during construction and would require an estimated 20 to 24 months to construct because a temporary railroad bridge is required over Washington Boulevard to maintain train traffic.

Under Alternative 2, Washington Boulevard vehicular traffic would be allowed to pass through the project site under the control of one-way flagging operations during some of the construction phases. However, the travelling public would still be significantly delayed during construction under Alternative 2 because it would not be possible to maintain two lanes of traffic flow during most of the construction period; therefore, more than half of the normal traffic would use an alternative route.

2.4.3 No Project Alternative

The No Project Alternative would not involve any improvements to Washington Boulevard. The existing roadway and Andora Underpass would remain in their current state.

Chapter 3 Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures

This chapter describes the environmental setting (regulatory setting and physical setting/existing conditions) for air quality and climate change as it relates to the proposed project; the impacts on air quality that would result from the proposed project; and avoidance, minimization, and/or mitigation measures that would reduce these impacts, if applicable.

3.1 Affected Environment

3.1.1 Regulatory Setting

3.1.1.1 Air Quality

The air quality management agencies of direct importance in Placer County include the United States Environmental Protection Agency (EPA), California Air Resources Board (ARB), and Placer County Air Pollution Control District (PCAPCD). The EPA has established federal standards for which the ARB and PCAPCD have primary implementation responsibility. The ARB and PCAPCD are also responsible for ensuring that state standards are met. Federal, state, and local regulations applicable to the proposed project are described below.

Federal Air Quality Standards

The Federal Clean Air Act (FCAA) as amended in 1990 is the federal law that governs air quality. The California Clean Air Act (California CAA) of 1988 is its companion state law, which is described further below. These laws and related regulations by the EPA and ARB set standards for the quantity of pollutants that can be in the air. At the federal level, the standards are called National Ambient Air Quality Standards (NAAQS). NAAQS have been established for six transportation-related criteria pollutants that have been linked to potential health concerns. The criteria pollutants are carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM, broken down for regulatory purposes into particles of 10 micrometers or smaller—PM10, and particles of 2.5 micrometers and smaller—PM2.5), lead, and sulfur dioxide (SO_2). In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

The NAAQS and California Ambient Air Quality Standards (CAAQS) are set at a level that protects public health with a margin of safety and are subject to periodic review and revision. The NAAQS and CAAQS are listed together in Table 2. Both state and federal regulations also cover toxic air contaminants (air toxics). Note that some criteria pollutants are air toxics or may include certain air toxics within their general definition. The federal and state air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA and CEQA. In addition to this type of environmental analysis, a parallel “conformity” requirement under the FCAA also applies, as described below.

Federal Clean Air Act Conformity Requirements for Transportation

FCAA Section 176(c) prohibits the United States Department of Transportation (DOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that are not first found to conform to State Implementation Plan (SIP) for achieving the goals of FCAA requirements related to the NAAQS. The “Transportation Conformity” Act applies 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. A region is *nonattainment* if one or more monitoring stations in the region measures 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 the EPA, and are then called *maintenance* areas. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for CO, NO_2, O_3, PM10, and PM2.5, and in some areas SO_2. California is nonattainment or maintenance for all of these transportation-related criteria pollutants except SO_2, and also has a nonattainment area for lead. However, lead is not currently required by the FCAA to be covered in a transportation conformity analysis. Regional conformity is based on Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all of the 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 is based on use of travel demand and air quality models to determine whether or not implementation of those projects would conform to emission budgets or other tests showing that requirements of the FCAA and the SIP are met. The Metropolitan Planning Organization (MPO) and FHWA determine whether the RTP and FTIP conform to SIP goals for achieving the FCAA requirements. If the RTP and FTIP do not conform to the SIP, the projects in the RTP and/or the 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 the FTIP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis. Note the SACOG’s RTP is known as the MTP/SCS and its Transportation Improvement Program is known as the MTIP.

Table 2. National and California Ambient Air Quality Standards Applicable in California

Pollutant	Symbol	Average Time	Standard (ppm)		Standard (µg/m^3)		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	NA	180	NA	If exceeded	NA
		8 hours	0.070	0.070	137	147	If exceeded	If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor within an area
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.18	0.100	339	188	If exceeded	NA
Sulfur dioxide	SO_2	Annual arithmetic mean	NA	0.030	NA	NA	NA	If exceeded
		24 hours	0.04	0.14	105	NA	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	75	655	196	If exceeded	NA
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA
Vinyl chloride	C_2H_3Cl	24 hours	0.01	NA	26	NA	If equaled or exceeded	NA
Inhalable PM	PM10	Annual arithmetic mean	NA	NA	20	NA	If exceeded	If exceeded at each monitor within area
		24 hours	NA	NA	50	150	If exceeded	If exceeded on more than 1 day per year
	PM2.5	Annual arithmetic mean	NA	NA	12	12.0	If exceeded	If 3-year average from single or multiple community-oriented monitors is exceeded
		24 hours	NA	NA	NA	35	NA	If 3-year average of 98th percentile at each population-oriented monitor within an area is exceeded

Pollutant	Symbol	Average Time	Standard (ppm)		Standard (µg/m^3)		Violation Criteria	
			California	National	California	National	California	National
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded on more than 1 day per year
		30-day average	NA	NA	1.5	NA	If equaled or exceeded	NA
		Rolling 3-month average	NA	NA	NA	0.15	If equaled or exceeded	Averaged over a rolling 3-month period

Source: California Air Resources Board 2016a

Notes: All standards are based on measurements at 25ºC and 1 atmosphere pressure; national standards shown are the primary (health effects) standards; ppm = parts per million; µg/m^3 = micrograms per cubic meter; NA = not applicable.

Conformity at the project level also requires a hot-spot analysis if an area is nonattainment or maintenance for CO or particulate matter (PM10 and PM2.5). A hot-spot analysis is essentially the same, for technical purposes, as a CO or particulate matter 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 CO 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 particulate matter violation is in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

The concept of transportation conformity was introduced in the FCAA 1977 amendments. Transportation conformity requires that no federal dollars be used to fund a transportation project unless it can be clearly demonstrated that the project would not cause or contribute to violations of the NAAQS. Conformity requirements were made substantially more rigorous in the FCAA 1990 amendments, and the transportation conformity regulation that details implementation of the new requirements was issued in November 1993.

The DOT and EPA developed guidance for determining conformity of transportation plans, programs, and projects in November 1993 in the Transportation Conformity Rule (40 CFR 51 and 40 CFR 93). The demonstration of conformity to the SIP is the responsibility of the local MPO, which is also responsible for preparing RTPs and associated demonstration of SIP conformity. Section 93.114 of the Transportation Conformity Rule states that “there must be a currently conforming RTP and transportation improvement plan at the time of project approval.”

State Air Quality Standards

Responsibility for achieving the CAAQS (see Table 2), which, for certain pollutants and averaging periods, are more stringent than federal standards, is placed on the ARB and local air pollution control districts. State standards are achieved through district-level air quality management plans that are incorporated into the SIP.

ARB traditionally has established state air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved SIPs. Air district responsibilities include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required under CEQA. It should be noted, however, that Caltrans considers the use of locally adopted CEQA thresholds of significance for construction emissions as being not mandatory, but to help serve as guidance for scoping air quality studies. However, Caltrans Standard Specification Section 14-9.02, which includes specifications relating to air pollution control, requires that projects comply with air pollution control rules, regulations, ordinances, and statutes, including those provided in Government Code Section 11017 (Public Contract Code § 10231). In addition, Caltrans does not have the authority to require use of specific equipment or to apply other direct restrictions on contractor equipment fleet emissions in excess of EPA, ARB, and possibly local air district regulations.

The California CAA of 1988 substantially added to the authority and responsibilities of air districts. The California CAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures.

The California CAA focuses on attainment of the CAAQS and requires designation of attainment and nonattainment areas with respect to these standards. The California CAA also requires that local and regional air districts expeditiously adopt and prepare an air quality attainment plan (Clean Air Plan) if the district violates state air quality standards for O_3, CO, SO_2, or NO_2. These plans are specifically designed to attain state standards and must be designed to achieve an annual 5% reduction in district-wide emissions of each nonattainment pollutant or its precursors. No locally prepared attainment plans are required for areas that violate the state PM10 standards; ARB is responsible for developing plans and projects that achieve compliance with the state PM10 standards.

The California CAA requires that the state air quality standards be met as expeditiously as practicable, but, unlike the FCAA, does not set precise attainment deadlines. Instead, the California CAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards.

The California CAA emphasizes the control of “indirect and area-wide sources” of air pollutant emissions. The act gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish transportation control measures. The California CAA does not define the terms *indirect sources* and *area-wide sources*. However, Section 110(a)(5)(C)) of the FCAA defines an indirect source as

> a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution. Such term includes parking lots, parking garages, and other facilities subject to any measure for management of parking supply….

The ARB defines area-wide sources as sources of pollution where the emissions are spread over a wide area, such as consumer products, fireplaces, road dust and farming operations. Area-wide sources do not include mobile sources or stationary sources (California Air Resources Board n.d.). Transportation control measures are defined in the California CAA as “any strategy to reduce trips, vehicle use, vehicle miles travelled, vehicle idling, or traffic congestion for the purpose of reducing vehicle emissions.”

Local and Regional Implementation of Federal and State Requirements

At the local level, air quality is managed through land use and development planning practices, which are implemented in Placer County through the general planning process. PCAPCD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws. The air district is also responsible for implementing strategies for air quality improvement and recommending mitigation measures for new growth and development.

PCAPCD (2016) has specified significance thresholds in its *Review of Land Use Projects under CEQA Policy* to assist lead agencies in determining air quality impacts for projects located in Placer County. Although not used to determine impacts associated with the proposed project, PCAPCD's thresholds of significance, as indicated in their land use policy, are summarized in Table 3 for informational purposes. Thresholds for pollutants other than reactive organic gases (ROG), nitrogen oxides (NO_X), and PM10 are not specified.

Table 3. Placer County Air Pollution Control District Thresholds of Significance (pounds per day)

	O_3 Precursor Emissions		
	ROG	**NO_X**	**PM10**
Construction (short-term)	82	82	82
Operational (long-term)	55	55	82

Source: Placer County Air Pollution Control District 2016

3.1.2 Physical Setting

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

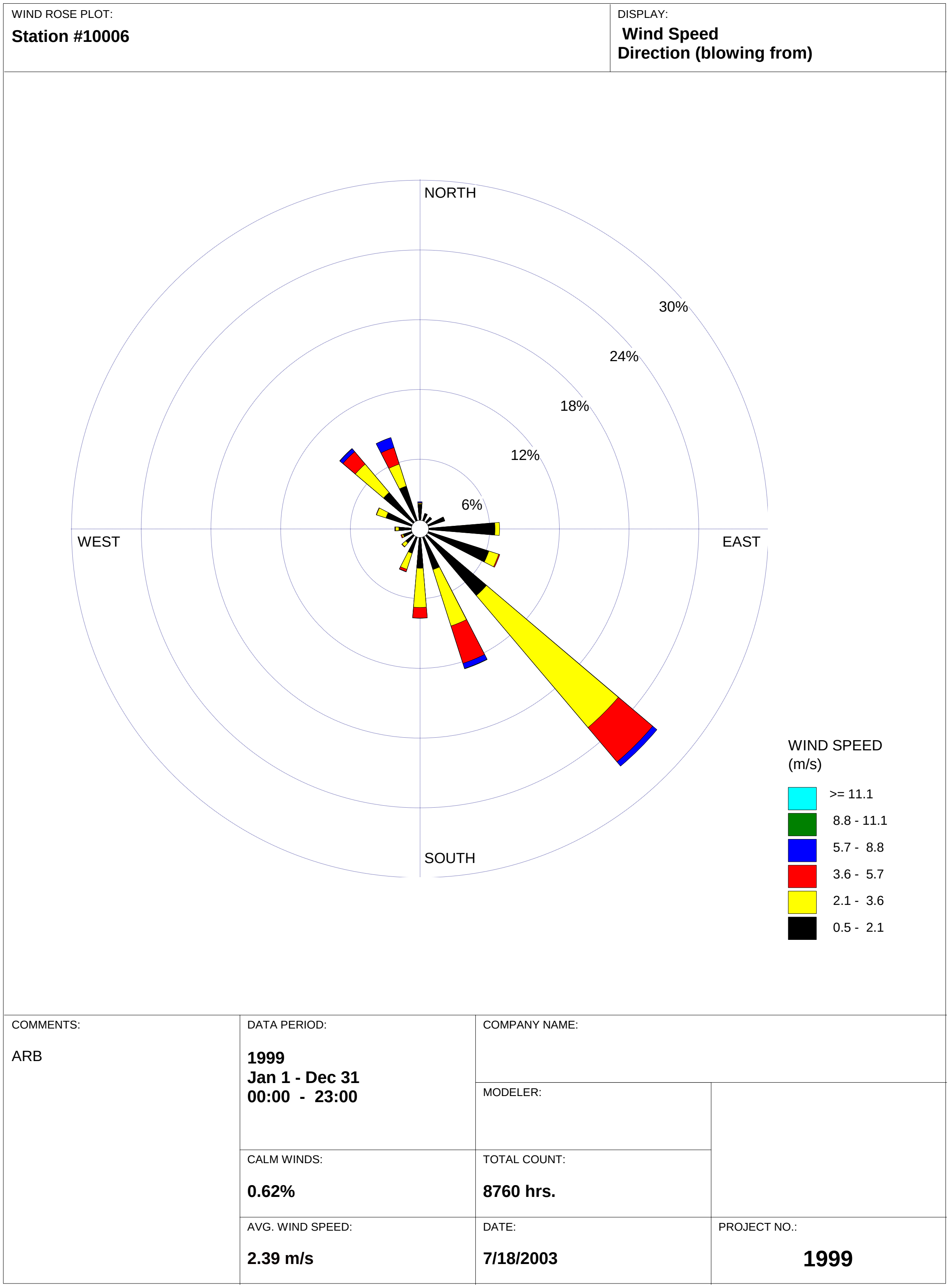
3.1.2.1 Climate and Topography

The project is in Placer County, California, which spans three air basins; however, the project is entirely in the Sacramento Valley Air Basin (SVAB). The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, and Yolo Counties, as well as parts of Solano and Placer Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The San Joaquin Valley Air Basin lies to the south.

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During the winter, the North Pacific storm track intermittently dominates valley weather, and fair weather alternates with periods of extensive clouds and precipitation. Also characteristic of winter weather in the SVAB are periods of dense and persistent low-level fog that is most prevalent between storms. The frequency and persistence of heavy fog in the SVAB diminishes with the approach of spring. The average yearly temperature range for the Sacramento Valley is between 20 and 115° Fahrenheit (F), with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

Incoming airflow strength varies daily with a pronounced diurnal cycle. Figure 4, Wind Rose Plot, indicates the predominant wind direction in the region is from the southeast based on meteorological data from the North Sunrise Boulevard monitoring station (California Air

Resources Board 2003). Influx strength is weakest in the morning and increases in the evening hours. Associated with the influx of air through the Carquinez Strait is the Schultz Eddy. The Schultz Eddy is an eddy formed when mountains on the valley’s western side divert incoming marine air. The eddy contributes to the formation of a low-level southerly jet between 500 and 1,000 feet above the surface that is capable of speeds in excess of 35 miles per hour (mph). This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.



WIND ROSE PLOT:
Station #10006

DISPLAY:
Wind Speed
Direction (blowing from)

COMMENTS:
ARB

DATA PERIOD:
1999
Jan 1 - Dec 31
00:00 - 23:00

COMPANY NAME:

MODELER:

CALM WINDS:
0.62%

TOTAL COUNT:
8760 hrs.

AVG. WIND SPEED:
2.39 m/s

DATE:
7/18/2003

PROJECT NO.:
1999

WRPLOT View - Lakes Environmental Software

Figure 4. Wind Rose Plot—Roseville North Sunrise

The SVAB's climate and topography contribute to the formation and transport of photochemical pollutants throughout the region. The region experiences temperature inversions that limit atmospheric mixing and trap pollutants; high pollutant concentrations result near the ground surface. Generally, the lower the inversion base height from the ground and the greater the temperature increase from base to top, the more pronounced the inhibiting effect of the inversion will be on pollutant dispersion. Consequently, the highest concentrations of photochemical pollutants occur from late spring to early fall when photochemical reactions are greatest because of intensifying sunlight and lowering altitude of daytime inversion layers. Surface inversions (those at altitudes of 0 to 500 feet above sea level) are most frequent during winter, and subsidence inversions (those at 1,000 to 2,000 feet above sea level) are most common in the summer.

3.1.2.2 Description of Pollutants

The primary pollutants of concern in the project area are O_3 and its precursors, ROG and NO_X, as well as CO, PM10, and PM2.5. O_3, PM10, and PM2.5 are considered to be regional pollutants because they affect air quality on a regional scale. NO_2 reacts photochemically with ROG to form O_3, while PM10 and PM2.5 can form from chemical reaction of atmospheric chemicals, including NO_X, sulfates, nitrates, and ammonia. These processes can occur at some distance downwind of the source of pollutants. Pollutants, such as CO, are considered to be local pollutants because they tend to disperse rapidly with distance from the source. Although PM10 and PM2.5 are regional pollutants, they can also be localized pollutants, as direct emissions of PM10 from automobile exhaust can accumulate in the air locally near the emission source.

The following is a brief overview of O_3, CO, PM10, and PM2.5. Carbon dioxide (CO_2), mobile source air toxics (MSAT), and asbestos are also discussed, even though there are currently no adopted standards to control these pollutants.

Ozone

O_3 is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials. O_3 is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. The O_3 precursors ROG and NO_X react in the atmosphere in the presence of sunlight to form O_3. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, O_3 pollution is primarily a problem in the summer.

Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death. Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

Inhalable Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Particulate matter less than 10 microns in diameter, about 1/7 the diameter of a human hair, is referred to as PM10. Particulate matter 2.5 microns or less in diameter, roughly 1/28 the diameter of a human hair, is referred to as PM2.5. Major sources of PM10 include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush or waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM2.5 results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM10 and PM2.5 can be formed in the atmosphere from gases such as SO_2, NO_X, and ROG.

PM10 and PM2.5 pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM10 and PM2.5 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of certain substances, such as lead, sulfates, and nitrates, can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body; they can also transport absorbed gases such as chlorides or ammonium into the lungs and cause injury. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns in diameter or smaller can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, contribute to haze, and reduce regional visibility.

Carbon Dioxide

CO_2 is the most important anthropogenic greenhouse gas (GHG) and accounts for more than 75% of all anthropogenic GHG emissions. Its long atmospheric lifetime (decades to centuries) ensures that atmospheric concentrations of CO_2 will remain elevated for decades after mitigation efforts to reduce GHG concentrations are instituted (Intergovernmental Panel on Climate Change 2007).

Increasing concentrations of CO_2 in the atmosphere are primarily a result of emissions from the burning of fossil fuels, gas flaring, cement production, and land use changes. Three quarters of anthropogenic CO_2 emissions are the result of fossil fuel burning (and to a very small extent, cement production), and approximately one quarter of emissions are the result of land use change (Intergovernmental Panel on Climate Change 2007).

Anthropogenic emissions of CO_2 have increased concentrations in the atmosphere, most notably since the industrial revolution; the concentration of CO_2 has increased from about 280 parts per million (ppm) to 390 ppm from 1750 to 2011 (Intergovernmental Panel on Climate Change 2013:161). The Intergovernmental Panel on Climate Change estimates that the present atmospheric concentration of CO_2 has not been exceeded in the last nearly 1 million years (Intergovernmental Panel on Climate Change 2007:100).

Toxic Air Contaminants/Mobile Source Air Toxics

Toxic air contaminants (TACs) are pollutants that may result in an increase in mortality or serious illness or that may pose a present or potential hazard to human health. Health effects of TACs include cancer, birth defects, neurological damage, damage to the body’s natural defense system, and diseases that lead to death. In 1998, following a 10-year scientific assessment process, ARB identified particulate matter from diesel-fueled engines as a TAC. Compared to other air toxics that ARB has identified and controlled, diesel particulate matter (DPM) emissions are estimated to be responsible for about 70% of the total ambient air toxics risk (California Air Resources Board 2000).

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

- Acrolein
- Benzene
- 1,3-Butadiene
- DPM/diesel exhaust organic gases
- Formaldehyde
- Naphthalene
- Polycyclic organic matter (POM)

While FHWA considers these compounds the priority MSATs, the list is subject to change and may be adjusted in consideration of future rules. To address emissions of MSATs, EPA has issued a number of regulations, including the 2007 rule mentioned above, that will dramatically decrease MSATs through cleaner fuels and cleaner engines.

The issue of air toxics is an emerging area of analysis and continuing research. Although much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques available for assessing project-specific health impacts from MSATs are currently limited. Given the emerging state of the science and of project-level analysis techniques, there are no established criteria for determining when MSAT emissions should be considered a significant issue in the context of NEPA.

