I-80 Across the Top Bus/Carpool Lanes Project

SACRAMENTO COUNTY, CALIFORNIA
DISTRICT 3 – SAC – 80, PM 0.3/10.4
03-37970

DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL ASSESSMENT

Prepared by the
US Department of Transportation
Federal Highway Administration
and the
State of California Department of Transportation

April 2007

General Information About this Document

What's in this document?

The California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) have prepared this Environmental Impact Report/Environmental Assessment, which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Sacramento County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, the potential impacts from each of the alternatives, and the proposed avoidance, minimization and/or mitigation measures.

What should you do?

- Please read this Environmental Impact Report/Environmental Assessment. Additional copies of this document, as well as the technical studies, are available for review at:
    - Caltrans District 3 Sacramento Office
      2389 Gateway Oaks Drive, Suite 100
      Sacramento, CA 95833
      (916) 274-0586
    - Sacramento Public Libraries:
        - Central Library
          828 I Street
          Sacramento, CA 95814
        - South Natomas Library
          2901 Truxel Road,
          Sacramento, CA 95833
        - Del Paso Heights Library
          920 Grand Avenue
          Sacramento, CA 95838
        - Arcade Learning Library
          2443 Marconi Avenue
          Sacramento, CA 95821
- Attend public workshop. Public workshops will be held to present the project and solicit comments on the Draft EIR/EA at the following locations, dates and times:
    - Hamilton Street Park Recreation Center
      Hamilton Street and Myrtle Avenue, Sacramento
      Wednesday, May 9, 2007, 5 PM - 7 PM
    - Caltrans District 3 Office
      2800 Gateway Oaks Drive, Sacramento
      Tuesday, May 15, 2007, 5 PM - 7 PM

- We welcome your comments. If you have any comments regarding the proposed project, please attend the public workshop and/or send your written comments to Caltrans by the deadline.
- Submit comments via postal mail to:

  Jeremy Ketchum, Environmental Branch Chief
  Attention: Ken Lastufka
  Dept. of Transportation, Environmental Planning
  2389 Gateway Oaks Drive, Suite 100
  Sacramento, CA 95833

- Submit comments via email to ken_lastufka@dot.ca.gov.
- Submit comments by the deadline: June 6, 2007.

What happens after this?

After comments are received from the public and reviewing agencies, the Caltrans and FHWA may: (1) give environmental approval to the proposed project, (2) undertake additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is appropriated, the Caltrans could design and construct all or part of the project.

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Ken Lastufka, Office of Environmental Management, S-1, 2389 Gateway Oaks Drive, Sacramento, CA 95833; (916) 274-0586 Voice, or use the California Relay Service TTY number, 1-800-735-2929.

It should be noted that at a future date FHWA or another Federal Agency may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that a final action has been taken on this project by FHWA or another Federal agency. If such notice is published, a lawsuit or other legal claim will be barred unless it is filed within 180 days after the date of publication of the notice (or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed). If no notice is published, then the lawsuit or claim can be filed as long as the periods of time provided by other Federal laws that govern claims are met.

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03-37970

I-80 ACROSS THE TOP BUS/CARPOOL LANE PROJECT

This project is located in the City and County of Sacramento along
Interstate 80 from Watt Avenue and the Sacramento River (PM 0.3/10.4)

DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to: (State) California Public Resources Code §21000 et seq
(Federal) 42 USC 4332(2)(C)

THE STATE OF CALIFORNIA
Department of Transportation

US DEPARTMENT OF TRANSPORTATION
Federal Highway Administration, and

3/29/07
Date of Approval

Katrina Pierce
North Region Environmental Division Chief
California Department of Transportation

3/29/07
Date of Approval

for. Gene Fong
Division Administrator
Federal Highway Administration

SUMMARY

The proposed project is a joint effort by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under CEQA and the FHWA is lead agency under NEPA.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, it is quite often the case that a "lower level" document is prepared for NEPA. One of the most commonly seen joint document types is an Environmental Impact Report/Environmental Assessment (EIR/EA).

Following receipt of public comments on the Draft EIR/EA and circulation of the Final EIR/EA, the lead agencies will be required to take actions regarding the environmental document. Caltrans will determine whether to certify the EIR and issue Findings and a Statement of Overriding Considerations and FHWA will decide whether to issue a Finding of No Significant Impact or require an Environmental Impact Statement.

S-1 PROPOSED ACTION

The project proposes to construct bus/carpool lanes in the median of Interstate 80 (I-80) in Sacramento County from east of the Sacramento River to Watt Avenue (PM 0.3 – 10.4). The project also includes auxiliary lanes in the eastbound and westbound directions between the West El Camino Avenue interchange and the Interstate 5 (I-5)/I-80 separation and between Northgate Boulevard and Norwood Avenue. Retaining walls and sound walls are proposed at various locations along the project. Figure 1-1 shows the project location.

S-2 PROJECT ALTERNATIVES

There are two proposed alternatives:

Alternative 1: Bus/Carpool Lanes and Auxiliary Lanes

Alternative 1 would connect to the existing bus/carpool lanes that extend east from Watt Avenue to Placer County. Specifically, Alternative 1 would:

- Add a 12-foot bus/carpool lane, a minimum 10-foot median shoulder with an exception, and a 1-foot area for a concrete median barrier in each direction from Watt Avenue to West El Camino Avenue.
- Add 12-foot eastbound and westbound auxiliary lanes on I-80 in two locations, from West El Camino Avenue to I-5 and between Northgate Boulevard and Norwood Avenue.
- Widen four structures: Natomas East Canal Bridge and Overhead, Rio Linda Boulevard Undercrossing, Winters Street Undercrossing, and Del Paso Park Separation Overhead. All structures will be widened to the inside.
- Install ramp metering and bus/carpool bypass lane on-ramps at selected interchanges, if feasible.
- Construct sound walls and retaining walls at various locations.

Alternative 2: No Build

S-3 OTHER PROPOSED ACTIONS IN PROJECT VICINITY

The following FHWA/Caltrans transportation projects are planned along or near I-80 in the general vicinity of the proposed project:

- Sac 80 Capitol Preventative Maintenance (CAPM) Project – replace failed Portland Cement Concrete (PCC) slabs, overlay the PCC mainline, and reconstruct existing shoulder along I-80 between the Sacramento River to the Del Paso Park separation overhead. This project and the proposed I-80 bus/carpool lane project will be constructed at the same time.
- I-5/I-80 Interchange Improvements – replace the east to north loop ramp with a flyover, enlarging the remaining loop ramps, and adding direct HOV connector ramps.
- I-80/West El Camino Avenue Interchange Improvements – widen the overcrossing and signalizing ramp terminal intersections.
- I-5 HOV lanes from downtown Sacramento to the Sacramento International Airport.

The following City of Sacramento transportation project is also planned along I-80:

- I-80 Interchange Enhancements – improvements and expansion of I-80 interchanges at West El Camino and Northgate Boulevard.

S-4 POTENTIAL ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Table S-1 summarizes the potential significant impacts of and includes proposed mitigation measures to reduce significant impacts. Table S-2 lists other project impacts and proposed avoidance / minimization measures. Details for each environmental category are presented in Chapter 2 (Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures) of this document.

Table S-1. Summary of Potential Significant Impacts (Under CEQA) and Proposed Mitigation Measures

Affected Resources	Potential Significant Impacts (Under CEQA)	Mitigation Measures	Significance After Mitigation*	See Section

Special-Status Animal Species	• Potential temporary impacts to 3.0 acres of giant garter snake upland habitat at the NEMDC.	• Alternative 1 will result in less than 20 acres of temporary impacts to GGS upland habitat (approximately 3.0 acres), lasting two construction seasons. The project will likely qualify as Level 2 effects for temporary disturbance of 3.0 acres of GGS upland habitat, with restoration plus 1:1 replacement as compensation, per the USFWS Programmatic Biological Opinion (USFWS File No. 1-1-03-F-0154, dated January 24, 2005).
		• All areas temporarily disturbed during construction will be restored within one year of completion of the project, following the "*Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat*", outlined below:
		  • If necessary, the disturbed area will be graded to its preexisting contours and ripped to de-compact the soil.
		  • The area should be hydroseeded with a mix containing at least 20-40 percent native grass seeds. Some acceptable native grasses include annual fescue (Vulpia spp.), California brome (Bromus carinatus), blue wildrye (Elymus glaucus), and needle grass (Nassella spp.). The seed mix should also contain native forb seeds.
		• Replacement of GGS upland habitat temporarily affected by the project will be satisfied through purchase of mitigation credits at a USFWS approved conservation bank.
			LS	2.17.2.3

* LS = less than significant

Table S-2. Summary of Potential Environmental Impacts and Proposed Avoidance / Minimization Measures

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
Community Facilities	• A number of transportation projects are planned in the region in the next 4 to 7 years. • Possible detours during construction.	• Complete a Regional Transportation Management Plan that will help organize the construction phasing for planned transportation projects in the region. • Develop a detour plan.	2.4.4
Community Impacts: Traffic & Transportation/ Pedestrian and Bicycle Facilities	• Two bicycle paths cross under I-80: one on the top of the levee within the Ueda Parkway east of Northgate Boulevard and another along an abandoned railroad right of way east of Rio Linda Boulevard.	• Bike routes and bike paths will remain open during construction.	2.5.2
Visual Resources	• Highway users will experience one additional lane of traffic in each direction on the outside of the existing traveled way in two locations: between West El Camino Avenue and I-5 and between Northgate Boulevard and Norwood Avenue. These additional lanes will result in more pavement/shoulder and the removal of trees and shrubs. • New sound walls are proposed at various locations and heights on both sides of I-80. Walls would block views of the highway from at-grade residential and commercial locations. Windows in two story homes or businesses are above the 8' sound walls. Sound walls covered in graffiti can distract the highway traveler. • Alternative 1 will remove existing trees and shrubs. • The existing mowed median will be paved.	• All grade changes should be landscaped/irrigated with drought tolerant trees, shrubs, and groundcovers. Landscaping provides permanent pollution prevention and Best Management Practice in storm water management. In addition, slopes under the bridge should be paved full length to minimize maintenance and potential for erosion. • New median barriers should have an aesthetic treatment to compensate for the additional height and visual impact. • Install new landscaping along proposed auxiliary lanes. • Plant vines in front of new sound walls to reduce potential graffiti and sound wall maintenance. • Replant removed trees and shrubs. • Replace removed irrigation, and install new irrigation were needed. • Follow Best Management Practices (BMPs): - Where possible, cut and fill slopes will be contour graded and rounded so as to reflect the contours of adjacent, undisturbed topography to the extent feasible. To the extent feasible, grading operations will not result in angular landforms. - During clearing and grubbing, stockpiling of existing surface soils and duff from the construction site will occur as part of the excavation work. All new cut/fill slopes with stockpiled material to enhance re-vegetation efforts will be	2.6.5

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
		resurfaced. - Plant species native to the area shall be used when re-vegetation is being performed. - Erosion Control will be applied to all disturbed areas. - Projects disturbing more than 2.4 acres of land require a National Pollution Discharge Elimination System (NPDES) permit. Disturbance includes all newly paved land surfaces. This permit regulates all storm water discharges associated with construction activities. Compliance with the Storm Water Management Plan and Storm Water Quality Standards is also required. These regulations protect fish and wildlife as well as set standards for re-vegetation and erosion control.	
Paleontology	• Potential for fossil remains to be uncovered by excavations during project construction.	• Monitor where excavation or road cuts could disturb fossil-bearing sedimentary strata. • Contractor undertaking monitoring will adhere to the paleontological plan.	2.10.4
Hazardous Materials	• During site investigation, remediation activities, and subsequent construction activities, public health and the health of the construction workers could potentially be affected by airborne dust particles containing heavy metals, petroleum hydrocarbons, asbestos, and lead.	• Prepare health and safety plans to address potential effects of the various chemical compounds that could be encountered. • It is Caltrans policy to avoid hazardous waste, whenever possible. If involvement becomes necessary prior to, during and/or after construction, protection for employees, workers and the community would be implemented. Confirmation and documentation of suspected hazardous waste issues will be performed, and an attempt will be made to have responsible parties perform the cleanup activities. • If hazardous waste is encountered in soil and/or groundwater, appropriate cleanup methods will be recommended. • Caltrans will perform site investigations for all identified properties to confirm or dismiss potential hazardous waste issues. Upon confirmation of hazardous waste issues, responsible parties will be sought for appropriate cleanup.	2.11.3
Air Quality	• Short-term construction-related air emissions, including dust and exhaust emissions from construction equipment.	• In order to minimize the temporary construction-related emission impacts, the contractor will be required to use Best Management Practices and comply with Caltrans Standard	2.13.3

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
		Specifications, Section 7-1.01F, “Air Pollution Control” and Section 10, “Dust Control.” The contractor is also required to comply with all pertinent rules, regulations, ordinances, and statutes of the Sacramento Metropolitan Air Quality Management District.	
	• Reduce greenhouse gas emissions.	Caltrans and its parent agency, the Business, Transportation, and Housing Agency, will continue to address greenhouse gas emission reductions through the following strategies in the Climate Action Program: • Improve Transportation Energy Efficiency Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools and information that advance cleaner transportation and reduce climate change emissions. • Smart Land Use and Intelligent Transportation Systems (ITS) Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. Governor Schwarzenegger is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a prosperous economy, social equity, and a quality environment. Smart land use, demand management, ITS, and value pricing are critical elements in this plan for improving mobility and transportation efficiency. Specific strategies include: promoting jobs/housing proximity and transit-oriented development; encouraging high density residential/commercial development along transit/rail corridors; valuing and congestion pricing; implementing intelligent transportation systems, traveler information/traffic control, incident	