FHWA released updated guidance for factoring mobile source health risks into project-level decision making under NEPA in October 2016 (U.S. Federal Highway Administration 2016). However, EPA has not established regulatory concentration targets for the seven relevant MSAT pollutants appropriate for use in the project development process. The FHWA recommends MSAT analyses be conducted using EPA's latest version of the Motor Vehicle Emissions Simulator (MOVES) model, released on October 7, 2014, which estimates on- and off-road MSAT emissions from motor vehicles. FHWA's guidance advises the assessment of MSATs in NEPA documents (U.S. Federal Highway Administration 2016).

Asbestos

Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (proper rock name serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. 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. Naturally occurring asbestos (NOA) is present in approximately 44 of California's 58 counties.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos-bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

Asbestos can result in a human health hazard when airborne. The inhalation of asbestos fibers into the lungs can result in a variety of adverse health effects, including inflammation of the lungs, respiratory ailments (such as asbestosis, which is scarring of lung tissue that results in constricted breathing), and cancer (such as lung cancer and mesothelioma, which is cancer of the linings of the lungs and abdomen).

3.1.2.3 Existing Air Quality Conditions

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that federal and state governments have established for various pollutants and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or micrograms per cubic meter ($\mu g/m^3$). The nearest air quality monitoring station in the vicinity of the project area that reported pollutant concentrations between 2013 and 2015 is the North Sunrise Boulevard monitoring station at 151 North Sunrise Avenue in Roseville, which is approximately 2.5 miles south of the project. The North Sunrise Boulevard station monitors for O_3, NO_2, PM10, and PM2.5. Because there are no monitors for CO located in Placer County, monitoring data for CO was taken from the nearest monitoring station, located at North Highlands-Blackfoot Way in Sacramento County (7 miles southwest of the project).

Air quality monitoring data from the North Sunrise Boulevard and North Highlands-Blackfoot Way monitoring stations are summarized in Table 4. These data represent air quality monitoring data for the last 3 years (2013 through 2015) in which complete data are available.

Table 4. Ambient Air Quality Monitoring Data Measured at the Roseville- North Sunrise Boulevard and North Highlands-Blackfoot Way Sacramento Monitoring Stations

Pollutant Standards	2013	2014	2015
O_3 (Roseville-North Sunrise Boulevard)			
Maximum 1-hour concentration (ppm)	0.111	0.097	0.098
Maximum 8-hour concentration (ppm)	0.083	0.086	0.084
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	2	4	1
CAAQS 8-hour (>0.070 ppm)	8	21	6
Nitrogen Dioxide (NO_2) (Roseville-North Sunrise Boulevard)			
State maximum 1-hour concentration (ppm)	0.056	0.054	0.050
State second-highest 1-hour concentration (ppm)	0.054	0.048	0.049
Annual average concentration (ppm)	0.010	0.008	0.008
Number of days standard exceeded[a]			
CAAQS 1-hour (0.18 ppm)	0	0	0
Carbon Monoxide (CO) (North Highlands-Blackfoot Way)			
Maximum 8-hour concentration (ppm)	1.4	1.4	1.3
Maximum 1-hour concentration (ppm)	1.9	1.8	2.1
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0
Particulate Matter (PM10) (Roseville-North Sunrise Boulevard)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	55.5	30.2	36.7
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	36.4	29.5	24.4
State[c] maximum 24-hour concentration ($\mu g/m^3$)	54.1	31.8	59.1
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	36.5	29.5	43.1
National annual average concentration ($\mu g/m^3$)	18.4	17.9	13.0
State annual average concentration ($\mu g/m^3$)[d]	*	18.0	*
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[e]	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)[e]	1	0	1
Particulate Matter (PM2.5) (Roseville-North Sunrise Boulevard)			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	23.7	22.2	29.1
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	18.9	20.6	20.1
State[c] maximum 24-hour concentration ($\mu g/m^3$)	57.0	30.7	44.1
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	35.2	24.8	37.7

Pollutant Standards	2013	2014	2015
National annual average concentration ($\mu g/m^3$)	7.5	7.8	8.0
State annual average concentration ($\mu g/m^3$)[d]	7.5	10.5	8.1
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 $\mu g/m^3$)	0	0	0

Notes: CAAQS = California Ambient Air Quality Standards.
NAAQS = National Ambient Air Quality Standards.
* = insufficient data available to determine the value.
ppm = parts per million.
$\mu g/m^3$ = micrograms per cubic meter.

[a] An exceedance is not necessarily a violation.

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

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

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

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

Source: California Air Resources Board 2016b; U.S. Environmental Protection Agency 2016a

As shown in Table 4, the Roseville-North Sunrise Boulevard monitoring station has experienced violations of the state 1-hour O_3 standard, state 8-hour O_3 standard, and state 24-hour PM10 standard during the 3-year monitoring period.

3.1.2.4 Attainment Status

EPA has classified the SVAB portion of Placer County as a severe nonattainment area with regard to the federal 8-hour O_3 standard and a moderate nonattainment area for the federal PM2.5 standard. EPA has classified the SVAB portion of Placer County as a moderate maintenance area for the federal CO standard. Placer County is considered an attainment area for the federal PM10 standard (U.S. Environmental Protection Agency 2016b).

ARB has classified the SVAB portion of Placer County as a serious nonattainment area for the state 1-hour O_3 standard. ARB has classified all of Placer County as a nonattainment area for the state 8-hour O_3 and PM10 standards. With regards to the state CO and PM2.5 standards, ARB has classified the SVAB portion of Placer County as an attainment area (California Air Resources Board 2016c). Attainment status information is summarized in Table 5.

Table 5. Attainment Status of Sacramento Valley Air Basin portion of Placer County

Pollutant	Attainment Status	
	State	Federal
1-hour Ozone	Serious Nonattainment	N/A
8-hour Ozone	Nonattainment	Severe Nonattainment
Carbon Monoxide	Attainment	Moderate Maintenance
PM10	Nonattainment	Attainment
PM2.5	Attainment	Moderate Nonattainment
Source: California Air Resources Board 2016c; U.S. Environmental Protection Agency 2016b		

3.1.2.5 Sensitive Receptors

The PCAPCD defines *sensitive receptors* as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of sensitive receptors include schools, hospitals, and residential areas. Primary pollutants of concern to sensitive receptors are CO, DPM, and, to a lesser extent, odors or odorous compounds such as ammonia and SO_2. Sensitive receptors would not be directly affected by emissions of regional pollutants, such as O_3 precursors (ROG and NO_X).

The project area is within an urban environment. Land use compatibility issues relative to the siting of pollution-emitting sources or the siting of sensitive receptors must be considered. Receptors within 1,000 feet of the proposed project may be exposed to increased air pollution. Residential land uses are immediately east and west (closest receptor is 25 feet) of Washington Boulevard between the Andora Underpass and Pleasant Grove Boulevard. Residential receptors are also within 120 feet of the existing UPRR mainline. Use of the shoofly during construction would move existing freight traffic approximately 40 feet closer to the Kaseberg-Kingswood neighborhood that is northwest of Washington Boulevard. There are no educational, recreational, or medical facilities within 1,000 feet of the project area. Figure 5 indicates the locations of sensitive receptors located in the vicinity of the project alignment.

3.2 Environmental Consequences

3.2.1 Methods

The proposed project would generate construction-related and operational emissions. The methodology used to evaluate construction and operational effects is described below.

3.2.1.1 Operational Impact Assessment Methodology

The primary operational emissions associated with the project are ROG, NO_X, CO, PM10, PM2.5, and CO_2 emitted as vehicle exhaust. Transportation conformity with regard to criteria pollutants was evaluated by including the project in the most recent MTP and MTIP. In addition, the effects of criteria pollutant and CO_2 emissions were quantified with Caltrans' CT-EMFAC emission modeling program (version 5.0) and traffic data provided by the project traffic engineers, Fehr & Peers (2016, 2017). The effects of localized CO hot-spot emissions were evaluated through CO dispersion modeling using the *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997) and traffic data provided by the project traffic engineers, Fehr & Peers (Fehr & Peers 2017).

The only differences between Alternative 1and Alternative 2 would occur during construction. Traffic volumes, speeds, and other operational conditions under Alternative 1 and Alternative 2

Graphics ... 00274.16 (6-1-2017)

Figure 5
Areas of Sensitive Receptors

would be identical. Accordingly, the operational impact assessment is based on a single set of traffic conditions, which is representative of both Alternative 1 and Alternative 2.

Transportation Conformity

Construction of the entire project is expected to require less than two years. Accordingly, construction-related emissions related to the project, including those associated with the Washington Boulevard detour, are not considered in the project-level or regional conformity analysis, pursuant to 40 CFR 93.123(c)(5).

Regional Conformity

The proposed project is located in a severe nonattainment area for the federal 8-hour O_3 standard. Because O_3 and its precursors are regional pollutants, the project must be evaluated under the transportation conformity requirements described in Section 3.1.1, *Regulatory Setting*. An affirmative regional conformity determination must be made before the project can proceed. Such a determination is not required if the project is described in an approved MTP and/or transportation improvement program and the project has not been altered in design concept or scope.

Project-Level Conformity

Carbon Monoxide

The project is located in a moderate maintenance area for the federal CO standard. Consequently, the evaluation of transportation conformity for CO is required. The CO transportation conformity analysis is based on the CO Protocol (Garza et al. 1997). The CO Protocol details a step-by-step procedure to determine whether project-related CO concentrations have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for CO.

CO hot spots were evaluated at roadway intersections within the transportation study area. Existing year (2016) and design year (2035) conditions were modeled. Modeled traffic volumes and operating conditions were obtained from the traffic data prepared by the project traffic engineers, Fehr & Peers (2017). Ambient CO concentrations near the roadway under future project conditions were modeled using CALINE4 (Benson 1989). Only the PM peak hour traffic was modeled, as the modeled LOS and delays are worse in the PM peak hour than in the AM peak hour (Fehr & Peers 2017).

CO intersection modeling was conducted for the following three intersections.

- Washington Boulevard/Pleasant Grove Boulevard
- Washington Boulevard/Kaseberg Drive
- Washington Boulevard/Junction Boulevard

These intersections segments were evaluated because they were identified in the traffic analysis prepared by Fehr & Peers as the greatest impacted intersections and segments (i.e., highest traffic volumes and worst levels of congestion/delay) of the intersections analyzed in the vicinity of the project area (Fehr & Peers 2017). Vehicle emission rates were determined using the EMFAC2014 emission rate program. Free flow traffic speeds were adjusted to a speed of 5.0 mph for vehicles entering and exiting intersection segments to represent a worst-case scenario, as 5.0 mph is the lowest speed EMFAC allows. EMFAC2014 modeling procedures followed the guidelines recommended by Caltrans (Garza et al. 1997). The program assumed Placer County regional traffic data, averaged for each subarea, operating during the winter months. A low January temperature of 39 °F was assumed.

CO concentrations were estimated at four receptor locations located at each of the intersections analyzed. The receptors were placed at the edge of the mixing zone from the corner of each intersection, accounting for the intersection dimensions as determined by the number of lanes in each direction. The mixing zone is defined by a 9.8-foot (3 meters) buffer from the outer edge of a roadway. Receptors were modeled at the edge of the mixing zone to represent a worst-case scenario as the nearest location in which a receptor could potentially be located adjacent to a travelled roadway. The modeled receptors are not representative of the actual sensitive receptors and represent receptors located at the nearest possible location at the intersection of the modeled mixing zones[1]. Receptors were chosen based on the CO Protocol (Garza et al. 1997). Receptor heights were set at 5.9 feet (or 1.8 meters).

Meteorological inputs to the CALINE4 model were determined using methodology recommended in Appendix B of the CO Protocol (Garza et al. 1997). The meteorological conditions used in the modeling represent a calm winter period. Worst-case wind angles were modeled to determine a worst-case concentration for each receptor. The meteorological inputs included: 0.5 meters per second wind speed, ground-level temperature inversion (atmospheric stability class G), wind direction standard deviation equal to 15 degrees, and a mixing height of 1,000 meters.

To account for sources of CO not included in the modeling, a background concentration of 1.93 ppm was added to the modeled cumulative 1-hour values, and a background concentration of 1.37 ppm was added to the modeled cumulative 8-hour values. Background concentration data for 1- and 8-hour CO values were obtained from EPA (2016b). Maximum monitored 1- and 8-hour CO values from the nearest monitoring station (North Highlands-Blackfoot Way) for the years 2013 through 2015 were averaged to obtain a background concentration. Eight-hour modeled values were calculated from the 1-hour values using a persistence factor of 0.7. Background concentrations for design year (2035) conditions were assumed to be the same as those for the current year. Actual 1- and 8-hour background concentrations in future years would likely be lower than those used in the CO modeling analysis because the trend in CO emissions and concentrations is decreasing as a result of continuing improvements in engine technology

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[1] In the parlance of air dispersion modeling, the *mixing zone* represents the region directly over the highway as a zone of uniform emissions and turbulence. This area is the region over the traveled way (traffic lanes, not including shoulders) plus three meters on either side. The additional three meter width accounts for the initial horizontal dispersion imparted to pollutants by the vehicle wake. Within the mixing zone, the mechanical turbulence created by moving vehicles and the thermal turbulence created by hot vehicle exhaust are assumed to be the dominant dispersive mechanisms (Benson 1989).

and the retirement of older, higher-emitting vehicles. Appendix A presents CALINE4 model output files.

PM2.5

The SVAB portion of Placer County, including the project area, was redesignated by EPA as a nonattainment area for the lowered PM2.5 standard on January 15, 2013. Consequently, the evaluation of transportation conformity for PM2.5 is required.

On March 10, 2006, EPA published a final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in PM2.5 and PM10 nonattainment and maintenance areas. For the assessment of particulate matter hot spots, the final rule stipulates that a hot-spot analysis is to be performed only for projects of air quality concern (POAQCs). POAQCs are certain highway and transit projects that involve significant levels of diesel traffic or any other project identified in the PM2.5 or PM10 SIP as a localized air quality concern. Section 93.123(b)(1) of the Conformity Rule defines the following projects that require a PM2.5 or PM10 hot-spot analysis (Table 6).

Table 6. POAQCs as Defined by Section 93.123(b)(1) of the Conformity Rule

Section 93.123(b)(1) Subsection	Type of Project
i	New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles.
ii	Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.
iii	New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location.
iv	Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location.
v	Projects in or affecting locations, areas, or categories of sites which are identified in the PM2.5 or PM10 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Source: 40 CFR 93.123(b)(1)

EPA noted in the March 2006 final rule that the examples below are considered to be the most likely projects that would be considered a POAQC under Section 93.123(b)(1)i and ii listed above.

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) where 8% (10,000 truck AADT) or more of such AADT is diesel truck traffic.
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal.
- Expansion of an existing highway or other facility that affects a congested intersection (operated at LOS D, E, or F) that has a significant increase in the number of diesel trucks.

- Similar highway projects that involve a significant increase in the number of diesel transit buses and/or diesel trucks.

EPA noted in the March 2006 final rule that the examples below are considered to be the most likely projects that would be considered a POAQC under Section 93.123(b)(1)iii and iv listed above.

- A major new bus or intermodal terminal that is considered to be a "regionally significant project."
- An existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel buses increases by 50% or more, as measured by bus arrivals.

EPA noted in the March 2006 final rule that the examples below are considered to be the most likely projects that would not be considered a POAQC under Section 93.123(b)(1)i and ii listed above.

- Any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at LOS D, E, or F.
- An intersection channelization project or interchange configuration project that involves either turn lanes or slots, or lanes or movements that are physically separated. These kinds of projects improve freeway operations by smoothing traffic flow and vehicle speeds by improving weave and merge operations, which would not be expected to create or worsen PM2.5 or PM10 violations.
- Intersection channelization projects, traffic circles or roundabouts, intersection signalization projects at individual intersections, and interchange reconfiguration projects that are designed to improve traffic flow and vehicle speeds, and do not involve any increases in idling. Thus, they would be expected to have a neutral or positive influence on PM2.5 or PM10 emissions.

EPA noted in the March 2006 final rule that the examples below are considered to be the most likely projects that would not be considered a POAQC under Section 93.123(b)(1)iii and iv listed above:

- A new or expanded bus terminal that is serviced by non-diesel vehicles (e.g., compressed natural gas) or hybrid-electric vehicles.
- A 50% increase in daily arrivals at a small terminal (e.g., a facility with 10 buses in the peak hour).

For projects identified as not being a POAQC, PM2.5 and PM10 hot-spot analyses are not required. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that FCAA and 40 CFR 93.116 requirements have been met without a hot-spot analysis since such projects have been found not to be of air quality concern under 40 CFR 93.123(b)(1). The proposed project was identified as not being a POAQC (see Appendix B); therefore, no PM2.5 hot-spot analyses were performed.

Mobile Source Air Toxics

FHWA has issued an updated interim guidance using a tiered approach on how MSATs should be addressed in NEPA documents for highway projects (U.S. Federal Highway Administration 2016). Depending on the specific project circumstances, FHWA has identified the following three levels of analysis.

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

Exempt Projects or Projects with No Meaningful Potential Mobile Source Air Toxic Effects

The types of projects that are exempt or have no meaningful potential MSAT effects are listed below.

- Projects qualifying as a categorical exclusion under 23 CFR 771.117(c).
- Projects exempt under the FCAA Conformity Rule under 40 CFR 93.126.
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

For projects that are categorically excluded under 23 CFR 771.117(c), or are exempt from all conformity requirements under the FCAA pursuant to 40 CFR 93.126, no analysis or discussion of MSATs is necessary. Documentation sufficient to demonstrate that the project qualifies as a categorical exclusion or exempt project will suffice. For other projects with no or negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is recommended.[2] However, the project record should document the basis for the determination of "no meaningful potential impacts" with a brief description of the factors considered.

Projects with Low Potential Mobile Source Air Toxic Effects

The types of projects with low potential MSAT effects 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 for exempt projects or projects without meaningful potential effects (discussed above) or projects with higher potential MSAT effects (discussed below) should be included in this category. Examples of these types of projects are

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[2] The types of projects categorically excluded under 23 CFR 771.117(d) or exempt from project-level conformity requirements under 40 CFR 93.127 do not warrant an automatic exemption from an MSAT analysis, but they usually will have no meaningful impact.

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 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 the No Project Alternative, based on vehicle miles travelled (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 EPA. Because the emission effects of these projects typically are low, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives.

Projects with Higher Potential Mobile Source Air Toxic Effects

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. It is expected a limited number of projects would meet the criteria to fall into this category, which are as follows.

- Projects that create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of DPM in a single location, involving a significant number of diesel vehicles for new projects or accommodating a significant increase in the number of diesel vehicles for expansion projects.
- Projects that 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[3], or greater, by the design year.
- Projects that are proposed to be located in proximity to populated areas.

Projects falling within this category should be more rigorously assessed for impacts, including a quantitative analysis to forecast local specific emission trends of the priority MSAT for each alternative. Based on regulations now in effect, an analysis of national trends with EPA’s MOVES2014a model, as shown in Figure 6, Projected National MSAT Trends, even if VMT increases by 45% as assumed from 2010 to 2050, a combined reduction of 91% in the total annual emissions for the priority MSAT is projected for the same time period.

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[3] Using EPA's MOVES2014a emissions model, FHWA determined that this range of AADT would result in emissions significantly lower than the Clean Air Act definition of a major hazardous air pollutant (HAP) source, i.e., 25 tons/yr. for all HAPs or 10 tons/yr. for any single HAP. Variations in conditions such as congestion or vehicle mix could warrant a different range for AADT (U.S. Federal Highway Administration 2016).

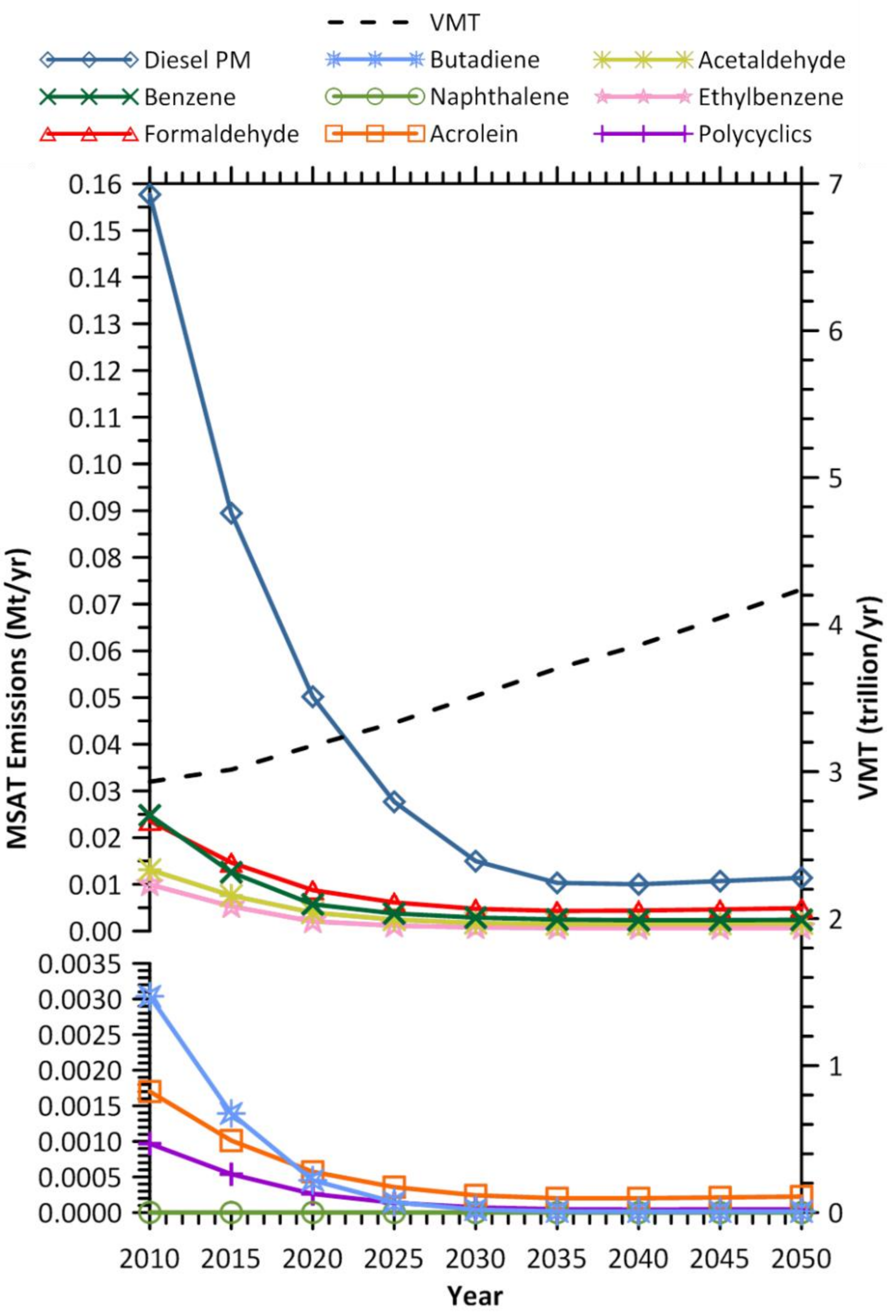

Figure 6. Projected National MSAT Emission Trends 2010–2050 For Vehicles Operating On Roadways Using EPA's MOVES 2014a Model

Figure note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors (U.S. Federal Highway Administration 2016).

Mobile Source Air Toxic Category Assessment for the Project

The analysis of applicable MSAT category for the project is based an analysis of design year (2035) AADT volumes, which represents the year with the greatest traffic volumes developed by Fehr & Peers (2017). Table 7 indicates that the AADT in the project area for the proposed project under design year (2035) conditions will vary between 9,400 and 60,000, depending on the location. Based on this information, it is estimated that mainline AADT would be below FHWA’s MSAT AADT threshold of 140,000. Consequently, based on the FHWA’s 2016 MSAT guidance, this project is considered a project with low potential MSAT effects, and a quantitative analysis of MSAT emissions is not required (U.S. Federal Highway Administration 2016). Therefore, a qualitative evaluation of MSAT emissions is included in Section 3.2.2, *Impacts*.

Table 7. AADT Volumes and Truck Percentages

Location	**Existing Conditions (2016)**		**Design Year Conditions (2035)**				
			No Project		**Alternatives 1 and 2**		
	AADT	**Truck AADT**[a]	**AADT**	**Truck AADT**[a]	**AADT**	**Truck AADT**[a]	**Δ Truck AADT from No Project Alternative**
Washington Boulevard between Pleasant Grove Boulevard and Industrial Avenue	15,500	310	27,500	550	29,300	586	36
Washington Blvd between Kaseberg Drive and Emerald Oak Road / Diamond Oaks Road	22,100	442	30,400	608	35,800	716	108
Washington Blvd between Kaseberg Drive and Emerald Oak Road / Diamond Oaks Road	20,300	406	24,900	498	32,000	640	142
Washington Blvd between Kaseberg Drive and Sawtell Road / Derek Place	20,700	414	25,000	500	32,100	642	142
Washington Blvd between Junction Boulevard and Corporation Yard Road	23,900	478	36,300	726	36,400	728	2
Pleasant Grove Boulevard between Winslow Drive and Washington Boulevard	43,400	868	58,900	1178	60,000	1200	22
Pleasant Grove Boulevard between Washington Boulevard and Galilee Road/ Elmwood Rive	44,100	882	58,900	1178	57,600	1152	-26
Diamond Oaks Road between Glenwood Circle / Firestone Drive and Washington Boulevard	4,700	94	9,100	182	9,400	188	6
Junction Boulevard between Washington Boulevard and Corporation Yard Road	13,400	268	25,700	514	27,900	558	44
Foothills Boulevard between Pleasant Grove Boulevard and S Bluff Drive / Beckett Drive	32,200	644	50,000	1,000	49,400	988	-12

Source: Fehr & Peers 2017

Notes:

[a] Trucks assumed to represent 2% of total AADT.

Criteria Pollutants and Greenhouse Gas Emissions

The estimation of criteria pollutant emissions associated with the project was conducted using Caltrans' CT-EMFAC model and vehicle activity data provided by the project traffic engineer, Fehr & Peers (2017). CT-EMFAC is a California-specific project-level analysis tool developed for Caltrans by the University of California, Davis to model criteria pollutant, MSAT, and CO_2 emissions from on-road mobile sources. The model uses the latest version of ARB's EMFAC model to quantify running exhaust and running loss emissions using user-input traffic data, including peak-hour and off-peak-hour VMT data allocated into 5-mph speed bins.

Emission of ROG, NO_X, CO, PM10, PM2.5, and CO_2 were modeled for existing year (2016) and design year (2035) conditions using daily VMT and VMT distribution by 5-mph speed bin data (5 mph to 70 mph) provided by Fehr & Peers. VMT data was not provided for opening year (2020) conditions and is, therefore, not evaluated in the analysis of project-related criteria pollutant and GHG emissions. The data included vehicle activity for affected roadways in the immediate project region. Yearly GHG emissions were calculated by multiplying daily emissions by 347, consistent with ARB methodology to extrapolate yearly traffic emissions from daily (California Air Resources Board 2008). The daily VMT distribution by speed bin data for all evaluated conditions is presented in Table 8.

Table 8. Daily VMT Distribution by Speed Bin

Speed		Existing	Existing Plus Project	2035 No Project	2035 Plus Project
>0	<=5	59,504	60,825	142,743	142,894
>5	<=10	215,738	214,724	454,007	455,659
>10	<=15	557,270	555,540	813,036	841,270
>15	<=20	6,322,369	6,313,951	9,592,960	9,479,274
>20	<=25	2,681,083	2,680,514	5,213,647	5,333,591
>25	<=30	3,135,781	3,187,792	4,700,428	4,700,826
>30	<=35	4,763,307	4,780,631	8,342,685	8,266,886
>35	<=40	5,113,326	5,041,862	11,628,882	11,662,611
>40	<=45	4,959,185	4,954,825	7,055,879	7,054,600
>45	<=50	5,380,232	5,397,389	7,706,144	7,627,113
>50	<=55	10,238,611	10,235,833	8,548,859	8,659,579
>55	<=60	5,277,378	5,290,272	5,855,494	5,829,879
>60	<=65	1,521,616	1,517,241	3,723,569	3,724,924
>65	<=70	1,873,052	1,872,721	212,251	212,259
>70	<=75	0	0	0	0
>75		0	0	0	0
Total		**52,098,452**	**52,104,120**	**73,990,584**	**73,991,365**

Vehicle emission rates were determined using Caltrans' CT-EMFAC model. The CT-EMFAC program assumed project operating conditions during average annual conditions for the SVAB portion of Placer County. Vehicle fleet mixes, including truck volumes, were based on traffic data provided by Fehr & Peers (2017). Appendix A presents the CT-EMFAC emission factors and calculation output files.

3.2.1.2 Construction Impact Assessment Methodology

Construction activity is a source of dust and exhaust emissions that can have substantial temporary impacts on local air quality (i.e., exceeding state air quality standards for O_3, CO, PM10, and PM2.5). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and roadway construction. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A major portion of dust emissions for the project would likely be caused by construction traffic on temporary areas.

Construction emissions of ROG, NO_X, CO, PM10, PM2.5, and CO_2 were estimated using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model (RCEM) (Version 8.1.0). The RCEM is a public-domain spreadsheet model formatted as a series of individual worksheets available to estimate construction-related emissions for roadway projects. The model enables users to estimate emissions using a minimum amount of project-specific information. The model estimates emissions for load hauling (on-road, heavy-duty vehicle trips), worker commute trips, construction site fugitive dust (PM10 and PM2.5), and off-road construction vehicles. This analysis is based on anticipated construction equipment calculated by the RCEM, which estimates construction equipment based on project size, duration of construction activities, and level of daily construction activities. While exhaust emissions are estimated for each activity, fugitive dust estimates are currently limited to major dust-generating activities, which include grubbing/land clearing and grading/excavation.

Construction activity for the project is expected to occur sequentially over 13 to 20 months, commencing in 2018. The analysis covers Alternative 2, which assumes Washington Boulevard will be closed during construction of the UPRR shoofly detour, as well as the proposed project, which assumes the road will remain open. Construction activities for Alternatives 1 and 2are anticipated to occur over four phases, (1) Grubbing/Land Clearing; (2) Grading/Excavation; (3) Drainage/Utilities/Sub-Grade; and (4) Paving. Construction activity information and several project-specific assumptions were provided by the project engineers, Mark Thomas & Company (Horton pers. comm.). Table 9 summarizes the provided equipment activity data, while Table 10 summarizes the overall construction assumptions. Note that the construction equipment assumptions (Table 9) would be identical for the Build Alternatives. RCEM defaults were used where project-specific data were unavailable.

Table 9. Construction Equipment Assumptions for the Build Alternatives 1 and 2

Equipment	Horsepower	Number of equipment pieces per phase			
		Grubbing/ land clearing	Grading/ excavation	Drainage/ utilities/sub-grade	Paving
Crawler Tractor	208	2			
Excavator	163	2			
Crawler Tractor	208		1		
Excavator	163		1		
Grader	175		2		
Roller	81		2		
Loader	200		1		
Scraper	362		2		
Tractors/Backhoe	98		4		
Air Compressor	78			1	
Generator Set	84			1	
Grader	175			1	
Plate Compactor	8			1	
Pump	84			1	
Forklift	100			1	
Tractors/Backhoe	98			2	
Pavers	126				1
Paving Equipment	131				1
Rollers	81				2
Tractors/Backhoe	98				2

Source: Horton pers. comm.

Table 10. Project-Specific Construction Modeling Assumptions for Build Alternatives 1 and 2

Assumption	Alternative 2	Alternative 1
Construction start date (year)	2018	2018
Number of months of construction	13	20
Project length (miles)	0.9 mile	0.9 mile
Total project area (acres)	25 acres	25 acres
Use of water trucks	Yes	Yes
Predominant soil type	Weathered Rock	Weathered Rock
Duration of construction activities per phase		
1. Grubbing/land clearing	1.30 months	2.00 months
2. Grading/excavation	5.85 months	9.00 months
3. Drainage/utilities/sub-grade	3.90 months	6.00 months
4. Paving	1.95 months	3.00 months
Soil import/export per phase		
1. Grubbing/land clearing	200 cubic yards	200 cubic yards
2. Grading/excavation	2,000 cubic yards	3,000 cubic yards
3. Drainage/utilities/sub-grade	80 cubic yards	80 cubic yards
Asphalt import/export per phase		
4. Paving	900 cubic yards	1,800 cubic yards

Assumption	Alternative 2	Alternative 1
Haul truck miles per phase		
1. Grubbing/land clearing	880 miles per day	880 miles per day
2. Grading/excavation	200 miles per day	200 miles per day
3. Drainage/utilities/sub-grade	50 miles per day	50 miles per day
4. Paving	1,250 miles per day	1,250 miles per day

Source: Horton pers. comm.

3.2.2 Impacts

This section discusses air quality and climate change impacts that could result from project implementation.

Impact AQ-1: Conformity of the Regional Transportation Plan with the State Implementation Plan

The Washington Boulevard/Andora Bridge Improvement Project was included in the regional emissions analysis conducted by SACOG for the conforming 2016 MTP/SCS (PLA25501). The project's design concept and scope have not changed significantly from what was analyzed in the regional emission analysis. This analysis found that the regional plan, which takes into account regionally significant projects and financial constraint, would conform to the SIP for maintaining the NAAQS as provided in Section 176(c) of the CAA. FHWA determined that the 2016 MTP/SCS, as amended, conformed to the SIP on December 16, 2016. Accordingly, it can be concluded that the project's operational emissions (which include the O_3 precursors ROG and NO_X) would meet the transportation conformity requirements imposed by the EPA and PCAPCD and would not be expected to exacerbate O_3 nonattainment conditions. Therefore, regional conformity requirements are satisfied. See Appendix C for a listing of the project in the 2016 MTP/SCS.

Impact AQ-2: Potential Violations of Carbon Monoxide NAAQS or CAAQS

Existing year (2016) and design year (2035) conditions were modeled to evaluate CO concentrations relative to the NAAQS and CAAQS. As previously discussed, CO concentrations were estimated at three roadway intersections. Table 11 summarizes the results of the intersection CO modeling and indicate that CO concentrations are not anticipated to exceed the 1- or 8- hour NAAQS and CAAQS under all project conditions.

Table 11. CO Modeling Concentration Results (Parts per Million)

Intersection	**Rec.**[a]	**1-Hour Concentration**[b]			**8-Hour Concentration**[c]		
		Existing (2016)	**Design (2040)**		**Existing (2016)**	**Design (2040)**	
			No Project	**Alternatives 1 and 2**		**No Project**	**Alternatives 1 and 2**
Washington Boulevard/Pleasant Grove Boulevard	1	3.8	2.6	2.6	2.7	1.9	1.9
	2	3.5	2.5	2.5	2.5	1.8	1.8
	3	3.4	2.5	2.5	2.4	1.8	1.8
	4	3.8	2.6	2.6	2.7	1.9	1.9
Washington Boulevard/Kaseberg Drive	5	3.1	2.3	2.4	2.2	1.6	1.7
	6	2.9	2.2	2.3	2.1	1.6	1.6
	7	3.0	2.3	2.4	2.1	1.6	1.7
	8	2.9	2.2	2.3	2.1	1.6	1.6
Washington Boulevard/Junction Boulevard	9	3.0	2.4	2.4	2.1	1.7	1.7
	10	3.0	2.4	2.4	2.1	1.7	1.7
	11	3.1	2.4	2.4	2.2	1.7	1.7
	12	2.9	2.4	2.4	2.1	1.7	1.7
State Standard (ppm)		20	20	20	9	9	9
Federal Standard (ppm)		35	35	35	9	9	9

Notes:

[a] Consistent with Caltrans CO Protocol, receptors are located at 3 meters from the intersection, at each of the four corners to represent the nearest location in which a receptor could potentially be located adjacent to a travelled roadway. The modeled receptors indicated are not representative of the actual sensitive receptors. All intersections modeled have two intersecting roadways.

[b] Average 1-hour background concentration between 2013 and 2015 was 1.93 ppm (California Air Resources Board 2016c).

[c] Average 8-hour background concentration between 2013 and 2015 was 1.37 ppm (U.S. Environmental Protection Agency 2016b).

CO = carbon monoxide; ppm = parts per million

Impact AQ-3: Potential Violations of PM2.5 NAAQS or CAAQS

The project would be within a nonattainment area for the federal PM2.5 standard. Therefore, per 40 CFR Part 93, a project-level PM2.5 analysis is required for conformity purposes.

As discussed in Section 3.1.1, *Regulatory Setting*, a quantitative hot-spot analysis is only required for projects identified as a POAQC, as defined in 40 CFR 93.123(b)(1). As described below, the project does not meet any of the project types considered to be POAQCs by EPA's final rule. Accordingly, the project is not considered to be a POAQC, and project-level particulate matter conformity determination requirements are thus satisfied.

(i) **New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles**. Appendix B from the EPA's *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* provides guidance on what types of projects may be projects of local air quality concern (40 CFR 93.123(b)(1)). Appendix B indicates that a facility with an AADT volume of 125,000 and 8% trucks (10,000 truck AADT) are likely considered a POAQC. The Build Alternatives would widen Washington Boulevard from two to four travel lanes between Sawtell Road/Derek Place and Pleasant Grove Boulevard. For existing roadway facilities, the effect of a project on truck volumes is normally the main point on which this criterion is judged. Design year (2035) conditions were selected for the analysis because they represents the year with maximum traffic volumes.

Table 7 indicates that the AADT in the transportation study area for the project under design year (2035) conditions would vary between 9,400 and 60,000, depending on the location. Heavy-duty trucks comprise approximately 2% of this AADT, resulting in a truck AADT of 188 to 1,200 (Horton pers. comm.).

Based on the data presented in Table 7, predicted AADT would be less than the EPA's AADT guidance criterion of 125,000. Predicted truck percentages and volumes would also be well below EPA's guidance criteria of 8% or 10,000 vehicles per day (maximum truck percentages and truck AADT are 2% and 1,200, respectively). Accordingly, the Build Alternatives would not serve a significant number of diesel vehicles or result in a significant increase in diesel vehicles.

(ii) **Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project**. Peak-hour LOS and delay at transportation study area intersections under design year (2035) conditions are presented in Appendix B. The table indicates that the intersections of Washington Boulevard/Pleasant Grove Boulevard, Washington Boulevard / Sawtell Road / Derek Place, and Washington Boulevard/Junction Boulevard would experience increases in delay with implementation of the project. However, the project would improve AM peak hour operations at Washington

Boulevard/Diamond Oaks Road/Emerald Oak Road from LOS E to C and improve PM peak hour operations from LOS D to C. Delays would also decrease at Washington Boulevard/Kaseberg Drive.

While LOS and delay would be degraded at two transportation study area intersections, they would not serve a significant number of trucks (2%), therefore, the Build Alternatives would not affect any at-grade intersections with a high number of diesel vehicles.

(iii) **New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location**. The project does not include new bus or rail terminals and transfer points.

(iv) **Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location**. The project does not include expanded bus or rail terminals and transfer points.

(v) **Projects in or affecting locations, areas, or categories of sites which are identified in the PM2.5 or PM10 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation**. The PM2.5 SIP, *PM2.5 Implementation/Maintenance Plan and Redesignation Request for Sacramento PM2.5 Nonattainment Area*, has not identified any locations, areas, or categories of sites as s site of violation or possible violation.

Based on the discussion above, the project would not be considered a POAQC, as defined by 40 CFR 93.123(b)(1). Therefore, FCAA and 40 CFR 93.116 requirements were met without a hot-spot analysis.

The project underwent interagency consultation through SACOG's Project Level Conformity Group (PLCG), which issued concurrence that the project is not a POAQC on May 4, 2017. Appendix B contains the documentation submitted to SACOG's PLCG used to support its concurrence, as well as concurrence letters from EPA and Caltrans that the project is not a POAQC.

Impact AQ-4: Potential for Generation of Mobile Source Air Toxic Emissions

As discussed in Section 3.2.1, *Methods,* the Build Alternatives are considered a project with low potential MSAT effects (Level 2) because AADT is less than FHWA's MSAT AADT threshold of 140,000 (Federal Highway Administration 2016). Therefore, a qualitative analysis of potential MSAT emissions was performed.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA (2016) entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives*.

The VMT estimated for the Build Alternatives is slightly higher than that for the No Project Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. Refer to Table 8. This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along Washington Boulevard, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the EPA MOVES2014 model, emissions of all of the priority MSAT decrease as speed increases. Also, emissions would likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90% between 2010 and 2050 (U.S. Federal Highway Administration 2016). 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 would likely be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the Build Alternatives have the effect of moving some traffic closer to nearby homes; therefore, under the Build Alternatives there may be localized areas where ambient concentrations of MSAT could be higher than the No Project Alternative. The localized increases in MSAT concentrations at receptor locations would likely be most pronounced along the expanded roadway section between Kaseberg Drive and Sawtell Road/Derek Place, based on changes in AADT (see Table 7). However, the magnitude and the duration of these potential increases compared to the No Project Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts.

In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternatives could be higher relative to the No Project Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

MSAT Research and Incomplete Information

Air toxics analysis is an ongoing area of research. While much work has been done to assess the overall health risk of TACs, many questions remain unanswered. In particular, considerable uncertainties are associated with the existing estimates of MSAT toxicity, as well the acceptable risk levels. Because of these and other limitations, technical tools are not available to predict the project-specific health impacts of the emission changes associated with each project alternative. Because of these limitations, Appendix D is included in this report in accordance with Council on Environmental Quality regulations (40 CFR 1502.22[b]) regarding incomplete or unavailable information.