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
		management; accelerating the development of broadband infrastructure; and comprehensive, integrated, multimodal/intermodal transportation planning.	
Noise	• The estimated increase in noise levels due to the project was 1 to 2 dBA, which is not considered substantial. However, receivers immediately adjacent to the project (such as homes, apartments, and hotels/motels) are currently experiencing noise levels above the federal threshold of 67 dBA.	• Caltrans intends to incorporate noise abatement measures in the form of barriers (sound walls) at the following 10 locations: WB5, WB6, WB7A, WB7B, WB7C, EB6A, EB6B, EB7A, EB7B, and EB7C.	2.13.3.4
Wetlands	• Alternative 1 will permanently affect one small wetland located in the roadside ditch bordering the eastbound shoulder of I-80, encompasses approximately 0.001-acre. • Permanent impacts to other waters consists of the installation of 8 new, 5-foot by 3.5-foot, oblong columns within the NEMDC, encompassing approximately 0.003 acres; and, if jurisdictional, the two shoulder ditches between West El Camino Avenue and I-5, which will encompass an area of approximately 0.31 acres. • Work in the NEMDC will avoid placing any temporary or permanent structures in Steelhead Creek, and avoid any temporary discharge of fill into Steelhead Creek. However, the activity may result in temporary impacts to the NEMDC channel, outside Steelhead Creek, which could include soil compaction and disturbance to vegetation associated with equipment access and construction activities to drill and install the 8 columns.	• Alternative 1 will require the relocation of the ditches adjacent to the auxiliary lane, regardless if they are subject to USACE jurisdiction. The new ditches will be graded to receive roadway and irrigation runoff as they do now. Hydrophytic vegetation is expected to re-establish itself in the wetland. • Temporary impacts to NEMDC will be minimized by working during the summer months when the NEMDC channel is dry (except for Steelhead Creek), and by using mats to minimize compaction of soil. All appropriate Best Management Practices (BMP's), which will be part of the Storm Water Pollution Prevention Plan (SWPPP), will be implemented to avoid and minimize impacts to the NEMDC and Steelhead Creek.	2.15.4
Riparian Habitat	• Under Alternative 1, the proposed widening of NEMDC will affect approximately 0.003 acres of hydrophytic forbs and grasses from the installation	• Placing mats on the ground to reduce compaction • Confining equipment and personnel access to the minimum area necessary (areas to be avoided will be designated with	2.16.2

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
	of 8 5 foot by 3.5 foot support columns. Three riparian trees, two Goodding willows and an Oregon ash, may require trimming to accommodate construction equipment underneath the overcrossing structures.	Environmental Sensitive Area (ESA) fencing) • Minimizing the number of limbs trimmed from willows and ash (if required)	
Special-Status Animal Species	• Under Alternative 1, there may be potential impacts to steelhead, Chinook salmon, giant garter snake, Swainson's hawk, western pond turtle, Cooper's hawk, tricolored blackbird, western burrowing owl, white-tailed kite, loggerhead shrike, Oak Titmouse, Nuttail's woodpecker, purple martin, swallows, and swifts.	**Steelhead and Chinook Salmon** • Comply with June 1 – October 1 work window. • No work will occur within the bed and banks of Steelhead Creek. • All construction within NEMDC will occur during daylight hours. • Mats will be placed in NEMDC to minimize potential compaction of soils and to reduce the potential for sediments to enter Steelhead Creek. • Measures consistent with the current Caltrans' Construction BMP's Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and WPCP Manuals will be implemented to minimize effects to migrating salmonids during construction. • In the October following each construction season, all areas temporarily disturbed during construction (e.g., equipment storage and access areas) will be reseeded with erosion control seeding consisting of a sterile, non-proliferating grass species, such as cereal barley. The seed mix shall not include any fertilizers or chemicals. • Following project completion, all areas temporarily disturbed during construction will be restored following the "*Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat*", outlined below. • The disturbed area(s) will be re-graded to its pre-existing contour and ripped, if necessary, to de-compact the soil. • If appropriate, the areas will be hydroseeded, with a mix containing at least 20 to 40 percent native grass seeds. The seed mix will also contain 2 to 10 percent native forb seeds, and approximately 40 to 68 percent of the seed mix may be non-native, non-aggressive European annual grass. Aggressive non-native grasses will not be included in the seed	2.17.2.3

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
		mix. Endophyte-infected grasses will not be included in the seed mix. **Giant Garter Snake** • Avoid construction related activities to the extent feasible within 200 feet from the banks of GGS aquatic habitat, and confine the movement of heavy equipment to existing roadways to the extent feasible, to minimize habitat disturbance. ESA fencing will be installed to prevent access to areas outside the construction site. No vehicles or equipment will be stored in the NEMDC. • Construction activity within habitat should be conducted between May 1 and October 1. If it appears that construction activities in snake habitat may go beyond October 1, the USFWS will be contacted as soon as possible, and no later than September 15, to determine if additional measures are necessary to minimize take. • Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided GGS habitat within or adjacent to the project area ESA's. All construction personnel shall avoid these areas. • Construction personnel shall receive Service-approved worker environmental awareness training. • Twenty-four hours prior to construction activities, the project area shall be surveyed for GGS. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and/or any incidental take to the US Fish and Wildlife Service immediately. • If applicable, any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat. • After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. • All construction within NEMDC will be conducted during daylight hours. • Measures consistent with the current Caltrans' Construction	

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
		Site Best Management Practices (BMPs) Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and Water Pollution Control Program [WPCP] Manuals will be implemented to minimize effects to GGS (e.g., siltation) during construction. • A WPCP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction (on file with the Central Valley RWQCB). The WPCP will contain a Spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials. **Swainson's Hawk** • Tree removal will occur during the non-breeding season between September 15 and February 15, to the extent possible, to comply with the Migratory Bird Treaty Act. If trees cannot be removed during this time period, a qualified biologist will conduct a pre-construction survey prior to the start of construction to search for raptor nests. If Swainson's hawks or other raptors are observed nesting, California Dept. of Fish and Game shall be contacted for their advice on establishing a buffer zone of appropriate length. • Compensatory mitigation for the loss of foraging habitat is not anticipated. **Western Pond Turtle** • Construction activities in the NEMDC will occur during the summer months to minimize potential impacts to steelhead and giant garter snake, and only during the daylight hours. Western pond turtles are most active during this time period as well; as a result, it is expected that turtles, if present, would move upstream or downstream of the temporary construction activities. **Cooper's Hawk** • Refer to discussion under Swainson's hawk, above. **Tricolored Blackbird**	

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
		• If tricolored blackbirds are found nesting within the NEMDC near the project site, CDFG will be contacted for their advice on the establishment of appropriate buffers. **Western Burrowing Owl (BUOW)** • A qualified biologist will survey the ESL for BUOW no more than 30 days prior to the start of construction. If BUOW or sign is identified, CDFG will be consulted. **White-tailed Kite** • A qualified biologist will conduct pre-construction surveys in the spring, prior to the start of construction. If kites or other raptors are observed nesting, CDFG will be contacted and a suitable buffer zone will be established. • Any trees that require removal should be removed outside the nesting season, after September 1st and before February 1st, if feasible, to conform to the MBTA. • All construction within NEMDC will be conducted during daylight hours. **Loggerhead Shrike** • A qualified biologist will conduct pre-construction surveys in the spring prior to construction, to determine the nesting status of loggerhead shrike. If a found nesting, the CDFG will be notified and an appropriate buffer will be established around the nest until the young have fledged. If no nests are found, then avoidance or minimization measures will not be required. **Nuttall's Woodpecker and Oak Titmouse** • The project will comply with the Migratory Bird Treaty Act regulations to minimize potential impacts to Nuttall's woodpecker, oak titmouse, and other migratory birds. Tree removal will occur between September 1 and February 1. **Purple Martin** • Surveys will be conducted each season prior to construction to document the status of the Roseville Road colony and identify new colonies that may become established at other overcrossings.	

Affected Resources	Potential Impacts	Avoidance / Minimization Measures	See Section
		• Weep holes will be plugged during the non-breeding season (September 1 – March 1) of the year of project construction, to conform with the MBTA. Exclusion devices will be left in place until August 31 or until all work is completed. The CDFG will be consulted regarding the exclusion of martins on any structures within the project area. **Swallows and Swifts** • Because work will occur during the swallow/swift nesting season (March 1 – August 31) swallows will be excluded, if necessary, by a qualified company during the non-breeding season immediately prior to start of construction. Exclusion structures (e.g., netting and weep hole plugs) will be left in place and maintained through August 31 of each breeding season, or until the work is complete.	
Invasive Species	None anticipated	• Caltrans will not allow disposal of soil and plant material from any areas that support invasive plant species onto areas that support stands dominated by native plant species; and, • Plant species used for erosion control should consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing.	2.16.5

TABLE OF CONTENTS

CHAPTER 1 – PROPOSED PROJECT **1**

1.1 INTRODUCTION 1
1.2 SCOPE OF THIS ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT 1
1.3 PURPOSE AND NEED 1
1.4 PROJECT DESCRIPTION 3
1.5 ALTERNATIVES 3
1.5.1 Project Alternatives 3
1.5.2 Alternatives Considered But Dropped 4
1.6 PROJECT SCHEDULE 5
1.7 PROJECT BACKGROUND AND HISTORY 5
1.8 PERMITS AND APPROVALS NEEDED 7

CHAPTER 2 - AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES **15**

HUMAN ENVIRONMENT **15**

2.1 LAND USE AND PLANNING 15
2.1.1 Affected Environment 15
2.1.2 Environmental Consequences 21
2.2 GROWTH INDUCEMENT 26
2.3 COMMUNITY IMPACTS AND ENVIRONMENTAL JUSTICE 29
2.3.1 Affected Environment 29
2.3.2 Environmental Consequences 29
2.3.3 Title VI and Environmental Justice 30
2.4 COMMUNITY FACILITIES 32
2.4.1 Affected Environment 32
2.4.2 Environmental Consequences 34
2.4.3 Construction Impacts 34
2.4.4 Minimization Measures 35
2.5 TRAFFIC & TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES 36
2.5.1 Traffic and Transportation 36
2.5.2 Pedestrian and Bicycle Facilities 41
2.6 VISUAL / AESTHETICS 45
2.6.1 Regulatory Setting 45
2.6.2 Affected Environment 45
2.6.3 Environmental Consequences 45
2.6.4 Construction Impacts 46
2.6.5 Avoidance, Minimization Measures 46
2.7 CULTURAL RESOURCES 48
2.7.1 Regulatory Setting 48
2.7.2 Affected Environment 48
2.7.3 Environmental Consequences 50

PHYSICAL ENVIRONMENT **51**

2.8 FLOODPLAIN 51
2.8.1 Regulatory Setting 51
2.8.2 Affected Environment 51
2.8.3 Environmental Consequences 52
2.9 HYDROLOGY, WATER QUALITY AND STORM WATER RUNOFF 53
2.9.1 Affected Environment 53
2.9.2 Environmental Consequences 53
2.9.3 Avoidance, Minimization Measures 54
2.10 PALEONTOLOGY 56
2.10.1 Regulatory Setting 56
2.10.2 Affected Environment 56
2.10.3 Environmental Consequences 57
2.10.4 Avoidance, Minimization Measures 58

2.11 HAZARDOUS WASTE/MATERIALS 59
2.11.1 Affected Environment 59
2.11.2 Environmental Consequences 61
2.11.3 Avoidance, Minimization Measures 62
2.12 AIR QUALITY 64
2.12.1 Affected Environment 65
2.12.2 Environmental Consequences 68
2.12.3 Avoidance, Minimization Measures 70
2.12.4 Greenhouse Gas 70
2.13 NOISE 76
2.13.1 Regulatory Setting 76
2.13.2 Affected Environment 76
2.13.3 Environmental Consequences 78
2.14 ENERGY 92

BIOLOGICAL ENVIRONMENT 93

INTRODUCTION 93
2.15 WETLANDS AND OTHER WATERS 93
2.15.1 Regulatory Setting 93
2.15.2 Affected Environment 94
2.15.3 Environmental Consequences 95
2.15.4 Avoidance, Minimization Measures 95
2.16 PLANT SPECIES 97
2.16.1 Regulatory Setting 97
2.16.2 Riparian Habitat 97
2.16.3 Special Status Plant Species, Listed 98
2.16.4 Special Status Plant Species, Non-Listed 98
2.16.5 Invasive Species 99
2.17 ANIMAL SPECIES 100
2.17.1 Regulatory Setting 100
2.17.2 Special Status Animal Species, Listed 100
2.17.3 Special Status Animal Species, Non-Listed 106
2.18 CUMULATIVE IMPACTS 117
2.18.1 Regulatory Setting 117
2.18.2 Cumulative Impacts Area 117
2.18.3 Potential Cumulative Impacts 117
2.18.4 Construction Related Impacts 120