Impact AQ-5: Potential for Generation of Operation-Related Emissions of Ozone Precursors, Carbon Monoxide, and Particulate Matter

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emission of ROG, NO_X, CO, PM10, and PM2.5 for existing year (2016) and design year (2035) with project conditions, were evaluated through modeling conducted using Caltrans' CT-EMFAC model and vehicle activity data provided by the project traffic engineer, Fehr & Peers (2017).

Table 12 summarizes the modeled emissions by scenario, as well as a comparison of project emissions to No Project and existing conditions, consistent with Caltrans environmental requirements. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the project. Vehicular emission rates are anticipated to lessen in future years due to continuing improvements in engine technology and the retirement of older, higher-emitting vehicles. Emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future without-project emissions. Because Caltrans has statewide jurisdiction, and the setting for projects varies so extensively across the state, Caltrans has not and has no intention to develop thresholds of significance for CEQA. Further, because most air district thresholds have not been established by regulation or by delegation from a federal or state agency with regulatory authority over Caltrans, Caltrans is not required to adopt those thresholds in Caltrans documents. Nevertheless, project-level operational emissions are presented in Table 12.

Table 12. Estimated Criteria Pollutant Emissions from Operation of the Washington Boulevard/Andora Bridge Improvement Project (pounds per day)

Alternative	Daily VMT	ROG	NO_X	CO	PM10	PM2.5
2016 Existing	52,098,452	5,937	28,175	151,116	5,856	2,535
2016 Existing Plus Proposed Project	52,104,120	5,938	28,179	151,142	5,857	2,536
2035 No Project Alternative	73,990,584	2,924	8,985	70,969	7,921	3,243
2035 Build Alternatives 1 and 2	73,991,365	2,924	8,984	70,965	7,921	3,243
Comparison to Existing						
2016 Existing Plus Build Alternatives 1 and 2	5,668	1	4	26	1	<1
2035 Build Alternatives 1 and 2	21,892,913	-3,013	-19,192	-80,150	2,066	708
Comparison to No Project						
2035 Build Alternatives 1 and 2	781	<1	-1	-3	<1	<1
PCAPCD Threshold	-	*55*	*55*	-	*82*	-

CO = carbon monoxide
NO_X = nitrogen oxides
PCAPCD = Placer County Air Pollution Control District
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases
VMT = vehicle miles travelled

The emissions analysis presented in Table 12 indicates that operation of the Build Alternatives under design year (2035) conditions would increase PM10 and PM2.5 emissions compared to existing conditions and decrease ROG, NO_X, and CO emissions. These results are primarily due to factors external to the project. The increase in PM is due to background growth in VMT between 2016 and 2035 (21.9 million daily VMT), as PM emissions are primarily a function of VMT. The decreases in other pollutants are due to expected improvements in vehicle engine technology, fuel efficiency, and turnover in older, more heavily polluting vehicles, which reduces exhaust emissions.

Emissions effects resulting from implementation of the Build Alternatives under design year (2035) conditions are obtained through a comparison of with-project emissions to without-project emissions. As shown in Table 12, VMT under the project and No Project Alternative conditions is nearly the same, with the project resulting in a slight increase of 781 daily VMT. This increase yields a corresponding minor increase in ROG and PM emissions. However, emissions of NO_X and CO are forecasted to decrease, relative to the No Project Alternative. These reductions are primarily the result of changes in vehicle speed patterns and the relationship between vehicle speeds and emission rates, which offset the minor increase in VMT associated with implementation of the project.

Impact AQ-6: Potential for Temporary Increase in Ozone Precursors (ROG and NO_X), CO, and Particulate Matter Emissions during Grading and Construction Activities

Implementation of the project would result in the widening of Washington Boulevard. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, and paving activities and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The SMAQMD's RCEM (Version 8.1.0) was used to estimate construction-related O_3 precursors ROG and NO_X, CO, PM10, and PM2.5 emissions from construction activities. The emissions shown in Tables 13 and 14 assume no concurrent construction activities. To provide a realistic, yet conservative scenario, maximum daily emissions were estimated assuming all equipment would operate at the same time during the individual construction phases. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix, and/or (2) a less intensive build-out schedule (i.e., fewer daily emissions occurring over a longer time interval).

As discussed above, the analysis considers both Alternative 2, which assumes Washington Boulevard will be closed during construction of the UPRR shoofly detour, as well as Alternative 1, which assumes the road will remain open. Tables 13 and 14 summarize maximum daily emissions levels for Alternative 2 and the proposed project, respectively. Because Caltrans has statewide jurisdiction, and the setting for projects varies so extensively across the state, Caltrans has not and has no intention to develop thresholds of significance for CEQA. Further, because most air district thresholds have not been established by regulation or by delegation down from a federal or state agency with regulatory authority over Caltrans, Caltrans is not required to adopt those thresholds in Caltrans' documents. Nevertheless, PCAPCD thresholds of significance are provided for reference.

Table 13. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternative 2 (pounds per day)

Project Phase	ROG	NO_X	CO	PM10			PM2.5		
				Exhaust	Dust	Total	Exhaust	Dust	Total
Grubbing/Land Clearing	2	34	14	1	2	3	1	<1	1
Grading/Excavation[a]	7	80	51	4	9	13	4	2	5
Drainage/Utilities/Sub-Grade	3	28	24	2	2	4	2	<1	2
Paving	2	30	17	1	0	1	1	<1	1
PCAPCD Threshold	*82*	*82*	-	-	-	*82*	-	-	-

Notes:

[a] Fugitive dust emissions from demolition of the existing underpass were estimated using emission factors from the Midwest Research Institute *Gap Filling PM10 Emission Factors for Selected Open Area Dust Sources*, as reported in the CalEEMod User Guide (Trinity Consultants 2016). It was assumed that 850 cubic yards of material would be demolished over a period of 5 days.

CO = carbon monoxide
NO_X = nitrogen oxides
PCAPCD = Placer County Air Pollution Control District
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases

Table 14. Estimated Unmitigated Criteria Pollutant Emissions from Construction of the Proposed Project (pounds per day)

Project Phase	ROG	NO_X	CO	PM10			PM2.5		
				Exhaust	Dust	Total	Exhaust	Dust	Total
Grubbing/Land Clearing	2	34	14	1	2	3	1	<1	1
Grading/Excavation[a]	7	80	51	4	9	13	4	2	5
Drainage/Utilities/Sub-Grade	3	26	24	2	2	4	1	<1	2
Paving	2	29	17	1	0	1	1	<1	1
PCAPCD Threshold	*82*	*82*	-	-	-	*82*	-	-	-

Notes:

[a] Fugitive dust emissions from demolition of the existing underpass were estimated using emission factors from the Midwest Research Institute *Gap Filling PM10 Emission Factors for Selected Open Area Dust Sources*, as reported in the CalEEMod User Guide (Trinity Consultants 2016). It was assumed that 850 cubic yards of material would be demolished over a period of 5 days.

CO = carbon monoxide
NO_X = nitrogen oxides
PCAPCD = Placer County Air Pollution Control District
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases

Construction activities are subject to requirements found in the *Standard Specifications for Construction of Local Streets and Roads* (California Department of Transportation 2010), Section 14-9.02, which includes specifications relating to air pollution control by complying with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the contract, including air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code § 10231) while standard specification Section 14-9.03 addresses dust control and palliative requirements. Implementation of Caltrans' standard specification and measures to control dust during construction would help to minimize air quality impacts from construction activities.

Naturally Occurring Asbestos

According to the California Department of Conservation's 2000 publication, *A General Location Guide for Ultramafic Rocks in California*, and PCAPCD mapping (Placer County Air Pollution Control District 2008), there are no geologic features normally associated with NOA (i.e., serpentine rock or ultramafic rock near fault zones) in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to NOA emissions during construction activities. However, demolition of the Andora underpass may be subject to EPA's National Emissions Standards for Hazardous Air Pollutants and ARB's Airborne Toxic Control Measures if asbestos-containing materials were present during the original construction of the structure.

Impact AQ-7: Potential for Generation of Greenhouse Gas Contaminant Emissions

3.2.2.2 Operational Emissions

Caltrans' CT-EMFAC model was used to estimate CO_2 emissions for existing (2016) and design year (2035) conditions. Table 15 summarizes the modeled emissions by scenario and presents a comparison of project emissions to No Project Alternative and existing conditions. Emissions include implementation of state mandates to reduce GHG emissions from on-road vehicles and transportation fuels.[4]

Table 15. Estimated Greenhouse Gas Emissions from Operation of the Washington Boulevard/Andora Bridge Improvement Project (metric tons per year)

Condition	Annual VMT	CO_2	CH_4	N_2O	CO_2e
2016 Existing	18,078,162,844	7,222,170	245	174	7,280,156
2016 Existing Plus Build Alternatives 1 and 2	18,080,129,640	7,223,469	245	174	7,281,464
2035 No Project Alternative	25,674,732,648	6,076,514	121	58	6,096,786
2035 Build Alternatives 1 and 2	25,675,003,655	6,076,549	121	58	6,096,820
Comparison to Existing					
2016 Existing Plus Build Alternatives 1 and 2	1,966,796	1,300	<1	<1	1,308
2035 Build Alternatives 1 and 2	7,596,840,811	-1,145,620	-125	-116	-1,183,335
Comparison to No Project Alternative					
2035 Build Alternatives 1 and 2	271,007	35	<1	<0	34

Notes

[a] Annual VMT values derived from daily VMT values in Table 8 multiplied by 347, per ARB methodology (California Air Resources Board2008).

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[4] Actions undertaken by the state will contribute to project-level GHG reductions. The analysis assumes implementation of Pavley and the Low Carbon Fuel Standard (LCFS). Pavley will improve the efficiency of automobiles and light duty trucks, whereas LCFS will reduce the carbon intensity of diesel and gasoline transportation fuels.

Implementation of the Build Alternatives under design year conditions would decrease GHG emissions compared to the existing conditions. This decrease is attributable to improvements in vehicle engine technology, fuel efficiency, and turnover in older, more heavily polluting vehicles, which reduces exhaust emissions, despite increases in VMT. Compared to 2035 No Project Alternative conditions, implementation of the project will result in a slight increase in GHG emissions. This increase is due to the small amount of VMT growth under the project.

Currently, there are no federal or state standards set for CO_2 emissions; therefore, the estimated emissions shown in Table 15 are only useful for a comparison between alternatives. The numbers are not necessarily an accurate reflection of what the true CO_2 emissions would be because CO_2 emissions are dependent on other factors that are not part of the model, such as the fuel mix[5], rate of acceleration, and the aerodynamics and efficiency of the vehicles. Refer to Appendix E for a summary of limitations and uncertainties associated with the emissions modeling.

3.2.2.3 Construction Emissions

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. The SMAQMD's RCEM (8.1.0) was used to estimate CO_2, methane (CH_4), and nitrous oxide (N_2O) emissions from construction activities.

Tables 16 and 17 summarize estimated GHG emissions generated by on-site construction equipment for the Build Alternatives. These emissions would 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. Measures to reduce construction emissions include maintenance of construction equipment and vehicles, limiting of construction vehicle idling time, and scheduling and routing of construction traffic to reduce engine emissions.

Table 16. GHG Emissions from Construction of Alternative 2 (metric tons per year)

Year	CO_2	CH_4	N_2O	CO_2e
2018	768	<1	<1	775
2019	68	<1	<1	69
Total GHG Emissions	836	<1	<1	844

GHG = greenhouse gas
CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
CO_2e = carbon dioxide equivalent

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[5] CT-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.

Table 17. GHG Emissions from Construction of Alternative 1(metric tons per year)

Year	CO_2	CH_4	N_2O	CO_2e
2018	985	<1	<1	995
2019	397	<1	<1	400
Total GHG Emissions	1,382	<1	<1	1,395

GHG = greenhouse gas
CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
CO_2e = carbon dioxide equivalent

3.3 Avoidance, Minimization, and/or Mitigation Measures

Implement California Department of Transportation Standard Specification Section 14

To control the generation of construction-related PM10 emissions, the project proponent will follow Standard Specification Section 14, Environmental Stewardship, which addresses the contractor’s responsibility on many items of concern, such as air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; convenience for the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.02, which includes specifications relating to air pollution control by complying with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the contract, including air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code § 10231). Section 14-9.03 is directed at controlling dust.

Implement Additional Control Measures for Construction Emissions of Fugitive Dust

Additional measures to control dust will be borrowed from the PCAPCD Fugitive Dust Control Requirements and implemented to the extent practicable when the measures have not already been incorporated and do not conflict with requirements of Caltrans’ Standard Specifications, Special Provisions, National Pollutant Discharge Elimination System permit, and the Biological Opinions, Clean Water Act Section 404 permit, Clean Water Act Section 401 Certification, and other permits issued for the project. The following excerpt is taken from the PCAPCD Fugitive Dust Control Requirements Fact Sheet (Placer County Air Pollution Control District 2013).

> For areas to be disturbed of any size, Rule 228, Fugitive Dust, Section 400 establishes standards to be met by activities generating fugitive dust. Minimum dust control requirements, summarized below, are to be initiated at the start and maintained throughout the duration of construction:
>
> 401.1—Unpaved areas subject to vehicle traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered. In geographic ultramafic rock units, or when naturally occurring asbestos, ultramafic rock, or serpentine is to be disturbed, the cover material shall contain less than 0.25 percent asbestos as determined using the bulk sampling method for asbestos in Section 502.

401.2—The speed of any vehicles and equipment traveling across unpaved areas must be no more than 15 miles per hour unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust exceeding Ringelmann 2 or visible emissions from crossing the project boundary line.

401.3—Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.

401.4—Prior to any ground disturbance, including grading, excavating, and land clearing, sufficient water must be applied to the area to be disturbed to prevent emitting dust exceeding Ringelmann 2 and to minimize visible emissions from crossing the boundary line.

401.5—Construction vehicles leaving the site must be cleaned to prevent dust, silt, mud, and dirt from being released or tracked off site.

401.6—When wind speeds are high enough to result in dust emissions crossing the boundary line, despite the application of dust mitigation measures, grading and earthmoving operations shall be suspended.

401.7—No trucks are allowed to transport excavated material off-site unless the trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments, and loads are either;

401.7.1 Covered with tarps; or

401.7.2 Wetted and loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.

402—A person shall take actions such as surface stabilization, establishment of a vegetative cover, or paving, to minimize wind-driven dust from inactive disturbed surface areas.

In addition, Rule 228 requires that all projects must minimize and clean-up the track-out of bulk material or other debris onto public paved roadways. For 1 acre and less disturbed surface area in areas that are not “Most Likely” to contain NOA according to PCAPCD’s NOA Hazard maps, and where NOA has not been found, only these minimum dust measures must be met (i.e., no Dust Control Plan is required).

For projects where greater than 1 acre of the site’s surface will be disturbed, a Dust Control Plan must be submitted to PCAPCD for approval prior to the start of earth-disturbing activities if this requirement has been established as a Condition of Approval of a discretionary permit.

Chapter 4 Air Quality Impacts under CEQA

The City is acting as state lead agency for this project under CEQA. Accordingly, the following analysis based on Appendix G of the State CEQA Guidelines is provided to support the project-level CEQA document. Operational and construction emissions are compared to PCAPCD thresholds to evaluate potentially significant air quality impacts. Emission results presented in Section 3.2.2, *Impacts*, are referenced, as appropriate, to avoid duplicative tables and text.

Conflict with or obstruct implementation of the applicable air quality plan?

The proposed project is listed in the 2016 MTP/SCS and 2017-2020 MTIP. Projects included in the MTP/SCS and MTIP are required to be consistent with the planning goals of SIPs adopted by local air quality management agencies, which is demonstrated in the regional transportation conformity analysis presented in Impact AQ-1 above. While construction of the project would result in a temporary emissions increase, long-term operation of the project would a negligible impact on emissions compared to the No Project Alternative, with increases of ROG and PM minor and below PCAPCD thresholds. Moreover, implementation of the project would improve overall network efficiency and reduce vehicle congestion, all of which are consistent with the objectives and policies outlined in SACOG's MTP/SCS and PCAPCD's clean air plans. This impact would be less than significant.

Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction

Implementation of the proposed project would widen Washington Boulevard. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, and paving activities and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The SMAQMD's RCEM (Version 8.1.0) and information provided by the project engineers were used to estimate construction-related emissions. Construction of the project would include four phases: (1) grubbing/land clearing, (2) grading/excavation, (3) drainage/utilities/sub-grade, and (4) paving. All construction activities would occur sequentially.

Tables 13 and 14 in Section 3.2.2, *Impacts*, summarize maximum daily emissions levels during construction of the Build Alternatives. Since construction would occur sequentially, emissions for each phase are compared separately to PCAPCD's thresholds as opposed to adding emissions across all phases. Accordingly, if emissions generated during a single phase exceed PCAPCD's thresholds, the project would result in a significant air quality impact.

As shown in Tables 13 and 14, neither construction scenario would generate ROG, NO_X, or PM10 in excess of PCAPCD's numeric thresholds. The project will implement Caltrans Standard Specifications, Sections 14-9.02 and 14-9.03, and comply with PCAPCD Fugitive Dust Control

Requirements (refer to Section 3.3, *Avoidance, Minimization, and Mitigation Measures*). The project would be required to comply with the City's Department of Public Works Construction Standards, Section 111, which is intended to minimize fugitive dust emissions during construction activities. Compliance with the engineering and design requirements would be noted on City-approved construction plans. Implementation of these measures will further reduce PM emissions. Accordingly, this impact would be less than significant.

Operation

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emission of ROG, NO_X, CO, PM10, and PM2.5 for existing (2016) and design year (2035) conditions were evaluated through modeling conducted using Caltrans' CT-EMFAC model and vehicle activity data provided by Fehr & Peers (2016). Table 12 in Section 3.2.2, *Impacts*, summarizes the modeled emissions by scenario and presents a comparison of project emissions to No Project and existing conditions.

The emissions analysis presented in Table 12 indicates that operation of the Build Alternatives would result in minor increases of all criteria pollutants compared to existing conditions. Relative to 2035 No Project conditions, the project would have virtually no impact on ROG and PM emissions, and result in minor decreases of NOx and CO. These reductions are primarily the result of changes in vehicle speed patterns and the relationship between vehicle speeds and emission rates, which offset the minor increase in VMT associated with implementation of the project. The increase in ROG and PM emissions would be minor and would not exceed PCAPCD thresholds. This impact would be less than significant.

Concurrent Construction and Traffic Detour Emissions

Washington Boulevard would be closed to all vehicular traffic from south of Diamond Oaks Road to north of Kaseberg Drive during the months of June through September in 2018. The road closure and associated detour would cause an estimated 10,600 VMT increase during the weekdays (Gard pers. comm.). Emissions generated by the VMT increase would occur concurrently with the grading and excavation phase of construction. A conservative estimate of overlapping emissions from simultaneous construction activities and the traffic detour were summed and are presented in Table 18. The increase in VMT was quantified using the CT-EMFAC model (version 6.0) assuming a posted speed limit of 40 miles mph on the detour route (Horton pers. comm.).

Table 18. Estimated Unmitigated Criteria Pollutant Emissions from Construction Activities and the Washington Boulevard Traffic Detour (2018) (pounds per day)

Source	ROG	NO_X	CO	PM10	PM2.5
Grading and excavation[a]	7	80	51	13	5
Traffic detour VMT	53	15	29	1	1
Total	60	96	80	15	6
PCAPCD Threshold	*82*	*82*	-	*82*	-

Notes:
[a] There is no difference in grading and excavation emissions between Scenarios A and B.
CO = carbon monoxide
NOX = nitrogen oxides
PCAPCD = Placer County Air Pollution Control District
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases

As shown in Table 18, concurrent construction and traffic detour emission would exceed PCAPCD's NO_X threshold. This is a potentially significant impact. Mitigation Measure AQ-1 is required to reduce construction-related NO_X emissions below 82 pounds per day (refer to Table 19). This impact would be less than significant with mitigation.

Mitigation Measure AQ-1. Implement an Exhaust Control Plan to Reduce Construction-Related NO_X Emissions

The City shall provide a plan for approval by PCAPCD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) used for construction during the Washington Boulevard detour, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NO_X reduction compared to the most recent ARB fleet average. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The SMAQMD's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction.

Table 19. Estimated Mitigated Criteria Pollutant Emissions from Construction Activities and the Washington Boulevard Traffic Detour (2018) (pounds per day)

Source	ROG	NO_X	CO	PM10	PM2.5
Grading and excavation[a]	7	65	51	13	5
Traffic detour VMT	53	15	29	1	1
Total	60	80	80	15	6
PCAPCD Threshold	*82*	*82*	-	*82*	-

Notes:
[a] There is no difference in grading and excavation emissions between Scenarios A and B.
CO = carbon monoxide
NOX = nitrogen oxides
PCAPCD = Placer County Air Pollution Control District
PM10 = particles of 10 micrometers or smaller
PM2.5 = particles of 2.5 micrometers and smaller
ROG = reactive organic gases

Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard?