CHAPTER 3 – CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION 137

3.1 DETERMINING SIGNIFICANCE UNDER CEQA 137
3.2 DISCUSSION OF SIGNIFICANT IMPACTS 137
3.3 MITIGATION MEASURES FOR POTENTIAL SIGNIFICANT IMPACTS UNDER CEQA 137

CHAPTER 4 – SUMMARY OF PUBLIC INVOLVEMENT AND TRIBAL COORDINATION 139

4.1 PUBLIC INVOLVEMENT 139
4.1.1 Notice of Preparation 139
4.1.2 Notice of Preparation Open House/Scoping Meeting 139
4.2 TRIBAL COORDINATION 139

CHAPTER 5 - LIST OF PREPARERS 141

5.1 CALTRANS STAFF 141
5.2 GEOCON CONSULTANTS, INC. 142
5.3 FEHR & PEERS. 142

CHAPTER 6 - DISTRIBUTION LIST 143

CHAPTER 7 - REFERENCES 147

LIST OF FIGURES

Figure 1-1. Project Location 9
Figure 1-2. Levels of Service (LOS) for Freeways 10
Figure 1-3. Project Features 11
Figure 2.1-1. Potentially Affected Resources 123

LIST OF TABLES

Table S-1. Summary of Potential Significant Impacts (Under CEQA) and Proposed Mitigation Measures 3
Table S-2. Summary of Potential Environmental Impacts and Proposed Avoidance / Minimization Measures 4
Table 1-1. EB/WB Existing (2004) Peak Period and Future (2034) Peak Period Demand Volumes 8
Table 1-2. Three-Year Accident History (4-1-02 to 3-31-05) 8
Table 1-3. Accidents By Peak Period and Accident Type 8
Table 2.1-1. Summary of Goals, Objectives, and Policies For Local General Plans 23
Table 2.1-2. 1990, 2000, and 2025 (Projected) Population, Housing, and Employment Data 25
Table 2.3-1. Population by Race Within the Study Area 31
Table 2.3-2. Population by Race Within the City, County, and State 31
Table 2.3-3. Income and Poverty Status in the Study Area, City, and County 31
Table 2.5-1. Peak-Period Network Summary for Existing and 2034 Conditions 43
Table 2.5-2 Highest Peak-Hour Bus/Carpool Lane Volume Served 43
Table 2.5-3: Summary of Time Savings on Existing Bus/Carpool Routes in Sacramento County 44
Table 2.11-1. Potential Hazardous Facilities (High and Medium Ranking) 63
Table 2.12-1. State and Federal Criteria Air Pollutant Standards, Effects, Sources, and Status 73
Table 2.12-2. Highest 1-Hour and 8-Hour CO Value for Each Alternative, for the Years 2010, 2020, and 2030 (in parts per million) 75
Table 2.13-1. Noise Abatement Criteria (NAC) 85
Table 2.13-2: Summary of Noise Measurement IDs and Land Uses for Each Project Segment 85
Table 2.13-3. Existing (2004) and Predicted (2030) Noise Levels 86
Table 2.13-5: Proposed Sound Walls 91
Table 2.13-6. Construction Equipment Noise 91
Table 2.17-1: Status of Listed Species and Species Proposed for Listing Potentially Occurring in Project Area. 114

APPENDICES

Appendix A: CEQA Checklist
Appendix B: Title VI Policy Statement
Appendix C: Resources Evaluated Relative to the Requirements of Section 4(f) and De Minimis Finding
Appendix D: Glossary of Technical Terms
Appendix E: Mitigation and Minimization/Avoidance Summary
Appendix F: List of Acronyms
Appendix G: List of Technical Studies
Appendix H: Consultation Letters

CHAPTER 1 – PROPOSED PROJECT

1.1 INTRODUCTION

Caltrans, FHWA, and the Sacramento Transportation Authority (STA) propose to add bus/carpool lanes in the median of Interstate 80 (I-80) in Sacramento County from east of the Sacramento River to Watt Avenue (PM 0.3/10.4). The total length of the project is approximately 10 miles. The project includes auxiliary lanes in the eastbound and westbound directions between West El Camino Avenue and the Interstate 5 (I-5)/I-80 separation and between Northgate Boulevard and Norwood Avenue. Retaining walls and sound walls are proposed at various locations along the project. Figure 1-1 shows the project location.

1.2 SCOPE OF THIS ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT

This document contains environmental analyses pertaining to the I-80 Across the Top Bus/Carpool Lanes Project from the Sacramento River to Watt Avenue in Sacramento County, California. This document satisfies requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA is the lead agency for NEPA and Caltrans is the lead agency for CEQA.

This Draft Environmental Impact Report/Environmental Assessment (EIR/EA) is an informational document that: 1) informs the public agency decision-makers and the public of the environmental effects of the proposed project; and 2) identifies potential mitigation measures to minimize any adverse impacts.

A Notice of Preparation (NOP) to prepare an EIR was released in September 2006.

Opportunities for public comment on the Draft EIR/EA will occur during the 45-day public availability period and at the public meetings/open houses that Caltrans will hold on this document. The Final EIR/EA will take into account comments received on the Draft EIR/EA during the 45-day comment period.

1.3 PURPOSE AND NEED

Purpose
The purpose of the project is:

- to provide congestion relief in order to improve traffic flow on the regional transportation system,
- promote the use of high occupancy vehicles, such as carpools, van pools, and transit, and
- provide greater connectivity with the existing and proposed bus/carpool network in the Sacramento region, and help achieve the goals of the SACOG 2006 Metropolitan Transportation Plan.

Need

Traffic Congestion and Capacity
I-80 is the primary east-west route in Northern California. Monitoring of traffic conditions during peak commute periods has shown a steady increase in both duration and length of congestion on the I-80 corridor. The congestion primarily occurs in the westbound direction during the morning commute and the eastbound direction during the evening commute.

Traffic congestion is classified as recurrent or non-recurrent. Recurrent congestion is repeated at the same location and same time of day. Recurrent congestion is defined as a condition where vehicle

speeds are reduced to 35 mph or less and lasting for 15 minutes or longer during an incident-free period. Non-Recurrent congestion is non-repeating and caused by incidents such as traffic accidents, weather and road construction.

Table 1-1 shows the volumes for the heavier peak direction for the 4-hour peak AM and PM periods for 2004 and 2034. The increase in the 4-hour future peak period demand volumes from 2004 to 2034 in both directions ranges from 46% to 120%. Capacity for this segment of I-80 is between 1,800 – 2,000 vehicles per hour per lane.

I-80 Eastbound Traffic Conditions (PM)

The 2006 Traffic Study (Fehr & Peers 2006) summarized existing congestion along this portion of I-80. In the eastbound direction during the PM peak hour, the main bottleneck is at the Northgate Boulevard interchange, which causes queues that extend to I-5. The congestion lasts from 3:00 to 6:15 PM. However, downstream bottlenecks also exist near the Norwood Avenue on-ramp and the Winters Street off-ramp, which cause minor congestion.

During the evening peak period, recurrent traffic congestion in this segment of I-80 in the eastbound direction occurs in and near the I-5/I-80 separation and east of Winters Street on I-80. In 2004, this segment experienced delays of 97,500 vehicle-hours per year. In 2006, congestion monitoring showed the average speed from West El Camino to Winters Street during the 4 PM to 5 PM peak period was 29 mph. The normal travel time between these two points at 65 mph is 6.5 minutes, and increases to nearly 15 minutes (29 mph average speed) when congested. The congestion is due to the considerable volume of traffic weaving and merging between eastbound I-80 from the northbound I-5 connector and Truxel Avenue. Additional congestion is also caused by a combination of high traffic volumes ascending the grade on the Natomas East Main Canal Bridge with a large number of vehicles merging from the Northgate Boulevard interchange.

Level of service (LOS) is used to express the traffic flow conditions of a road segment in relation to the capacity of the roadway. LOS generally describes traffic conditions in terms of speed and travel time, volume and capacity, traffic interruptions, and safety. LOS uses the letters “A” through “F” to describe traffic flow, with “A” being free flow and “F” being gridlock (see Figure 1-2). During the PM peak period, the freeway operates with level of service (LOS) C conditions from the Yolo/Sacramento county line to I-5 and with LOS D conditions from Winters Street to Watt Avenue, with LOS F in between.

Increasing growth along the I-80 corridor and in areas east of Sacramento will put more pressure on the mainline capacity by infusing greater volumes of traffic into already congested areas. Increased traffic volumes will also reduce traffic speeds to congestion levels (35 mph or less) in other parts of this segment.

I-80 Westbound Traffic Conditions (AM)

Between the Watt Avenue interchange and the Sacramento River, the westbound direction experiences recurrent traffic congestion during the morning peak period. Traffic delays have typically occurred within the limits west of Watt Avenue and Northgate Boulevard. In 2004, the average speed during the peak period was 31.5 mph. Without major highway improvements in this area, anticipated future growth is expected to increase the limits of westbound congestion further west beyond Norwood Avenue towards the I-80/I-5 separation.

In the westbound direction during the AM peak period, the bottlenecks between Raley Boulevard and Northgate Boulevard cause queues that extend back to the Longview Drive interchange. The end of the existing bus/carpool lane and the associated lane drop just west of the Longview Drive off-ramp also create congested conditions that extend to the Watt Avenue on-ramp. The congestion conditions (speeds below 35 mph) last from 6:45 to 8:45 AM. These conditions are reflected in the peak hour

analysis results, which are LOS F from Watt Avenue to Northgate Boulevard. From Northgate Boulevard to the Yolo/Sacramento county line, all locations operate at LOS D or better.

Current traffic conditions on the I-80 corridor between the Watt Avenue interchange and the Sacramento River during the evening peak period do not yet warrant congestion monitoring in the westbound direction.

Interstate 80 also serves as a principal recreational route between the Sacramento/Bay Area and the North Tahoe area. Consequently, westbound traffic volumes on Sunday afternoons and evenings are typically heavier than during other "off-peak" periods.

Move more people in fewer vehicles

Bus/carpool lanes can promote the movement of more people in fewer vehicles (carpools, vanpools, transit) by:

- Increasing the overall person-moving capacity of a roadway. An effective bus/carpool lane moves more people in fewer vehicles and will typically carry a higher number of persons than a mixed-flow lane. Mixed-flow lanes allow all types of vehicles, including single-occupant cars, carpools, vans, buses, and trucks.
- Maintaining free-flow speeds and providing a more dependable, predictable commute compared to the mixed-flow lanes, which typically operate under congested conditions.
- Carrying 2-3 times the passenger volume as mixed-flow lanes.
- Operating during the peak commute times (requiring 2 or more people) between 6 to 10 AM and 3 to 7 PM Monday through Friday.

Greater Connectivity with Bus/Carpool Network

The project is an important part of the larger existing and planned bus/carpool network in the Sacramento region. The project is a continuation of the existing bus/carpool lanes that extend from Watt Avenue to the Sacramento/Placer County line. By 2012, these lanes will extent to Highway 65 in Roseville, creating over 22 miles of bus/carpool lanes along I-80 and serving both Sacramento and Placer Counties.

Bus/carpool lanes are incorporated in regional transportation plans, including the 2005/2007 MTIP, the 2006 MTP, Measure A funding, and the Sacramento Regional Blueprint (see Section 1.8). The I-80 bus/carpool lane project is included in each of these plans.

1.4 PROJECT DESCRIPTION

The project proposes to construct bus/carpool lanes in the median of I-80 in Sacramento County from east of the Sacramento River to Watt Avenue (PM 0.3 – 10.4). The project also includes auxiliary lanes in the eastbound and westbound directions between the West El Camino Avenue interchange and the I-5/I-80 separation and between Northgate Boulevard and Norwood Avenue. Retaining walls and sound walls are proposed at various locations along the project.

1.5 ALTERNATIVES

1.5.1 Project Alternatives

There are two proposed alternatives:

Alternative 1: Bus/Carpool Lanes and Auxiliary Lanes

Alternative 1 would connect to the existing bus/carpool lanes that extend east from Watt Avenue to Placer County (see Figure 1-3a – 3d). Specifically, Alternative 1 would:

- Add a 12-foot bus/carpool lane, a minimum 10-foot median shoulder with an exception, and a 1-foot area for a concrete median barrier in each direction from Watt Avenue to West El Camino Avenue.
- Add 12-foot eastbound and westbound auxiliary lanes in two locations, from West El Camino Avenue to I-5 and between Northgate Boulevard and Norwood Avenue.
- Widen four structures: Natomas East Canal Bridge and Overhead, Rio Linda Boulevard Undercrossing, Winters Street Undercrossing, and Del Paso Park Separation Overhead. All structures will be widened to the inside.
- Install ramp metering and bus/carpool bypass lane on-ramps at selected interchanges, if feasible.
- Construct sound walls and retaining walls at various locations.

Alternative 2: No Build

The No-Build alternative (Alternative 2) would not add any improvements to the existing facility. Alternative 2 would not address future growth. Without improvements to the existing facility, the level of service will continue to deteriorate and peak periods of congestion will increase. With a no build alternative, existing freeway lane configuration would remain while other future projects within the project limits are constructed. Alternative 2 would not add capacity and therefore would create longer delays.