The City, as CEQA lead agency, relies on a two-tier criteria pollutant cumulative analysis methodology similar to that adopted by the SMAQMD as outlined in its *Guide to Air Quality Assessment in Sacramento County*. That is, if a project would not result in significant project-level criteria air pollutant emissions for which the region is designated nonattainment (i.e., exceed the PCAPCD recommended project thresholds shown in Table 3), project emissions would not be considered cumulatively considerable and would result in a less-than-significant cumulative impact. Should a project exceed the thresholds, a Tier 2 evaluation is conducted to determine Ozone Plan consistency in accordance with CEQA Guidelines Section 15064 (h)(3). Under the Tier 2 analysis, projects found consistent with the Ozone Plan and which would not conflict with the Ozone Plan emissions budget are considered less than cumulatively considerable. The City finds that this methodology is appropriate for Roseville projects because the City is located within the SVAB, the same air basin where the above methodology is utilized by numerous CEQA lead agencies with concurrence and support from the SMAQMD.

As shown in Tables 12, 13, and 14, neither construction nor operation of the project would result in emissions in excess of PCAPCD's recommended project thresholds. Concurrent construction and traffic detour emissions likewise would not exceed thresholds with implementation of Mitigation Measure AQ-1 (see Table 18). Accordingly, project emissions would not be considered cumulatively considerable and would result in a less-than-significant cumulative impact without a Tier 2 evaluation.

Expose sensitive receptors to substantial pollutant concentrations?

While all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation), significant health impacts are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). In particular, because O_3 precursors (ROGs and NO_X) affect air quality on a regional scale, associated health effects are the product of emissions generated by numerous sources throughout a region. Minor increases in regional air pollution from project-generated ROGs and NO_X would therefore have nominal or negligible impacts on human health.

As such, an analysis of impacts on human health associated with project-generated ROG and NO_X is not included in this analysis. Rather, consistent with the current state-of-practice and published guidance by PCAPCD (2016) and other state air quality management agencies, the analysis of project-related impacts on human health focuses only on those pollutants with the greatest potential to result a significant, material impact on human health, which are: (1) DPM, (2) localized CO concentrations, and (3) asbestos.

Diesel Particulate Matter

Construction Activities

Heavy-duty equipment would generate DPM during roadway-widening activities. As shown in Tables 13 and 14, DPM emissions would be minor (less than 4 pounds per day) and only occur over a period of 13 to 20 months. The short-term construction period is well below the 30-year exposure period typically associated with increased cancer risks. Moreover, DPM from construction equipment would be transitory and spread throughout the entire 0.85-mile segment, as opposed to concentrated at a single location. Accordingly, construction of the proposed project would not expose sensitive populations to substantial pollutant concentrations. This impact is less than significant.

Shoofly Detour

The shoofly detour would relocate existing UPRR traffic about 40 feet closer to existing sensitive receptors. The shoofly would be operational for roughly 6 months and approximately 25 trains per day would use the shoofly instead of the existing mainline. During the transition from the old track to the shoofly and then back again, the rail line would be shut down to train traffic for about 4 hours. However, no trains will be diverted around the project site to other rail lines. Although the shoofly detour would move locomotives closer to receptors, it would not increase the number or intensity of existing emissions. Moreover, the detour would only change the location of emissions by approximately 40 feet for a period of up to 6 months. This change is short-term and would not expose sensitive populations to substantial pollutant concentrations. This impact is less than significant.

Roadway Operation

With respect to long-term operation, the project area does not serve a significant number of diesel powered vehicles (approximately 2%) (Horton pers. comm.). Accordingly, it is expected that implementation of the project would not have an appreciable impact on overall DPM emissions. The additional travel lanes contemplated as part of the project would have the effect of moving some traffic closer to nearby homes; therefore, there may be localized areas where ambient concentrations of DPM could be higher than the No Project condition. However, the widened portions of Washington Boulevard are neither considered by the ARB (2005) as a high-traffic road nor a roadway with significant diesel volumes.6 Accordingly, operation of the proposed project would not expose sensitive populations to substantial pollutant concentrations. This impact is less than significant.

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[6] The ARB’s (2005) *Air Quality and Land Use Handbook* defines high-traffic urban roads as those with greater than 100,000 vehicles per day and high-traffic rural roads as those with greater than 500,000 vehicles per day. As shown in Table 7, AADT in the project area for the project under design year (2035) conditions will vary between 9,400 and 60,000, depending on the location. Heavy-duty trucks comprise approximately 2% of this AADT, resulting in a truck AADT of 188 to 1,200 (Horton pers. comm.).

Localized Carbon Monoxide Concentrations

Heavy traffic congestion can contribute to high levels of CO. Individuals exposed to these CO hot-spots may have a greater likelihood of developing significant health effects, including headaches and nausea. The Washington Boulevard detour during construction would result in notable traffic increases at several intersections in the surrounding area. CO intersection modeling was conducted for the following two junctions to evaluate the effects of closing Washington Boulevard during construction.

- Foothills Boulevard/Junction Boulevard
- Roseville Parkway/Galleria Boulevard

These intersections were evaluated because they were identified in the traffic analysis prepared by Fehr & Peers as the most affected intersections (i.e., highest traffic volumes and worst levels of congestion/delay) that were analyzed in the project vicinity (Fehr & Peers 2016). Table 20 summarizes the results of the modeling and indicates that CO concentrations from diverted traffic are not anticipated to exceed the 1- or 8- hour NAAQS or CAAQS.

Table 20. CO Modeling Concentration Results with and without Washington Boulevard Construction Detour (2018) (Parts per Million)

Intersection	Rec.[a]	1-Hour CO Concentrations[b] (ppm)		8-Hour CO Concentrations[c] (ppm)	
		No Detour	With Detour	No Detour	With Detour
Foothills Boulevard/Junction Boulevard	1	3.0	3.4	2.1	2.4
	2	3.2	3.3	2.3	2.3
	3	3.1	3.4	2.2	2.4
	4	2.9	3.3	2.1	2.3
Roseville Parkway/Galleria Boulevard	5	3.8	3.8	2.7	2.7
	6	3.5	3.6	2.5	2.6
	7	3.5	3.6	2.5	2.6
	8	3.6	3.7	2.6	2.6
State Standard (ppm)		20	20	9	9
Federal Standard (ppm)		35	35	9	9

[a] Consistent with Caltrans CO Protocol, receptors are located at 3 meters from the intersection, at each of the four corners to represent the nearest location in which a receptor could potentially be located adjacent to a travelled roadway. The modeled receptors indicated are not representative of the actual sensitive receptors. All intersections modeled have two intersecting roadways.

[b] Average 1-hour background concentration between 2013 and 2015 was 1.93 ppm (California Air Resources Board 2016c).

[c] Average 8-hour background concentration between 2013 and 2015 was 1.37 ppm (U.S. Environmental Protection Agency 2016b).

CO = carbon monoxide; ppm = parts per million

Existing (2016) and design year (2035) traffic conditions were also modeled to evaluate operational CO concentrations at the three transportation study area intersections relative to the NAAQS and CAAQS. As shown in Table 11 in Section 3.2.2, *Impacts*, CO concentrations from changes in long-term traffic patterns are not anticipated to exceed the 1- or 8- hour NAAQS or CAAQS. Consequently, implementation of the project is not expected to cause or contribute to new or worsened violations of the federal or state air quality standards. This impact would be less than significant.

Asbestos

According to the California Department of Conservation's *A General Location Guide for Ultramafic Rocks in California*, there are no geologic features normally associated with NOA (i.e., serpentine rock or ultramafic rock near fault zones) in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to NOA emissions during construction activities. However, demolition of the existing Andora Bridge would be subject to EPA's National Emissions Standards for Hazardous Air Pollutants and ARB's Airborne Toxic Control Measures if asbestos-containing materials were used in the original bridge construction.

Create objectionable odors affecting a substantial number of people?

Minor sources of odors would be present during construction of the proposed project. Diesel engines are the predominant source of power for construction equipment. Exhaust odors from diesel engines, as well as emissions associated with asphalt paving, may be considered offensive to some individuals. However, because odors would be temporary and would disperse rapidly with distance from the source, construction-generated odors are not anticipated to result in the adverse exposure of receptors to objectionable odorous emissions. The shoofly detour would relocate diesel-powered freight closer to receptors for a period of 5 months. Any increase in odors associated with the detour would be intermittent, occurring only as trains pass by receptors, and would be consistent with existing land uses and freight rail operation. Long-term operation of the project is not anticipated to have an impact on odors since it would not increase truck volumes along Washington Boulevard. This impact would be less than significant. No mitigation is required.

Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction activities would generate short-term emissions of CO_2, CH_4, and N_2O from the use of equipment (e.g., graders) and on-road vehicles (e.g., employee commuter cars). GHG emissions generated by construction activities were estimated using SMAQMD's RCEM (Version 8.1.0). Tables 16 and 17 in Section 3.2.2, *Impacts*, summarize estimated GHG emissions. As shown in the table, construction of the project would generate approximately 844 to 1,395 metric tons CO_2e. Vehicle emissions from the Washington Boulevard traffic detour would generate an additional 547 metric tons CO_2e, resulting in a total construction-period estimate of 1,391 to 1,942 metric tons CO_2e. This is equivalent to the annual GHG emissions generated by 294 to 410 passenger vehicles (U.S. Environmental Protection Agency 2016c).

Operational emissions for existing (2016) and design year (2035) conditions were modeled using Caltrans' CT-EMFAC model and traffic data provided by Fehr & Peers (2017). As shown in Table 15 in Section 3.2.2, *Impacts*, project implementation would increase GHG emissions compared to No Project conditions. The emissions are attributable to minor increases in VMT under the project, with the overall change in emissions, relative to No Project conditions, negligible (34 metric tons CO_2e per year).

The State CEQA Guidelines do not indicate what amount of GHG emissions would constitute a significant impact on the environment. Instead, they authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (State CEQA Guidelines Sections 15064.4(a) and 15064.7(c)). The California Supreme Court decision[7] in the *Centers for Biological Diversity et al. vs. California Department of Fish and Wildlife, the Newhall Land and Farming Company* (November 30, 2015, Case No. S217763) (hereafter Newhall Ranch) confirmed that there are multiple potential pathways for evaluating project-level GHG emissions consistent with CEQA, depending on the circumstances of a given project. These potential pathways include reliance on business-as-usual (BAU) model[8], numeric thresholds, and compliance with regulatory programs.

Use of a BAU threshold is most applicable to land use development projects with emission sources covered by the Assembly Bill (AB) 32 scoping plan. Likewise, there are currently no drafted, adopted, or recommended thresholds relevant to the analysis of GHG emissions from transportation projects. PCAPCD has adopted a *de minimis* threshold of 1,100 metric tons CO_2e for operation of land use development projects, such as new residential and commercial projects. The air district also has a bright line threshold of 10,000 metric tons CO_2e, where land use development projects in excess of the de minimis threshold (1,100 metric tons CO_2e) can be found less than cumulatively considerable if the emission intensity (emissions per capita) meets certain criteria. While not explicitly applicable to transportation projects, this analysis considers the 1,100 and 10,000 metric ton thresholds as GHG benchmarks. However, impact significance is ultimately determined based on compliance with regulatory programs, which is currently the most applicable approach for analyzing transportation-related GHG emissions. Accordingly, this analysis relies on compliance with regulatory programs to analyze project-level GHG impacts.

As shown in Tables 16 and 17 in Section 3.2.2, *Impacts*, construction of the project would generate 775 to 995 metric tons CO_2e in 2018, and fewer emissions in 2019. Vehicle emissions from the Washington Boulevard traffic detour would generate an additional 547 metric tons CO_2e in 2018, resulting in a total annual estimate of 1,322 to 1,542 metric tons CO_2e for the first construction year. Emissions generated by either of the Build Alternatives in 2018 with the detour would exceed PCAPCD's land use development threshold of 1,100 metric tons CO_2e per year. However, when total construction emissions are amortized over the life of the project and added to net operational emissions under design year (2035) conditions (see Table 15), implementation of project generates a net increase of 69 to 83 metric tons CO_2e per year.[9] These emissions increases are less than PCAPCD's land use development thresholds.

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[7] It should be noted that the defendants in the Newhall Ranch case have requested a rehearing from the California Supreme Court on a number of grounds. If the Supreme Court decides to rehear the case, it is possible that the ruling may change.

[8] Only if "an examination of the data behind the Scoping Plan's business-as-usual model allowed the lead agency to determine what level of reduction from business as usual a new land use development at the proposed location must contribute in order to comply with statewide goals."

[9] Total construction emissions = 1,391 to 1,942 metric tons CO_2e, or 35 to 49 metric tons CO_2e over a 40 year project life. Net operational emissions = 34 metric tons CO_2e. Total lifetime emissions = 35 to 49 + 34 = 69 to 83 metric tons CO_2e.

The most applicable GHG regulation to transportation projects, including the proposed project, is Senate Bill (SB) 375. SB 375 was enacted to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing and environmental planning. Under this law, SACOG is tasked with developing an SCS that provides a plan for meeting per capita CO_2 emissions levels allocated to SACOG by ARB. These levels are 7% below 2005 emissions levels by 2020 and 16% below 2005 levels by 2035. Accordingly, the targets established by SB 375 not only address near-term (2020) emissions, but also long-term (2035) emissions consistent with statewide legislation[10], executive orders[11], judicial attention[12], and recommendations made by the Association of Environmental Professionals Climate Change Committee.[13]

The Final Environmental Impact Report (EIR) for the 2016 MTP/SCS demonstrates that projects identified in the MTP/SCS meet the ARB's issued SB 375 GHG targets for the SACOG region in 2020 and 2035. GHG emissions associated with the MTP/SCS, including those projects identified in the MTP/SCS, would therefore be less than significant (Sacramento Area Council of Governments 2016a).

As discussed in Section 3.2.2, *Impacts,* the proposed project is listed in the 2016 MTP/SCS. The design concept and scope of the proposed project is consistent with the project description in both documents. Since the proposed project is identified and consistent with SACOG's 2016 MTP/SCS, which was found to have a less-than-significant GHG impact, project-level GHG emissions would be consistent with SB 375. Accordingly, this impact would be less than significant. No mitigation is required.

Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The most applicable policy for the purpose of reducing transportation-related GHG emissions is SB 375. As discussed above, SACOG's emission targets under SB 375 are 7% below 2005 emissions levels by 2020 and 16% below 2005 levels by 2035. SACOG's 2016 MTP/SCS meets these GHG targets. The Final EIR for the 2016 MTP/SCS also demonstrates that he land use and transportation projects in the proposed MTP/SCS would not conflict with AB 32, SB 32, or Executive Order S-3-05. As such, projects consistent with the MTP/SCS would be consistent with SB 375, AB 32, SB 32, or Executive Order S-3-05.

Because the proposed project is identified in SACOG's 2016 MTP/SCS (see Appendix C), project emissions would not conflict with SB 375, AB 32, SB 32, or Executive Order S-3-05. Accordingly, this impact would be less than significant. No mitigation is required.

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[10] Senate Bill 32 has set forth an interim reduction target to reduce GHG emissions by 40% below 1990 levels by 2030.

[11] Executive Order S-03-05 has set forth an interim reduction target to reduce GHG emissions by 80% below 1990 levels by 2050.

[12] See the California Appellate Court, 4th District 2014 rulings in the *Cleveland National Forest Foundation et al. v. SANDAG* and *Sierra Club vs. County of San Diego* cases.

[13] The Association of Environmental Professional's *Beyond 2020: The Challenge of Greenhouse Gas Reduction Planning by Local Governments in California* white paper states that long-term projects should consider "post-2020 emissions consistent with 'substantial progress' along a post-2020 reduction trajectory toward meeting the 2050 target."

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5.2 Personal Communications

Gard, John. Principal. Fehr & Peers, Roseville, CA. October 26, 2016—Email Message to Garry Horton, Mark Thomas & Company.

Horton, Garry. Mark Thomas & Company, Sacramento, CA. October 24 and 27, 2016, and November 9, 2016—Email messages to Laura Yoon, ICF.

Appendix A AQ Model Output

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

             JOB: Washington/Andora Widening Project
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=   0.5 M/S           Z0= 100. CM          ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   15. DEGREES      TEMP=  3.9 DEGREE (C)


  II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *              EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*------------------------*------------------------------
 A. EBA          * -1000    -5     0    -5 *  AG    495   4.3    0.0  17.0
 B. EBD          *     0    -2  1000    -2 *  AG      5   4.3    0.0  10.0
 C. WBA          *  1000     4     0     4 *  AG     11   4.3    0.0  13.3
 D. WBD          *     0     4 -1000     4 *  AG    756   4.3    0.0  13.3
 E. SBA          *    -7  1000    -7     0 *  AG   1090   4.3    0.0  20.6
 F. SBD          *    -4     0    -4 -1000 *  AG   1084   4.3    0.0  13.3
 G. NBA          *     7 -1000     7     0 *  AG   1191   4.3    0.0  20.6
 H. NBD          *     4     0     4  1000 *  AG    942   4.3    0.0  13.3


 III.  RECEPTOR LOCATIONS

           *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -18     11   1.8
 2. R_002    *     10     10   1.8
 3. R_003    *    -11    -15   1.8
 4. R_004    *     18     -7   1.8


1
```

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

            JOB: Washington/Andora Widening Project
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

            *       * PRED  *               CONC/LINK
            *  BRG  * CONC  *                  (PPM)
   RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. R_001    *  169. *   1.1 *  0.1  0.0  0.0  0.2  0.1  0.4  0.3  0.0
  2. R_002    *  185. *   1.1 *  0.0  0.0  0.0  0.0  0.0  0.4  0.6  0.1
  3. R_003    *    6. *   1.2 *  0.1  0.0  0.0  0.1  0.5  0.1  0.0  0.3
  4. R_004    *  274. *   1.0 *  0.3  0.0  0.0  0.3  0.0  0.1  0.3  0.0


1
EXIT
```

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

            JOB: Washington/Andora Widening Project
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

         U=   0.5 M/S             Z0= 100. CM            ALT=     0. (M)
       BRG= WORST CASE            VD=  0.0 CM/S
      CLAS=     7 (G)             VS=  0.0 CM/S
      MIXH= 1000. M              AMB=  0.0 PPM
     SIGTH=   15. DEGREES       TEMP=  3.9 DEGREE (C)


  II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (M)   *             EF     H     W
    DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
  ----------------*-------------------------*------------------------------
  A. EBA         * -1000    -2     0    -2 *  AG     52   4.3    0.0  10.0
  B. EBD         *     0     0  1000     0 *  AG      0   4.3    0.0  10.0
  C. WBA         *  1000     0     0     0 *  AG      0   4.3    0.0  10.0
  D. WBD         *     0     2 -1000     2 *  AG     65   4.3    0.0  10.0
  E. SBA         *     0  1000     0     0 *  AG   1066   4.3    0.0  10.0
  F. SBD         *    -2     0    -2 -1000 *  AG   1078   4.3    0.0  10.0
  G. NBA         *     4 -1000     4     0 *  AG    948   4.3    0.0  13.3
  H. NBD         *     4     0     4  1000 *  AG    923   4.3    0.0  13.3


  III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
    RECEPTOR  *    X      Y      Z
  ------------*---------------------
  1. R_001    *     -6      7   1.8
  2. R_002    *     10      5   1.8
  3. R_003    *     -8     -7   1.8
  4. R_004    *     11     -5   1.8


 1
```

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

            JOB: Washington/Andora Widening Project
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

               *      * PRED  *               CONC/LINK
               *  BRG  * CONC  *                 (PPM)
   RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. R_001    *  174. *   1.2 *  0.0  0.0  0.0  0.0  0.1  0.7  0.4  0.0
  2. R_002    *  352. *   1.0 *  0.0  0.0  0.0  0.0  0.4  0.0  0.0  0.6
  3. R_003    *  172. *   1.1 *  0.0  0.0  0.0  0.0  0.0  0.7  0.4  0.0
  4. R_004    *  352. *   1.0 *  0.0  0.0  0.0  0.0  0.4  0.0  0.0  0.5


1
EXIT
```

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

            JOB: Washington/Andora Widening Project
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S             Z0= 100. CM          ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   15. DEGREES       TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
 A. EBA         * -1000   -11     0   -11 *  AG   1824   4.3    0.0  27.9
 B. EBD         *     0    -5  1000    -5 *  AG   2006   4.3    0.0  17.0
 C. WBA         *  1000     9     0     9 *  AG   2021   4.3    0.0  24.3
 D. WBD         *     0     5 -1000     5 *  AG   2097   4.3    0.0  17.0
 E. SBA         *    -7  1000    -7     0 *  AG   1002   4.3    0.0  20.6
 F. SBD         *    -4     0    -4 -1000 *  AG   1133   4.3    0.0  13.3
 G. NBA         *     9 -1000     9     0 *  AG    982   4.3    0.0  24.3
 H. NBD         *     4     0     4  1000 *  AG    593   4.3    0.0  13.3


 III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
------------*---------------------
 1. R_001    *    -18     14   1.8
 2. R_002    *     10     22   1.8
 3. R_003    *    -11    -26   1.8
 4. R_004    *     22    -14   1.8


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

            JOB: Washington/Andora Widening Project
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *               CONC/LINK
             *  BRG  * CONC  *                 (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. R_001    *   97. *   1.9 *  0.0  0.5  0.8  0.3  0.2  0.0  0.0  0.1
  2. R_002    *  186. *   1.6 *  0.0  0.2  0.4  0.0  0.0  0.4  0.4  0.1
  3. R_003    *   78. *   1.5 *  0.1  0.5  0.4  0.0  0.0  0.3  0.2  0.0
  4. R_004    *  277. *   1.9 *  0.6  0.3  0.0  0.5  0.0  0.2  0.2  0.0


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EXIT
```

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

            JOB: Washington/Andora Widening Project
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

         U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
       BRG= WORST CASE           VD=  0.0 CM/S
      CLAS=     7 (G)            VS=  0.0 CM/S
      MIXH= 1000. M             AMB=  0.0 PPM
     SIGTH=   15. DEGREES       TEMP=  3.9 DEGREE (C)


  II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. EBA         * -1000    -5     0    -5 *  AG    719   1.3    0.0  17.0
 B. EBD         *     0    -2  1000    -2 *  AG      5   1.3    0.0  10.0
 C. WBA         *  1000     4     0     4 *  AG     11   1.3    0.0  13.3
 D. WBD         *     0     4 -1000     4 *  AG   1792   1.3    0.0  13.3
 E. SBA         *    -7  1000    -7     0 *  AG   2025   1.3    0.0  20.6
 F. SBD         *    -4     0    -4 -1000 *  AG   1680   1.3    0.0  13.3
 G. NBA         *     7 -1000     7     0 *  AG   1691   1.3    0.0  20.6
 H. NBD         *     4     0     4  1000 *  AG    969   1.3    0.0  13.3


 III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -18     11   1.8
 2. R_002    *     10     10   1.8
 3. R_003    *    -11    -15   1.8
 4. R_004    *     18     -7   1.8


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

              JOB: Washington/Andora Widening Project
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

              *       * PRED  *                CONC/LINK
              *  BRG  * CONC  *                  (PPM)
  RECEPTOR    * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. R_001    *  169. *   0.5 *  0.0  0.0  0.0  0.1  0.0  0.2  0.1  0.0
  2. R_002    *  263. *   0.5 *  0.1  0.0  0.0  0.3  0.1  0.0  0.0  0.1
  3. R_003    *    5. *   0.5 *  0.1  0.0  0.0  0.1  0.3  0.1  0.0  0.1
  4. R_004    *  275. *   0.5 *  0.1  0.0  0.0  0.2  0.0  0.1  0.1  0.0


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

            JOB: Washington/Andora Widening Project
            RUN: CALINE4 RUN     (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S            Z0= 100. CM          ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=    7 (G)             VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   15. DEGREES      TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *            EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*-----------------------------
 A. EBA         * -1000    -2     0    -2 *  AG     51   1.3    0.0  10.0
 B. EBD         *     0     0  1000     0 *  AG      0   1.3    0.0  10.0
 C. WBA         *  1000     0     0     0 *  AG      0   1.3    0.0  10.0
 D. WBD         *     0     2 -1000     2 *  AG     53   1.3    0.0  10.0
 E. SBA         *     0  1000     0     0 *  AG   2016   1.3    0.0  10.0
 F. SBD         *    -2     0    -2 -1000 *  AG   2009   1.3    0.0  10.0
 G. NBA         *     4 -1000     4     0 *  AG    968   1.3    0.0  13.3
 H. NBD         *     4     0     4  1000 *  AG    963   1.3    0.0  13.3


 III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
------------*---------------------
 1. R_001    *     -6      7   1.8
 2. R_002    *     10      5   1.8
 3. R_003    *     -8     -7   1.8
 4. R_004    *     11     -5   1.8


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

             JOB: Washington/Andora Widening Project
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


   IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

            *       * PRED  *              CONC/LINK
            *  BRG  * CONC  *                (PPM)
   RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
  -------------*-------*-------*--------------------------------------------
   1. R_001    *  172. *   0.5 *  0.0  0.0  0.0  0.0  0.0  0.3  0.1  0.0
   2. R_002    *  351. *   0.4 *  0.0  0.0  0.0  0.0  0.2  0.0  0.0  0.2
   3. R_003    *  171. *   0.5 *  0.0  0.0  0.0  0.0  0.0  0.3  0.1  0.0
   4. R_004    *  351. *   0.4 *  0.0  0.0  0.0  0.0  0.2  0.0  0.0  0.2


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

              JOB: Washington/Andora Widening Project
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   15. DEGREES      TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. EBA          * -1000   -11     0   -11 *  AG   2222   1.3    0.0  27.9
 B. EBD          *     0    -5  1000    -5 *  AG   2459   1.3    0.0  17.0
 C. WBA          *  1000     9     0     9 *  AG   2834   1.3    0.0  24.3
 D. WBD          *     0     5 -1000     5 *  AG   2843   1.3    0.0  17.0
 E. SBA          *    -7  1000    -7     0 *  AG   1390   1.3    0.0  20.6
 F. SBD          *    -4     0    -4 -1000 *  AG   1977   1.3    0.0  13.3
 G. NBA          *     9 -1000     9     0 *  AG   1205   1.3    0.0  24.3
 H. NBD          *     4     0     4  1000 *  AG    912   1.3    0.0  13.3


 III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -18     14   1.8
 2. R_002    *     10     22   1.8
 3. R_003    *    -11    -26   1.8
 4. R_004    *     22    -14   1.8


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

         JOB: Washington/Andora Widening Project
         RUN: CALINE4 RUN      (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *              CONC/LINK
             *  BRG  * CONC  *                (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. R_001    *   97. *   0.7 *  0.0  0.2  0.3  0.1  0.1  0.0  0.0  0.0
  2. R_002    *  188. *   0.6 *  0.0  0.1  0.2  0.0  0.0  0.2  0.1  0.1
  3. R_003    *    9. *   0.6 *  0.1  0.0  0.0  0.1  0.1  0.1  0.0  0.1
  4. R_004    *  278. *   0.7 *  0.2  0.1  0.0  0.2  0.0  0.1  0.1  0.0


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

             JOB: Washington/Andora Widening Project
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
     BRG= WORST CASE           VD=  0.0 CM/S
    CLAS=     7 (G)            VS=  0.0 CM/S
    MIXH= 1000. M             AMB=  0.0 PPM
   SIGTH=   15. DEGREES       TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. EBA         * -1000    -5     0    -5 *  AG    809   1.3    0.0  17.0
 B. EBD         *     0    -2  1000    -2 *  AG      5   1.3    0.0  10.0
 C. WBA         *  1000     4     0     4 *  AG     11   1.3    0.0  13.3
 D. WBD         *     0     4 -1000     4 *  AG   1632   1.3    0.0  13.3
 E. SBA         *    -7  1000    -7     0 *  AG   1406   1.3    0.0  20.6
 F. SBD         *    -4     0    -4 -1000 *  AG   1496   1.3    0.0  13.3
 G. NBA         *     7 -1000     7     0 *  AG   1774   1.3    0.0  20.6
 H. NBD         *     4     0     4  1000 *  AG    867   1.3    0.0  13.3


 III.  RECEPTOR LOCATIONS

           *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -18     11   1.8
 2. R_002    *     10     10   1.8
 3. R_003    *    -11    -15   1.8
 4. R_004    *     18     -7   1.8
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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   2

             JOB: Washington/Andora Widening Project
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *               CONC/LINK
             *  BRG  * CONC  *                 (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. R_001    *  169. *   0.5 *  0.0  0.0  0.0  0.1  0.0  0.1  0.1  0.0
  2. R_002    *  263. *   0.5 *  0.1  0.0  0.0  0.2  0.1  0.0  0.0  0.1
  3. R_003    *    5. *   0.5 *  0.1  0.0  0.0  0.1  0.2  0.1  0.0  0.1
  4. R_004    *  275. *   0.5 *  0.1  0.0  0.0  0.2  0.0  0.1  0.1  0.0


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

             JOB: Washington/Andora Widening Project
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S             Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE            VD=  0.0 CM/S
     CLAS=     7 (G)             VS=  0.0 CM/S
     MIXH= 1000. M              AMB=  0.0 PPM
    SIGTH=   15. DEGREES       TEMP=  3.9 DEGREE (C)


  II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *              EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*------------------------*------------------------------
 A. EBA          * -1000    -2     0    -2 *  AG     51   1.3    0.0  10.0
 B. EBD          *     0     0  1000     0 *  AG      0   1.3    0.0  10.0
 C. WBA          *  1000     0     0     0 *  AG      0   1.3    0.0  10.0
 D. WBD          *     0     2 -1000     2 *  AG     63   1.3    0.0  10.0
 E. SBA          *     0  1000     0     0 *  AG   1386   1.3    0.0  10.0
 F. SBD          *    -2     0    -2 -1000 *  AG   1381   1.3    0.0  10.0
 G. NBA          *     4 -1000     4     0 *  AG    863   1.3    0.0  13.3
 H. NBD          *     4     0     4  1000 *  AG    856   1.3    0.0  13.3


 III.  RECEPTOR LOCATIONS

           *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *     -6      7   1.8
 2. R_002    *     10      5   1.8
 3. R_003    *     -8     -7   1.8
 4. R_004    *     11     -5   1.8


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

          JOB: Washington/Andora Widening Project
          RUN: CALINE4 RUN      (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

            *       * PRED  *               CONC/LINK
            *  BRG  * CONC  *                 (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*---------------------------------------
  1. R_001    *  174. *   0.4 *  0.0  0.0  0.0  0.0  0.0  0.2  0.1  0.0
  2. R_002    *  351. *   0.3 *  0.0  0.0  0.0  0.0  0.2  0.0  0.0  0.2
  3. R_003    *  171. *   0.4 *  0.0  0.0  0.0  0.0  0.0  0.2  0.1  0.0
  4. R_004    *  351. *   0.3 *  0.0  0.0  0.0  0.0  0.2  0.0  0.0  0.1


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

              JOB: Washington/Andora Widening Project
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    I.  SITE VARIABLES

          U=   0.5 M/S             Z0= 100. CM            ALT=     0. (M)
        BRG= WORST CASE            VD=  0.0 CM/S
       CLAS=     7 (G)             VS=  0.0 CM/S
       MIXH= 1000. M              AMB=  0.0 PPM
      SIGTH=   15. DEGREES       TEMP=  3.9 DEGREE (C)


   II.  LINK VARIABLES

        LINK      *  LINK COORDINATES (M)   *              EF     H     W
     DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
  ----------------*-------------------------*------------------------------
  A. EBA          * -1000   -11     0   -11 *  AG   2155   1.3    0.0  27.9
  B. EBD          *     0    -5  1000    -5 *  AG   2439   1.3    0.0  17.0
  C. WBA          *  1000     9     0     9 *  AG   2723   1.3    0.0  24.3
  D. WBD          *     0     5 -1000     5 *  AG   2958   1.3    0.0  17.0
  E. SBA          *    -7  1000    -7     0 *  AG   1742   1.3    0.0  20.6
  F. SBD          *    -4     0    -4 -1000 *  AG   1483   1.3    0.0  13.3
  G. NBA          *     9 -1000     9     0 *  AG   1104   1.3    0.0  24.3
  H. NBD          *     4     0     4  1000 *  AG    844   1.3    0.0  13.3


  III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
    RECEPTOR  *    X      Y      Z
  ------------*---------------------
  1. R_001    *    -18     14   1.8
  2. R_002    *     10     22   1.8
  3. R_003    *    -11    -26   1.8
  4. R_004    *     22    -14   1.8

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

             JOB: Washington/Andora Widening Project
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *                CONC/LINK
             *  BRG  * CONC  *                  (PPM)
  RECEPTOR   * (DEG) * (PPM) *    A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
   1. R_001    *   97. *   0.7 *  0.0  0.2  0.3  0.1  0.1  0.0  0.0  0.0
   2. R_002    *  258. *   0.6 *  0.1  0.0  0.0  0.2  0.1  0.0  0.0  0.1
   3. R_003    *    7. *   0.6 *  0.1  0.0  0.0  0.1  0.2  0.1  0.0  0.1
   4. R_004    *  278. *   0.7 *  0.2  0.1  0.0  0.2  0.0  0.1  0.1  0.0


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

           JOB: Washington/Andora Widening Project Detou
           RUN: CALINE4 RUN      (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

      U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
    BRG= WORST CASE           VD=  0.0 CM/S
   CLAS=     7 (G)            VS=  0.0 CM/S
   MIXH= 1000. M             AMB=  0.0 PPM
  SIGTH=   15. DEGREES      TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *              EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. EBA         * -1000    -7     0    -7 *  AG    461   3.7    0.0  20.6
 B. EBD         *     0    -4  1000    -4 *  AG    567   3.7    0.0  13.3
 C. WBA         *  1000     5     0     5 *  AG    771   3.7    0.0  17.0
 D. WBD         *     0     4 -1000     4 *  AG    712   3.7    0.0  13.3
 E. SBA         *    -9  1000    -9     0 *  AG   1588   3.7    0.0  24.3
 F. SBD         *    -5     0    -5 -1000 *  AG   1493   3.7    0.0  17.0
 G. NBA         *     9 -1000     9     0 *  AG   1452   3.7    0.0  24.3
 H. NBD         *     5     0     5  1000 *  AG   1500   3.7    0.0  17.0


 III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -22     11   1.8
 2. R_002    *     14     15   1.8
 3. R_003    *    -15    -18   1.8
 4. R_004    *     22    -11   1.8


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

            JOB: Washington/Andora Widening Project Detou
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *               CONC/LINK
             *  BRG  * CONC  *                  (PPM)
   RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. R_001    *   97. *   1.1 *  0.0  0.2  0.3  0.1  0.3  0.0  0.0  0.2
  2. R_002    *  187. *   1.3 *  0.0  0.1  0.2  0.0  0.0  0.3  0.5  0.2
  3. R_003    *    7. *   1.2 *  0.1  0.0  0.0  0.1  0.5  0.1  0.0  0.3
  4. R_004    *  349. *   1.0 *  0.0  0.1  0.1  0.0  0.3  0.0  0.1  0.4


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

             JOB: Washington/Andora Widening Project Detou
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   15. DEGREES      TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. EBA         * -1000    -9     0    -9 *  AG   1995   3.7    0.0  24.3
 B. EBD         *     0    -5  1000    -5 *  AG   1751   3.7    0.0  17.0
 C. WBA         *  1000    11     0    11 *  AG   2397   3.7    0.0  27.9
 D. WBD         *     0     5 -1000     5 *  AG   2228   3.7    0.0  17.0
 E. SBA         *    -9  1000    -9     0 *  AG   1476   3.7    0.0  24.3
 F. SBD         *    -5     0    -5 -1000 *  AG   1277   3.7    0.0  17.0
 G. NBA         *     9 -1000     9     0 *  AG   1335   3.7    0.0  24.3
 H. NBD         *     5     0     5  1000 *  AG   1947   3.7    0.0  17.0


 III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -22     14   1.8
 2. R_002    *     14     25   1.8
 3. R_003    *    -15    -23   1.8
 4. R_004    *     22    -15   1.8


1
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     CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
          JUNE 1989 VERSION
          PAGE   2

      JOB: Washington/Andora Widening Project Detou
      RUN: CALINE4 RUN      (WORST CASE ANGLE)
   POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

           *      * PRED  *              CONC/LINK
           *  BRG  * CONC  *                (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*---------------------------------------
  1. R_001    *   97. *   1.9 *  0.0  0.4  0.7  0.3  0.3  0.0  0.0  0.2
  2. R_002    *  189. *   1.6 *  0.0  0.2  0.4  0.0  0.0  0.3  0.4  0.3
  3. R_003    *    8. *   1.6 *  0.4  0.0  0.0  0.2  0.4  0.2  0.0  0.4
  4. R_004    *  278. *   1.7 *  0.6  0.2  0.0  0.5  0.0  0.1  0.2  0.0


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

             JOB: Washington/Andora Widening Project Detou
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   15. DEGREES      TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *            EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. EBA         * -1000    -7     0    -7 *  AG    461   3.7    0.0  20.6
 B. EBD         *     0    -4  1000    -4 *  AG    972   3.7    0.0  13.3
 C. WBA         *  1000     5     0     5 *  AG   1111   3.7    0.0  17.0
 D. WBD         *     0     4 -1000     4 *  AG    712   3.7    0.0  13.3
 E. SBA         *    -9  1000    -9     0 *  AG   2226   3.7    0.0  24.3
 F. SBD         *    -5     0    -5 -1000 *  AG   1469   3.7    0.0  17.0
 G. NBA         *     9 -1000     9     0 *  AG   1454   3.7    0.0  24.3
 H. NBD         *     5     0     5  1000 *  AG   2100   3.7    0.0  17.0


 III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -22     11   1.8
 2. R_002    *     14     15   1.8
 3. R_003    *    -15    -18   1.8
 4. R_004    *     22    -11   1.8


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

            JOB: Washington/Andora Widening Project Detou
            RUN: CALINE4 RUN      (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

            *       * PRED  *               CONC/LINK
            *  BRG  * CONC  *                 (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*---------------------------------------
  1. R_001    *   97. *   1.5 *  0.0  0.3  0.4  0.1  0.4  0.0  0.0  0.2
  2. R_002    *  351. *   1.4 *  0.0  0.0  0.0  0.0  0.5  0.0  0.0  1.0
  3. R_003    *    7. *   1.5 *  0.1  0.0  0.0  0.1  0.7  0.1  0.0  0.4
  4. R_004    *  349. *   1.4 *  0.0  0.2  0.2  0.0  0.4  0.0  0.1  0.6


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

             JOB: Washington/Andora Widening Project Detou
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=   0.5 M/S            Z0= 100. CM           ALT=     0. (M)
      BRG= WORST CASE           VD=  0.0 CM/S
     CLAS=     7 (G)            VS=  0.0 CM/S
     MIXH= 1000. M             AMB=  0.0 PPM
    SIGTH=   15. DEGREES      TEMP=  3.9 DEGREE (C)


 II.  LINK VARIABLES

     LINK      *  LINK COORDINATES (M)   *             EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. EBA         * -1000    -9     0    -9 *  AG   2209   3.7    0.0  24.3
 B. EBD         *     0    -5  1000    -5 *  AG   1751   3.7    0.0  17.0
 C. WBA         *  1000    11     0    11 *  AG   2397   3.7    0.0  27.9
 D. WBD         *     0     5 -1000     5 *  AG   2413   3.7    0.0  17.0
 E. SBA         *    -9  1000    -9     0 *  AG   1476   3.7    0.0  24.3
 F. SBD         *    -5     0    -5 -1000 *  AG   1491   3.7    0.0  17.0
 G. NBA         *     9 -1000     9     0 *  AG   1520   3.7    0.0  24.3
 H. NBD         *     5     0     5  1000 *  AG   1947   3.7    0.0  17.0


 III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. R_001    *    -22     14   1.8
 2. R_002    *     14     25   1.8
 3. R_003    *    -15    -23   1.8
 4. R_004    *     22    -15   1.8


1
```

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

             JOB: Washington/Andora Widening Project Detou
             RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *              CONC/LINK
             *  BRG  * CONC  *                (PPM)
    RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
  -------------*-------*-------*----------------------------------------
   1. R_001    *   97. *   1.9 *  0.0  0.4  0.7  0.4  0.3  0.0  0.0  0.2
   2. R_002    *  189. *   1.7 *  0.0  0.2  0.4  0.0  0.0  0.4  0.4  0.3
   3. R_003    *    8. *   1.7 *  0.4  0.0  0.0  0.2  0.4  0.2  0.0  0.4
   4. R_004    *  278. *   1.8 *  0.6  0.2  0.0  0.5  0.0  0.2  0.3  0.0


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2016, 2035 (grams/mile)

Speed	ROG	CO	NOx	CO2	PM10	PM2.5
0-5	0.29	2.82	0.51	1244.62	0.06	0.03
5-10	0.19	2.39	0.43	933.19	0.06	0.03
10-15	0.13	2.06	0.35	718.98	0.06	0.03
15-20	0.09	1.81	0.30	575.97	0.05	0.02
20-25	0.07	1.62	0.27	480.42	0.05	0.02
25-30	0.06	1.48	0.25	415.82	0.05	0.02
30-35	0.05	1.36	0.24	373.33	0.05	0.02
35-40	0.04	1.27	0.23	347.03	0.05	0.02
40-45	0.04	1.19	0.23	333.94	0.05	0.02
45-50	0.04	1.14	0.23	333.03	0.05	0.02
50-55	0.04	1.12	0.23	344.06	0.05	0.02
55-60	0.04	1.11	0.23	368.16	0.05	0.02
60-65	0.05	1.15	0.24	408.28	0.05	0.02
65-70	0.05	1.18	0.25	435.75	0.05	0.02

Speed	ROG	CO	NOx	CO2	PM10	PM2.5
0-5	0.10	0.90	0.29	711.90	0.05	0.02
5-10	0.07	0.78	0.23	536.77	0.05	0.02
10-15	0.05	0.67	0.15	415.39	0.05	0.02
15-20	0.03	0.59	0.10	334.11	0.05	0.02
20-25	0.02	0.53	0.07	280.11	0.05	0.02
25-30	0.02	0.49	0.06	243.63	0.05	0.02
30-35	0.02	0.45	0.05	219.46	0.05	0.02
35-40	0.01	0.41	0.04	204.37	0.05	0.02
40-45	0.01	0.39	0.04	196.68	0.05	0.02
45-50	0.01	0.37	0.04	195.71	0.05	0.02
50-55	0.01	0.35	0.04	201.43	0.05	0.02
55-60	0.01	0.34	0.04	214.64	0.05	0.02
60-65	0.02	0.34	0.04	236.90	0.05	0.02
65-70	0.02	0.34	0.04	252.18	0.05	0.02

2018 Composite Emissions (g/mi)

Speed	ROG	NOx	CO	PM10	PM2.5	CO2
5	2.62	2.35	3.15	0.08	0.04	1337.69
10	2.50	1.93	2.62	0.07	0.04	1048.63
15	2.41	1.41	2.18	0.07	0.03	821.09
20	2.35	1.07	1.87	0.06	0.03	673.19
25	2.32	0.87	1.64	0.06	0.03	578.27
30	2.29	0.77	1.47	0.06	0.03	513.43
35	2.28	0.70	1.34	0.06	0.03	470.34
40	2.27	0.66	1.24	0.06	0.03	441.60
45	2.27	0.63	1.16	0.06	0.03	424.71
50	2.26	0.61	1.11	0.06	0.03	419.64
55	2.26	0.60	1.09	0.06	0.03	425.77
60	2.26	0.60	1.11	0.06	0.03	444.01
65	2.27	0.61	1.16	0.06	0.03	476.93
70	2.27	0.62	1.21	0.06	0.03	499.19
75	2.27	0.62	1.21	0.06	0.03	499.19

Appendix B Interagency Consultation

POAQC Determination–Project Summary for Interagency Consultation

MTIP ID# *(required):* PLA25501

Project Description *(clearly describe project):*
The City of Roseville (City) proposes to improve a 0.85-mile section of Washington Boulevard as part of the Washington Boulevard/Andora Bridge Improvement Project. The proposed project involves widening a two-lane section of Washington Boulevard between Sawtell Road and Pleasant Grove Boulevard to four lanes and replacing the existing 100-year-old Union Pacific Railroad (UPRR) bridge (referred to as the Andora Underpass) over Washington Boulevard.