1.5.2 Alternatives Considered But Dropped

Traffic Report (2006)
Several alternatives were analyzed as part of the 2006 Traffic Report completed for the project (a copy of the traffic study is available from Caltrans):

Mixed Flow Alternative
When considering ways to reduce freeway congestion, adding mixed flow traffic lanes seems an obvious approach. Mixed-flow lanes allow all types of vehicles, including single-occupant cars, carpools, vans, buses, and trucks. However, for the following reasons, a mixed flow alternative was not fully evaluated:

- The mixed-flow alternative does not meet the purpose and need; specifically, it does not promote the use of high occupancy vehicles and is not included in SACOG's 2006 MTP (see bullet below).
- The Traffic Report for the project indicated that by the year 2034, the mixed-flow alternative would serve fewer persons and have higher delays than the bus/carpool lane alternative.
- In the 2005/07 MTIP, SACOG describes the project as "construct HOV lanes from Longview Drive to the Yolo County line." The 2005/07 SACOG MTIP identified bus/carpool lane alternatives as having both superior air quality benefits and superior mobility benefits over mixed flow lanes.
- Bus/carpool lanes, not mixed-flow, are included in all three scenarios presented for the eastern 1-80 corridor in SACOG's early 2035 MTP discussions.
- Mixed-flow alternative offer no incentives for carpooling or transit use.
- Because of air quality concerns, federal funding is not available for mixed flow lanes.
- The project is an important part of the larger existing and planned bus/carpool network proposed for the Sacramento region. Mixed-flow lanes are not part of this network.

HOT Lanes
High-occupancy toll (HOT) lanes allow single-occupant vehicles to use the bus/carpool lane for a fee that is based typically on the amount of congestion in the mixed-flow lanes. An analysis of the proposed US-50 bus/carpool lanes in Sacramento by Dowling and Associates in 2006 concluded that HOT lanes would be infeasible. The report found that projected congestion would not be great enough

to generate toll rates and revenues necessary to generate a positive cost/benefit ratio. The HOT lane would have a limited number of access points (necessary for toll collection and enforcement purposes). Bus/carpools have more freedom to switch to the bus/carpool lane. But with the limited number of access points for the HOT lane, a number of bus/carpools are forced to use the general-purpose lanes. These bus/carpools experience increased time costs, and cause more congestion in the general-purpose lanes. The barrier-separated design may also have right-of-way impacts and higher construction costs. (Dowling 2006).

Mixed-Flow to Bus/Carpool Lane Conversion ("Take-a-lane")
One option to provide a bus/carpool lane facility in the study area would be to convert an existing lane on I-80 to a bus/carpool lane (as known as "take-a-lane"). Under such an alternative, the existing inside shoulder lane (the leftmost lane) would be re-striped and signed to prohibit non-bus/carpool traffic during the peak period. Unlike Alternative 1, the mixed-flow to bus/carpool lane conversion would reduce mixed-flow lane capacity.

For the westbound direction, the bus/carpool lane would be continued in the left lane from the current terminus before the Longview Drive on-ramp through to east of West El Camino Avenue. Given the 2034 peak-hour bus/carpool lane forecast volume of 1,200 vehicles per hour and the average freeway capacity of 2,200 vehicles per hour per lane, the lane conversion alternative would have 28 percent less vehicle capacity than Alternative 1. For the eastbound direction, a lane transition with an outside lane drop to the West El Camino Avenue off-ramp would be needed to begin the bus/carpool lane west of West El Camino Avenue. The existing two-lane section at the I-5 overcrossing would become one mixed-flow lane and one bus/carpool lane. Given the 2034 peak-hour bus/carpool lane forecast volume of 700 vehicles per hour and the average freeway capacity of 2,200 vehicles per hour per lane, the lane conversion alternative would have 43 percent less vehicle capacity than Alternative 1. Therefore, the lane conversion alternative would serve fewer people and create lower average speeds than Alternative 1.

1.6 PROJECT SCHEDULE

The current project schedule is as follows:

- Circulate Draft EIR/EA: April/May 2007
- Final EIR/EA: Summer 2007
- Begin Construction: June 2009
- End Construction: October 2011

1.7 PROJECT BACKGROUND AND HISTORY

The project has been included in various studies, plans, and programs since 1988. These include:

- National Strategic Transportation Study (U.S. Department of Transportation)
    - 1988 study that recommended widening I-80 with bus/carpool lanes between I-5 and the City of Roseville.

- Transportation Concept Report (Caltrans)
    - 2001 report recommending adding a bus/carpool lane in each direction from I-5 to the Placer County line.

- Sacramento Transportation Authority (STA) Congestion Management Program
    - The Program has recommended bus/carpool lanes between I-5 and the Placer County line since 1991.

- Sacramento County Strategic Plan
    - The Plan has listed bus/carpool lanes between I-5 and the Placer County line since 1994.

- Metropolitan Transportation Improvement Program (MTIP):
    - The program includes a listing of all transportation-related projects requiring federal funding or other approval by the federal transportation agencies.
    - The project was included in the adopted 2005/2007 MTIP.

- Metropolitan Transportation Plan (MTP):
    - The MTP is a 23-year plan for transportation improvements in a six-county region (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba).
    - The project is included in the 2006 MTP, which has been adopted by SACOG.

- Measure A Half-Cent Sales Tax, Sacramento County 2004
    - The Measure A Half-Cent sales tax extended an existing half-cent from 2009 to 2030.
    - The bus/carpool project was listed under Freeway Safety and Congestion Relief Program, Regional Bus/Carpool Lane Connectors/Extensions in the 2004 election ballot. All projects included on the ballot are also included in the 2025 MTP.
    - According to Sacramento County Registrar of Voters, countywide, the measure passed with approximately 75% approval by voters. A more detailed approval breakdown is as follows:
        - City of Sacramento 76%
        - Unincorporated Sacramento County 74%

- Sacramento Region Blueprint
    - Joint effort of SACOG and Valley Vision.
    - SACOG conducted two years of study and public involvement, resulting in the adoption the Blueprint's Preferred Blueprint Scenario in December 2004. The Blueprint scenario adopted became part of SACOG's Metropolitan Transportation Plan update for 2005, a formal document that serves as a long-range transportation plan for the six-county region. It also will serve as a framework to guide local government in growth and transportation planning through 2050.

- California Transportation Plan 2025
    - The California Transportation Plan 2025 is a blueprint for meeting the State's future transportation needs.
    - Specific policies and strategies include completing the HOV network and maximizing the use of HOV lanes by encouraging transit operators to provide express bus service on HOV lanes.

- Proposition 1B, California State Propositions 2006
    - The proposition directs the State of California to sell $19.9 billion in general obligation bonds to fund state and local transportation and safety projects, including completing the state's network of carpool lanes.
    - The bus/carpool project was one of the projects listed as part of the proposition.
        - According to the Secretary of State's office, statewide Proposition 1B passed with approximately 61% approval by voters. In Sacramento County, the approval rate was 62%.