Type of Project: Change to existing regionally significant street	**County:** Placer

Narrative Location/Route & Washington Boulevard is north of Downtown Roseville at Union Pacific Railroad Milepost 108.20 (see Figure 1).
Caltrans Projects – EA#: CML 5182 (074)

Lead Agency: Caltrans District 3

Contact Person: Martin Villanueva	**Email:** Martin.villanueva@dot.ca.gov
Phone#: (530) 741-5450	**Fax#:** NA

Hot Spot Pollutant of Concern *(check one or both)*
PM2.5 ☒ **PM10** ☐

Is this a 6004 or 6005 Federal process? *(check one)*
6004 ☐ **6005** ☒

This is a 23 USC 327 federal process under MAP-21

Federal Action for which Project-Level PM Conformity is Needed *(check appropriate box)*
Categorical Exclusion (NEPA) ☒ **EA or Draft EIS** ☐ **FONSI or Final EIS** ☐

Scheduled Date of Federal Action: January 2018

Current Programming Dates *(as appropriate)*

	PE/Environmental	**ENG**	**ROW**	**CON**
Start	May 2016	May 2016	NA	September 2018
End	January 2018	June 2018	NA	December 2019

Project Purpose and Need

The purpose of the proposed project is to improve existing and future traffic; enhance access and safety for motorists, pedestrians, and cyclists; and meet railroad clearance requirements. The proposed project would also provide better connectivity between the existing two-lane, 0.85-mile segment of Washington Boulevard and the existing four-lane segments of Washington Boulevard. Additionally, the improvements would offer a better and more continuous route for pedestrians and bicyclists, who are currently forced to detour off Washington Boulevard onto Derek Place.

The project is needed because recurring morning and evening peak-period demand exceeds the current design capacity of Washington Boulevard, creating traffic operation and safety issues for motorists, pedestrians, and cyclists. These issues result in moderate delays and wasted fuel, which are expected to be exacerbated by anticipated increases in traffic from future population and employment growth.

Surrounding Land Use/Traffic Generators

The project area is within an existing urban environment. At the southern end of the project area, the UPRR line runs along east side of Washington Boulevard, crosses over the road just south of the South Fork of Pleasant Grove Creek, and then continues along the west side of the road towards Pleasant Grove Boulevard. The southern end of the project area contains commercial development to the east. Immediately before and after the Andora Underpass, the project area supports City open space lands to the west and residential development on both sides of the road up to Pleasant Gove Boulevard. An existing Class 1 bike trail occurs along the east side of Washington Boulevard and connects Diamond Oaks Road to Derek Place.

Residential land uses are immediately east and west (closest receptor is 25 feet) of Washington Boulevard between the Andora Underpass and Pleasant Grove Boulevard. Residential receptors are also within 120 feet of the existing UPRR. There are no educational, recreational, or medical facilities within 1,000 feet of the project area.

MTP Horizon Year/Design Year: **Build and No-Build LOS , AADT, Truck AADT, and % and # trucks:** Table 1 summarizes annual average daily traffic (AADT) and truck volumes in the project area for the proposed project, Alternative 1, and the No Build Alternative (Alternative 2) for design year (2035). The only differences between the proposed project and Alternative 1 occur during construction. Traffic volumes, speeds, and other operational conditions under the proposed project and Alternative 1 would be identical. Accordingly, the operational impact assessment is based on a single set of traffic conditions, which is representative of both the proposed project and Alternative 1.

Table 1: Design Year (2035) Build and No Build AADT and Truck Volumes

Location	Design Year Conditions (2035)				
	No Build (Alternative 2)		Proposed Project and Alternative 1		
	AADT	Truck AADT[a]	AADT	Truck AADT[a]	∆ Truck AADT from No Build Alternative
Washington Boulevard between Pleasant Grove Boulevard and Industrial Avenue	27,500	550	29,300	586	36
Washington Blvd between Kaseberg Drive and Emerald Oak Road / Diamond Oaks Road	30,400	608	35,800	716	108
Washington Blvd between Kaseberg Drive and Emerald Oak Road / Diamond Oaks Road	24,900	498	32,000	640	142
Washington Blvd between Kaseberg Drive and Sawtell Road / Derek Place	25,000	500	32,100	642	142
Washington Blvd between Junction Boulevard and Corporation Yard Road	36,300	726	36,400	728	2
Pleasant Grove Boulevard between Winslow Drive and Washington Boulevard	58,900	1178	60,000	1200	22
Pleasant Grove Boulevard between Washington Boulevard and Galilee Road/ Elmwood Rive	58,900	1178	57,600	1152	-26
Diamond Oaks Road between Glenwood Circle / Firestone Drive and Washington Boulevard	9,100	182	9,400	188	6
Junction Boulevard between Washington Boulevard and Corporation Yard Road	25,700	514	27,900	558	44
Foothills Boulevard between Pleasant Grove Boulevard and S Bluff Drive / Beckett Drive	50,000	1,000	49,400	988	-12

Source: Fehr & Peers 2017
Notes:
[a] Trucks assumed to represent 2 percent of total AADT.

Intersections in the transportation study area that are potentially affected by the proposed project/Alternative 1 were analyzed in the *Transportation Study for the Washington Boulevard Widening Project* prepared by Fehr & Peers (2017). A summary of intersection operations under design year (2035) project and No-Build (Alternative 2) conditions are shown in Attachment A. Trucks comprise approximately 2% of traffic (Horton pers. comm.).

Describe potential traffic redistribution effects of congestion relief*:*
The proposed widening of Washington Boulevard would alter travel behavior including route choice, periods of travel, selection of trip origin-destination pairs, and potentially the decision to travel. Traffic data provided by the traffic engineer, Fehr & Peers, indicates that implementation of the project would cause a model-wide increase in vehicle miles traveled (VMT) of 781 miles, relative to 2035 No Build conditions (Fehr & Peers 2017). As shown in Table 1 (above), AADT in the project area would also increase on most segments, with the highest increases occurring between Kaseberg Drive and Sawtell Road/Derek Place. The increases in VMT and AADT are a result of the project-induced improvements in traffic circulation achieved by the widening of Washington Boulevard. The proposed project would also substantially improve the walking and biking environment along the Washington Boulevard corridor. The project would not modify the existing bus turnout on the west side of Washington Boulevard south of Pleasant Grove Boulevard. It also would have no effect on the vehicle mix or percentage of trucks within the transportation study area, relative to No Build (Alternative 2) conditions.

Comments/Explanations/Details*:*
The proposed project is not a Project of Air Quality Concern (POAQC) because the project does not meet the following criteria (underlined text indicates answers to 40 CFR 93.123(b)(1) criteria for Projects of Air Quality Concern (POAQC)):

(i) **New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in diesel vehicles.** Appendix B from the U.S. Environmental Protection Agency (EPA) *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* provides guidance on what types of projects may be of local air quality concern (40 CFR 93.123(b)(1)). Appendix B indicates that a facility with an AADT volume of 125,000 and 8% trucks (10,000 truck AADT) are likely considered a POAQC. The proposed project would widen Washington Boulevard from two to four travel lanes between Sawtell Road/Derek Place and Pleasant Grove Boulevard. For existing roadway facilities, the effect of a project on truck volumes is normally the main point on which this criterion is judged. Design year (2035) conditions were selected for the analysis because they represent the year with maximum traffic volumes.

Table 1 indicates that the AADT in the transportation study area for the project under design year (2035) conditions will vary between 9,400 and 60,000, depending on the location. Heavy-duty trucks comprise approximately 2% of this AADT, resulting in a truck AADT of 188 to 1,200 (Horton pers. comm.).

Based on the data presented in Table 1, predicted AADT would be less than the EPA's AADT guidance criterion of 125,000. Predicted truck percentages and volumes would also be well below the EPA's guidance criteria of 8% or 10,000 vehicles per day (maximum truck percentages and truck AADT are 2% and 1,200, respectively). Accordingly, the proposed project/Alternative 1 would not serve a significant number of diesel vehicles or result in a significant increase in diesel vehicles.

(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.** Peak-hour Level-of-Service (LOS) and delay at study area intersections under design year (2035) conditions are presented in Attachment A. The table indicates that the intersections of Washington Boulevard/Pleasant Grove Boulevard, Washington Boulevard/Sawtell Road/Derek Place, and Washington Boulevard/Junction Boulevard would experience increases in delay with implementation of the project. However, the project would improve AM peak hour operations at Washington Boulevard/Diamond Oaks Road/Emerald Oak Road from LOS E to C and improve PM peak hour operations from LOS D to C. Delays would also decrease at Washington Boulevard/Kaseberg Drive.

Although LOS and delay would be degraded at two study area intersections, they would not serve a significant number of trucks (2%), therefore, the proposed project/Alternative 1 would not affect any at-grade intersections with a high number of diesel vehicles.

(i) **New bus and rail terminals and transfer points than have a significant number of diesel vehicles congregating at a single location.** The project does not include new bus or rail terminals and transfer points.

(ii) **Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location.** The project does not include expanded bus or rail terminals and transfer points.

(iii) **Projects in or affecting locations, areas, or categories of sites which are identified in the PM10 or PM2.5 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.** The PM2.5 State Implementation Plan, *PM2.5 Implementation/Maintenance Plan and Redesignation Request for Sacramento PM2.5 Nonattainment Area*, has not identified any locations, areas, or categories of sites as a site of violation or possible violation.

References Cited:

Fehr & Peers. 2017. Transportation Study for the Washington Boulevard Widening Project. Prepared for the City of Roseville. January.

Horton, Garry. Mark Thomas & Company, Sacramento, CA. November 9, 2016—Email message to Laura Yoon, ICF.

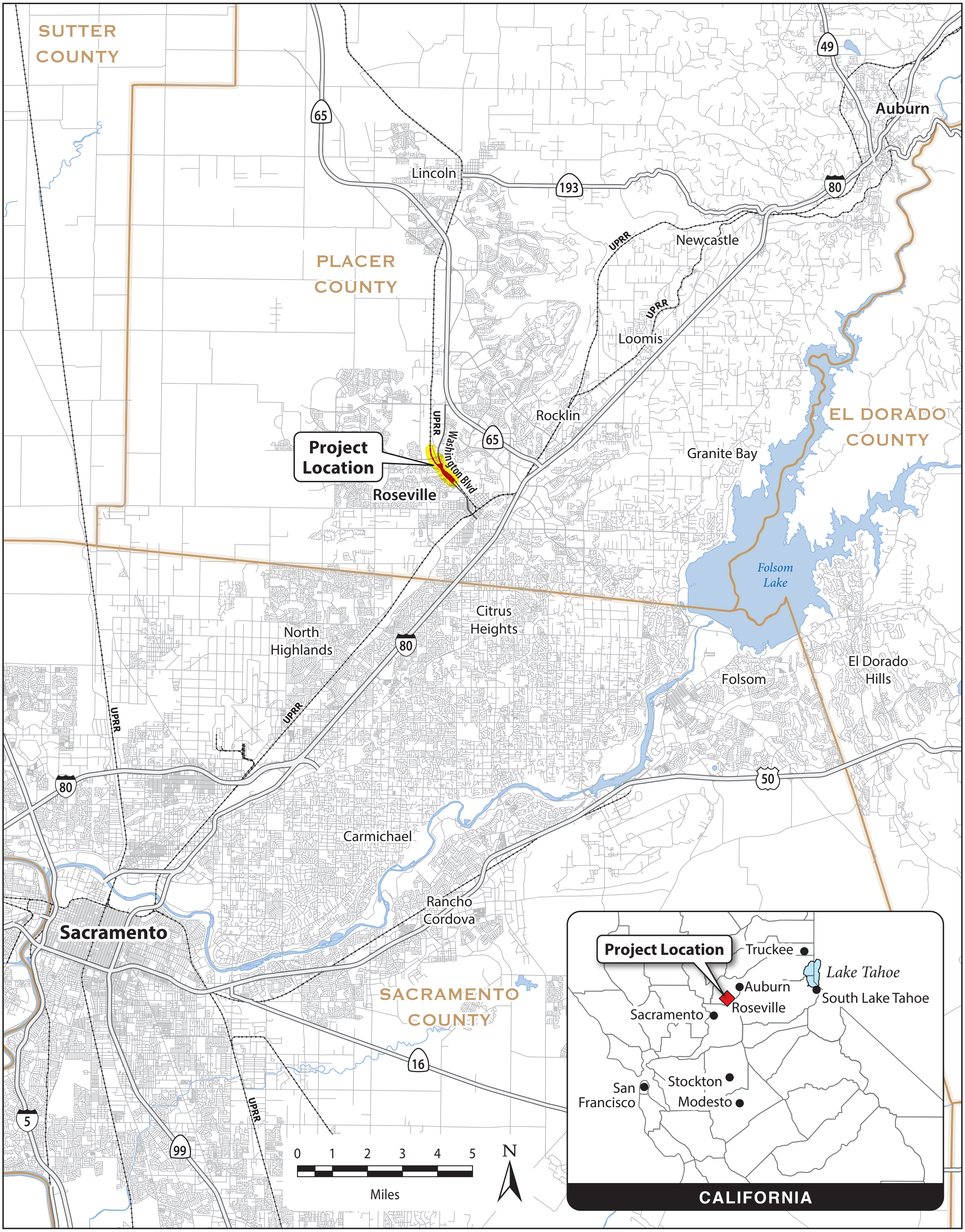

Figure 1
Regional Location

Attachment A Intersection Operations Results

Intersection	2035 No Build (Alternative 2)				2035 Proposed Project / Alternative 1			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Washington Boulevard / Pleasant Grove Boulevard	41	**D**	110	**F**	52	**D**	162	**F**
Washington Boulevard / Diamond Oaks Road / Emerald Oak Road	68	**E**	36	**D**	22	C	22	C
Washington Boulevard / Kaseberg Drive	8 (13)	A (B)	9 (37)	A **(E)**	4 (11)	A (B)	7 (35)	A **(D)**
Washington Boulevard / Sawtell Road / Derek Place	9	A	10	A	12	B	16	B
Washington Boulevard / Junction Boulevard	15	B	41	**D**	20	C	42	**D**

Source: Fehr & Peers 2017

Bold font indicates intersections at LOS D, E, or F. Underlined font indicates an increase in delay from the no build to project condition. The Level of Service (LOS) and average delay in seconds per vehicle are reported.

From: Jose Luis Caceres <JCaceres@sacog.org>
Sent: Thursday, May 04, 2017 4:41 PM
To: ALETA KENNARD; alexander.fong@dot.ca.gov; AGreen@placer.ca.gov; Jose Luis Caceres; CAnderson@airquality.org; dave.johnston@edcgov.us; douglas.coleman@dot.ca.gov; Heather.Phillips@arb.ca.gov; Lee Jason (jason.lee@dot.ca.gov); jbarton@edctc.org; Ungvarsky.John@epa.gov; Joseph.Vaughn@dot.gov; oconnor.karina@epa.gov; lmcneel-caird@pctpa.net; mjones@ysaqmd.org; Wright Molly (mwright@airquality.org); pphilley@airquality.org; Renee DeVere-Oki; rodney.tavitas@dot.ca.gov; shalanda_christian@dot.ca.gov; sharon.tang@dot.ca.gov; Shengyi Gao; sspaethe@fraqmd.org; Yu-Shuo (YChang@placer.ca.gov)
Cc: Hatcher, Shannon; Villanueva Martin (martin.villanueva@dot.ca.gov); Yoon, Laura; Bushnell-Bergfalk, Susan
Subject: Not a POAQC: Roseville Washington Blvd/Andora Bridge Widening (PLA25501)

All,

The PLCG has determined that the City of Roseville's project, Washington Blvd/Andora Bridge Improvement Project (PLA25501), is NOT a Project of Air Quality Concern (POAQC).

EPA and FHWA both concurred on 5/4/2017.

- José Luis Cáceres

From: Vaughn, Joseph (FHWA) [mailto:Joseph.Vaughn@dot.gov]
Sent: Thursday, May 04, 2017 2:07 PM
To: Jose Luis Caceres; ALETA KENNARD; alexander.fong@dot.ca.gov; AGreen@placer.ca.gov; CAnderson@airquality.org; dave.johnston@edcgov.us; douglas.coleman@dot.ca.gov; Heather.Phillips@arb.ca.gov; Lee Jason (jason.lee@dot.ca.gov); jbarton@edctc.org; Ungvarsky.John@epa.gov; oconnor.karina@epa.gov; lmcneel-caird@pctpa.net; mjones@ysaqmd.org; Wright Molly (mwright@airquality.org); pphilley@airquality.org; Renee DeVere-Oki; rodney.tavitas@dot.ca.gov; shalanda_christian@dot.ca.gov; sharon.tang@dot.ca.gov; Shengyi Gao; sspaethe@fraqmd.org; Yu-Shuo (YChang@placer.ca.gov)
Cc: Hatcher, Shannon; Yoon, Laura; Bushnell-Bergfalk, Susan; Villanueva Martin (martin.villanueva@dot.ca.gov)
Subject: RE: POAQC: Roseville Washington Blvd/Andora Bridge Widening (PLA25501) Due: 5/17

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

Joseph Vaughn
Environmental Specialist
FHWA, CA Division
(916) 498-5346

From: Jose Luis Caceres [mailto:JCaceres@sacog.org]
Sent: Wednesday, May 03, 2017 10:13 AM
To: ALETA KENNARD; alexander.fong@dot.ca.gov; AGreen@placer.ca.gov; Jose Luis Caceres; CAnderson@airquality.org; dave.johnston@edcgov.us; douglas.coleman@dot.ca.gov; Heather.Phillips@arb.ca.gov; Lee Jason (jason.lee@dot.ca.gov); jbarton@edctc.org; Ungvarsky.John@epa.gov; Vaughn, Joseph (FHWA); oconnor.karina@epa.gov; lmcneel-caird@pctpa.net; mjones@ysaqmd.org; Wright Molly (mwright@airquality.org); pphilley@airquality.org; Renee DeVere-Oki; rodney.tavitas@dot.ca.gov; shalanda_christian@dot.ca.gov; sharon.tang@dot.ca.gov; Shengyi Gao; sspaethe@fraqmd.org; Yu-Shuo (YChang@placer.ca.gov)
Cc: Hatcher, Shannon; Yoon, Laura; Bushnell-Bergfalk, Susan; Villanueva Martin (martin.villanueva@dot.ca.gov)
Subject: POAQC: Roseville Washington Blvd/Andora Bridge Widening (PLA25501) Due: 5/17
Importance: High

Project Level Conformity Group,

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Please confirm that you concur that this is NOT a Project of Air Quality Concern (POAQC). **Please email questions and comments by 5 p.m., Wednesday, May 17.**

This project falls under the 23 USC 327 (formerly 6005) federal process. As such, it requires written concurrence by EPA (Karina O'Conner) and FHWA (Joseph Vaughn). Please remember to use "reply all," to make comments to the group. Otherwise, you may also contact the sponsor directly (Caltrans D3 Local Assistance is assisting):

Martin Villanueva
Caltrans Local Assistance District 3
Martin.villanueva@dot.ca.gov

José Luís Cáceres
Transportation Planner, SACOG
(916) 340-6218

SACOG

From:	OConnor, Karina <OConnor.Karina@epa.gov>
Sent:	Thursday, May 04, 2017 9:45 AM
To:	Jose Luis Caceres; ALETA KENNARD; alexander.fong@dot.ca.gov; AGreen@placer.ca.gov; canderson@airquality.org; dave.johnston@edcgov.us; douglas.coleman@dot.ca.gov; Heather.Phillips@arb.ca.gov; Lee Jason (jason.lee@dot.ca.gov); jbarton@edctc.org; Ungvarsky, John; Joseph.Vaughn@dot.gov; lmcneel-caird@pctpa.net; mjones@ysaqmd.org; Wright Molly (mwright@airquality.org); pphilley@airquality.org; Renee DeVere-Oki; rodney.tavitas@dot.ca.gov; shalanda_christian@dot.ca.gov; sharon.tang@dot.ca.gov; Shengyi Gao; sspaethe@fraqmd.org; Yu-Shuo (YChang@placer.ca.gov)
Cc:	Hatcher, Shannon; Yoon, Laura; Bushnell-Bergfalk, Susan; Villanueva Martin (martin.villanueva@dot.ca.gov)
Subject:	RE: POAQC: Roseville Washington Blvd/Andora Bridge Widening (PLA25501) Due: 5/17

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

Thanks, Karina

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

From: Jose Luis Caceres [mailto:JCaceres@sacog.org]
Sent: Wednesday, May 03, 2017 10:13 AM
To: ALETA KENNARD <akennard@airquality.org>; alexander.fong@dot.ca.gov; AGreen@placer.ca.gov; Jose Luis Caceres <JCaceres@sacog.org>; canderson@airquality.org; dave.johnston@edcgov.us; douglas.coleman@dot.ca.gov; Heather.Phillips@arb.ca.gov; Lee Jason (jason.lee@dot.ca.gov) <jason.lee@dot.ca.gov>; jbarton@edctc.org; Ungvarsky, John <Ungvarsky.John@epa.gov>; Joseph.Vaughn@dot.gov; OConnor, Karina <OConnor.Karina@epa.gov>; lmcneel-caird@pctpa.net; mjones@ysaqmd.org; Wright Molly (mwright@airquality.org) <mwright@airquality.org>; pphilley@airquality.org; Renee DeVere-Oki <RDeVere-Oki@sacog.org>; rodney.tavitas@dot.ca.gov; shalanda_christian@dot.ca.gov; sharon.tang@dot.ca.gov; Shengyi Gao <SGao@sacog.org>; sspaethe@fraqmd.org; Yu-Shuo (YChang@placer.ca.gov) <YChang@placer.ca.gov>
Cc: Hatcher, Shannon <Shannon.Hatcher@icf.com>; Yoon, Laura <Laura.Yoon@icf.com>; Bushnell-Bergfalk, Susan <Susan.Bushnell-Bergfalk@icf.com>; Villanueva Martin (martin.villanueva@dot.ca.gov) <martin.villanueva@dot.ca.gov>
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Hatcher, Shannon

From: Vaughn, Joseph (FHWA) <Joseph.Vaughn@dot.gov>
Sent: Thursday, May 04, 2017 2:07 PM
To: Jose Luis Caceres; ALETA KENNARD; alexander.fong@dot.ca.gov; AGreen@placer.ca.gov; CAnderson@airquality.org; dave.johnston@edcgov.us; douglas.coleman@dot.ca.gov; Heather.Phillips@arb.ca.gov; Lee Jason (jason.lee@dot.ca.gov); jbarton@edctc.org; Ungvarsky.John@epa.gov; oconnor.karina@epa.gov; lmcneel-caird@pctpa.net; mjones@ysaqmd.org; Wright Molly (mwright@airquality.org); pphilley@airquality.org; Renee DeVere-Oki; rodney.tavitas@dot.ca.gov; shalanda_christian@dot.ca.gov; sharon.tang@dot.ca.gov; Shengyi Gao; sspaethe@fraqmd.org; Yu-Shuo (YChang@placer.ca.gov)
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Appendix C MTP Documentation

2016 MTP/SCS Project List

Projects listed as "Project Development Only" are anticipated to begin early stages of development including project planning, design, preliminary engineering, environmental clearance, and ROW acquisition by 2036. These projects remain eligible to seek federal and state funding, but under the financial constraint requirements for projecting revenues, the construction phase is not included in the DPS. If/when additional revenues for these projects become available to cover full construction costs, these projects can be considered as part of an amendment to the MTP/SCS following a technical analysis and consistency with plan requirements. While total costs are shown for these projects, for budgeting purposes, no more than 10% of the total project costs are anticipated to be captured within the MTP/SCS planning period. Year of expenditure costs are not provided since construction of these projects is not part of the financially constrained project list.

Project ID	Included in DPS	COUNTY	LEAD AGENCY	CATEGORY	TITLE	PROJECT DESCRIPTION	Completion Timing	TOTAL COST (2015 Dollars)	YEAR OF EXPENDITURE
PLA25323	**Yes**	Placer	City of Roseville	E- Transit Capital (Minor)	Sierra Gardens Transfer Point	Improve Sierra Gardens Transfer Point. Improvements may include new bus turnouts, shelters, restrooms, landscaping, lighting, crosswalks, sidewalks, and other pedestrian improvements such as bulb-outs. (Emission benefits in kg/day: 63 ROG, 63 Nox, 25 PM10.)	Completion by 2020	$1,012,151	$1,012,151
PLA25416	**Yes**	Placer	City of Roseville	F- Transit O&M (Demand Response)	South Placer Call Center	Operating cost contribution towards ADA complementary paratransit services provided for the South Placer Call Center.	Completion by 2020	$187,500	$187,500
PLA25516	**Yes**	Placer	City of Roseville	D- Programs & Planning	SRTS Toolkit Expansion	Multiple Schools in the Roseville City School District: Expand Safe Routes to School (SRTS) toolkit. SRTS3-03-006	Completion by 2020	$295,000	$295,000
PLA15911	**Yes**	Placer	City of Roseville	B- Road & Highway Capacity	Taylor Rd.	In Roseville; from just N/O E. Roseville Parkway to City Limits, widen Taylor Rd. from 2 to 4 lanes.	2021-2036	$5,042,390	$6,153,000
PLA25538	**Yes**	Placer	City of Roseville	B- Road & Highway Capacity	Vista Grande Arterial	In Roseville, from Fiddyment Rd west to Westbrook Blvd, construct new 4-lane arterial.	Completion by 2020	$2,500,000	$2,500,000
PLA25501	**Yes**	Placer	City of Roseville	B- Road & Highway Capacity	Washington Blvd/Andora Undercrossing Improvement Project	In Roseville, widen Washington Blvd from 2 to 4 lanes, including widening the Andora Underpass under the UPRR tracks, between Sawtell Rd and just south of Pleasant Grove Blvd. and construct bicycle and pedestrian improvements adjacent to roadway. (CMAQ funds are for bicycle and pedestrian improvements only. Emission Benefits in kg/day: 0.9 ROG, 0.51 NOx, 0.16 PM10)	Completion by 2020	$16,091,643	$16,091,643
PLA25582	**Yes**	Placer	City of Roseville	A- Bike & Ped	Washington Boulevard Improvement	In Roseville, along Washington Boulevard from Kaseburg Drive to Pleasant Grove Boulevard, construct new concrete sidewalks, Class I & Class II bike facilities. Proposed facilities cross under the Union Pacific tracks (aka "Andora Underpass"). (Emission Benefits in kg/day: 0.24 ROG; 0.16 NOx; 0.05 PM2.5).	Completion by 2020	$1,242,517	$1,242,517
PLA25483	**Project Development**	Placer	City of Roseville	B- Road & Highway Capacity	Westbrook Blvd.	Construct New Road: west of Fiddyment Road between Baseline and Pleasant Grove in proposed new Sierra Vista Specific Plan.	Completion after 2036	$7,500,000	
PLA25481	**Yes**	Placer	City of Roseville	B- Road & Highway Capacity	Westbrook Blvd.	Construct New Road: west of Fiddyment and north of Blue Oaks in proposed new Creekview Specific Plan.	Completion by 2020	$6,000,000	$6,293,000
PLA19470	**Project Development**	Placer	City of Roseville	B- Road & Highway Capacity	Woodcreek Oaks	Widen from 2 - 4 lanes from Canavari Dr to North Branch of Pleasant Grove Creek.	Completion after 2036	$3,500,000	
PLA25626	**Yes**	Placer	PCTPA	G- System Management,	At-Grade Railroad Crossings	At-Grade Railroad Crossings, including quiet zones throughout County	2021-2036	$500,000,000	$781,967,000
PLA25588	**Yes**	Placer	PCTPA	A- Bike & Ped	Bicycle Facilities	Construct various bicycle facilities according to implement the Regional Bicycle Master Plan and Local Bicycle Master Plans as amended.	Lump Sum or Ongoing	$40,000,000	$52,565,000
PLA25632	**Yes**	Placer	PCTPA	E- Transit Capital (Vehicles)	Bus Replacement	Lump-sum for bus vehicles for fiscal years 2019-2036; does not account for expansion of service. Placer County operators only.	Lump Sum or Ongoing	$63,153,000	$82,991,000
PLA25587	**Yes**	Placer	PCTPA	A- Bike & Ped	Complete Street & Safe Routes to School	Enhance pedestrian/bicycle and landscaping along approximately 40 miles of roadway and construct Safe Routes to School improvements to implement local plans.	Lump Sum or Ongoing	$52,000,000	$68,335,000
PLA25586	**Yes**	Placer	PCTPA	G- System Management,	Electric Vehicle Charging and Alternative Fuels	Develop and construct an electric vehicle charging and alternative fuels infrastructure.	Lump Sum or Ongoing	$20,000,000	$26,283,000
PLA25601	**Yes**	Placer	PCTPA	B- Road & Highway Capacity	I-80/SR 65 Interchange Improvements Phase 2	In Placer County: Between Douglas Blvd. and Rocklin Road; Reconfigure I-80/SR 65 interchange to widen southbound to eastbound ramp from 1 to 2 lanes, and replace existing eastbound to northbound loop ramp with a new 3 lane direct flyover ramp.	2021-2036	$110,000,000	$172,033,000
PLA25602	**Yes**	Placer	PCTPA	B- Road & Highway Capacity	I-80/SR 65 Interchange Improvements Phase 3	In Placer County: Between Douglas Blvd. and Rocklin Road; Widen Taylor Road from 2 to 4 lanes between Roseville Parkway and Pacific Street, and Reconfigure I-80/SR 65 interchange to widen the southbound to westbound ramp from 2 to 3 lanes.	2021-2036	$179,000,000	$279,944,000
PLA25603	**Yes**	Placer	PCTPA	B- Road & Highway Capacity	I-80/SR 65 Interchange Improvements Phase 4	In Placer County: Between Douglas Blvd. and Rocklin Road; Reconfigure I-80/SR 65 interchange to construct one lane HOV direct connectors from eastbound to northbound and southbound to westbound (HOV lanes would extend to between Galleria Blvd. and Pleasant Grove Blvd. on SR 65).	2021-2036	$95,000,000	$148,574,000

Appendix D 40 CFR 1502.22

Council on Environmental Quality (CEQ) Provisions Covering Incomplete or Unavailable Information (40 CFR 1502.22)

Sec. 1502.22 INCOMPETE OR UNAVAILABLE INFORMATION

When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.

(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:

1. a statement that such information is incomplete or unavailable;
2. a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
3. a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and
4. the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts that have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

(c) The amended regulation will be applicable to all environmental impact statements for which a Notice to Intent (40 CFR 1508.22) is published in the Federal Register on or after May 27, 1986. For environmental impact statements in progress, agencies may choose to comply with the requirements of either the original or amended regulation.

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 mobile source air toxic (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 Environmental Protection Agency (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 Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, https://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). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic 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 (HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects) 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 (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects). 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 states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (https://www.epa.gov/iris)."

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 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 (https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf).

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.

Due to the limitations cited, a discussion such as the example provided in this Appendix (reflecting any local and project-specific circumstances), should be included regarding incomplete or unavailable information in accordance with Council on Environmental Quality (CEQ) regulations [40 CFR 1502.22(b)]. The FHWA Headquarters and Resource Center staff, Victoria Martinez (787) 771-2524, James Gavin (202) 366-1473, and Michael Claggett (505) 820-2047, are available to provide guidance and technical assistance and support.

Appendix E Modeling Limitations

Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate CO_2 emissions from mobile sources, the model does have limitations when it comes to accurately reflecting changes in CO_2 emissions due to impacts on traffic. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008) and a 2009 University of California study (Barth and Boriboonsomsin 2009), brief but rapid accelerations, such as those occurring during congestion, can contribute significantly to a vehicle's CO_2 emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idling) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts. Although work by EPA and the ARB is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling.

The ARB is currently not using EMFAC to create its inventory of greenhouse gas emissions. It is unclear why the ARB has made this decision. Their website only states:

> REVISION: Both the EMFAC and OFFROAD Models develop CO2 and CH4 [methane] emission estimates; however, they are not currently used as the basis for [ARB's] official [greenhouse gas] inventory which is based on fuel usage information. . . However, ARB is working towards reconciling the emission estimates from the fuel usage approach and the models. (California Air Resources Board 2010)

Other Variables

With the current science, project-level analysis of greenhouse gas emissions has limitations. Although a greenhouse gas analysis is included for this project, there are numerous key greenhouse gas variables that are likely to change dramatically during the design life of the proposed project and would thus dramatically change the projected CO_2 emissions.

First, vehicle fuel economy is increasing. The EPA's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2012 ," which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005, and is now at a record high (U.S. Environmental Protection Agency 2013). Corporate Average Fuel Economy (CAFE) standards remained the same between model years 1995 and 2003 and subsequently began setting increasingly higher fuel economy standards for future vehicle model years. The EPA estimates that light duty fuel economy rose by 16% from 2007 to 2012. Table E-1 shows the increases in required fuel economy standards for cars and trucks between Model Years 2012 and 2025 as available from the National Highway Traffic Safety Administration for the 2012-2016 and 2017-2025 CAFE Standards.

Table E-1. Average Required Fuel Economy (mpg)

	2012	2013	2014	2015	2016	2018	2020	2025
Passenger Cars	33.3	34.2	34.9	36.2	37.8	41.1 to 41.6	44.2 to 44.8	55.3 to 56.2
Light Trucks	25.4	26	26.6	27.5	28.8	29.6 to 30.0	30.6 to 31.2	39.3 to 40.3
Combined	29.7	30.5	31.3	32.6	34.1	36.1 to 36.5	38.3 to 38.9	48.7 to 49.7
Source: U.S. Environmental Protection Agency 2013								

Second, near zero carbon vehicles will come into the market during the design life of this project. According to the 2013 Annual Energy Outlook:

> "LDVs that use diesel, other alternative fuels, hybrid-electric, or all-electric systems play a significant role in meeting more stringent GHG emissions and CAFE standards over the projection period. Sales of such vehicles increase from 20 percent of all new LDV sales in 2011 to 49 percent in 2040 in the AEO2013 Reference case." (U.S. Energy Information Administration 2013)

The greater percentage of alternative fuel vehicles on the road in the future will reduce overall GHG emissions as compared to scenarios in which vehicle technologies and fuel efficiencies do not change.

Third, California has recently adopted a low-carbon transportation fuel standard in 2009 to reduce the carbon intensity of transportation fuels by 10 percent by 2020. The regulation became effective on January 12, 2010 (codified in title 17, California Code of Regulations, Sections 95480-95490). Beginning January 1, 2011, transportation fuel producers and importers must meet specified average carbon intensity requirements for fuel in each calendar year.

Lastly, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, "Effects of Gasoline Prices on Driving Behavior and Vehicle Market," the Congressional Budget Office found the following results based on data collected from California (U.S. Congressional Budget Office 2008):

1. freeway motorists adjust to higher gas prices by making fewer trips and driving more slowly;
2. the market share of sports utility vehicles is declining; and
3. the average prices for larger, less-fuel-efficient models declined from 2003 to 2008 as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel efficient vehicles.

More recent reports from the Energy Information Agency and Bureau of Economic Analysis also show slowing re-growth of vehicle sales in the years since its dramatic drop in 2009 due to the Great Recession as gasoline prices continue to climb to $4 per gallon and beyond (U.S. Energy Information Administration 2013: Table 53, U.S. Bureau of Economic Analysis 2014).

Limitations and Uncertainties with Impact Assessment

Taken from p. 5-22 of the National Highway Traffic Safety Administration Final EIS for MY2017-2025 CAFE Standards (July 2012), Figure illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis:

> “Moss and Schneider (2000) characterize the “cascade of uncertainty” in climate change simulations Figure). As indicated in Figure , the emission estimates used in this EIS have narrower bands of uncertainty than the global climate effects, which are less uncertain than regional climate change effects. The effects on climate are, in turn, less uncertain than the impacts of climate change on affected resources (such as terrestrial and coastal ecosystems, human health, and other resources […] Although the uncertainty bands broaden with each successive step in the analytic chain, all values within the bands are not equally likely; the mid-range values have the highest likelihood.”(National Highway Traffic Safety Administration 2012:5-21).

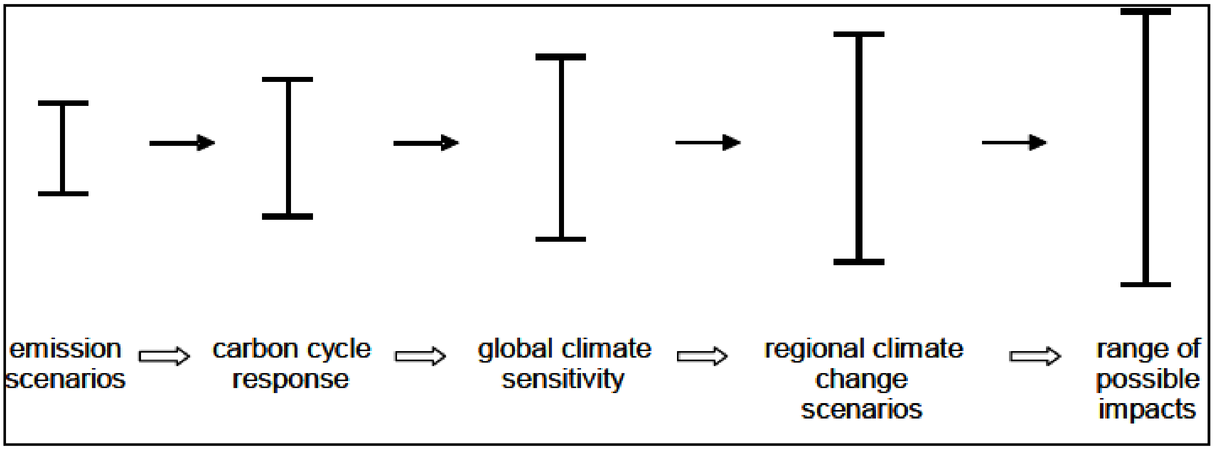

Figure E-1. Cascade of Uncertainties

Much of the uncertainty in assessing an individual project’s impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what any modeled increase in CO_2 emissions would mean for climate change given the overall California greenhouse gas emissions inventory of approximately 430 million tons of CO_2 equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation IPCC scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons CO_2 from 2000 to 2030, which represents an increase of between 25 and 90%. (Intergovernmental Panel on Climate Change 2007)

The assessment is further complicated by the fact that changes in greenhouse gas emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of greenhouse gas emissions, rather than causing “new” greenhouse gas emissions. It is difficult to assess the extent to which any project level increase in CO_2 emissions represents a net global increase, reduction, or no change; there are no models approved by regulatory agencies that operate at the global or even statewide scale.

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