1.8 PERMITS AND APPROVALS NEEDED

The following permits, reviews, and approvals would be required for project construction:

Agency	Permit/Approval
United States Fish and Wildlife Service	Section 7 Consultation for Threatened and Endangered Species Review and Comment on 404 Permit
United States Army Corps of Engineers	Section 404 Permit for filling or dredging waters of the United States.
California Department of Fish and Game	1601 Agreement for Streambed Alteration
California Water Resources Board	Water Discharge Permit
Reclamation District 1000	Permit

Table 1-1. EB/WB Existing (2004) Peak Period and Future (2034) Peak Period Demand Volumes

Segment	Westbound 2004 4 hr. A.M. Peak Period	Westbound 2034 4 hr. A.M. Peak Period	Eastbound 2004 4 hr. P.M. Peak Period	Eastbound 2034 4 hr. P.M. Peak Period
	Volume	Volume	Volume	Volume
Yolo/Sac County line to W. El Camino Ave	13,000	30,700	13,300	39,900
W. El Camino Ave to I-5 Junction	12,900	30,100	12,600	34,900
I-5 Junction to Truxel Road	20,700	40,200	20,100	38,400
Truxel Road to Northgate Blvd.	19,900	37,000	18,900	34,300
Northgate Blvd. To Norwood Ave	21,600	38,900	20,900	37,800
Norwood Ave to Raley Blvd	20,500	36,300	21,900	38,900
Raley Blvd to Winters Street	19,700	35,300	21,000	37,300
Winters Street to Longview Drive	23,900	42,800	22,700	40,600

Source: Caltrans District 3 Office of Traffic Operations.

Table 1-2. Three-Year Accident History (4-1-02 to 3-31-05)

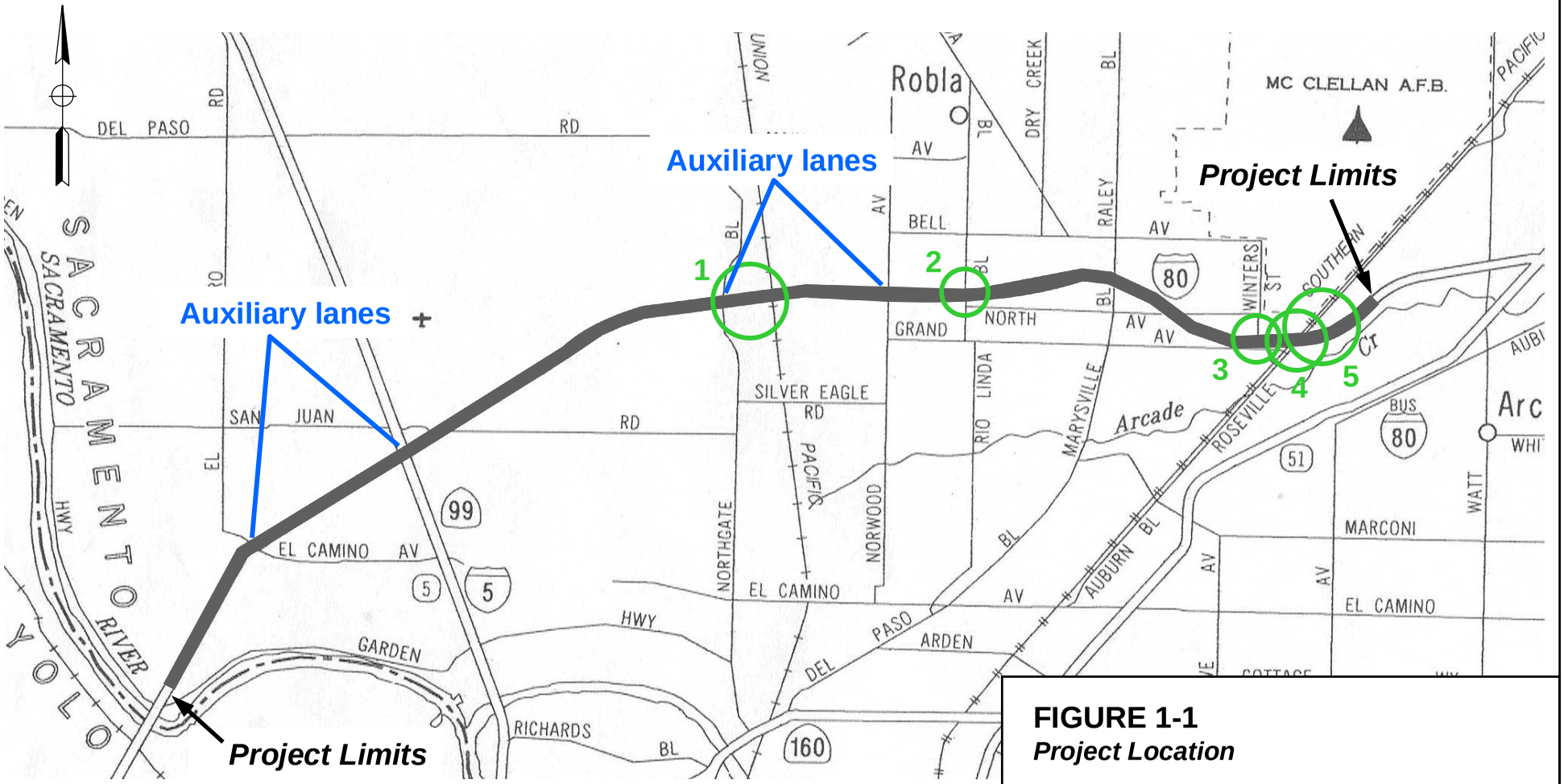
Location	Total Accidents	Total Fatalities	Actual Accident Rate*	Average Accident Rate*
Eastbound I-80 Yolo/Sac County Line to Longview Drive	433	1	0.62	0.97
Westbound I-80 Longview Drive to Yolo/Sac County Line	327	1	0.47	0.97

* The accident rate is accidents per million vehicle-miles.
Source: Caltrans District 3

Table 1-3. Accidents By Peak Period and Accident Type

Statistic	Peak Period			Accident Type				Total
	6 to 10 AM	3 to 7 PM	Off-Peak	Rear End	Hit Object	Sideswipe	Other*	
Number	153	283	324	330	214	148	68	760
Percentage	20%	37%	43%	43%	28%	20%	9%	100%

* The “Other” category includes head-on, broadside, overturn, and other accident types.
Source: Caltrans District 3



No scale

Structure Widening:

1 **Natomas East Main Drain Canal Bridge**
2 **Rio Linda Overhead**
3 **Winters Street Undercrossing**
4 **Longview Drive Overhead (retaining wall)**
5 **Del Paso Park Bridge Overhead**

FIGURE 1-1
Project Location

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

FIGURE 1-2
Levels of Service (LOS) for Freeways

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

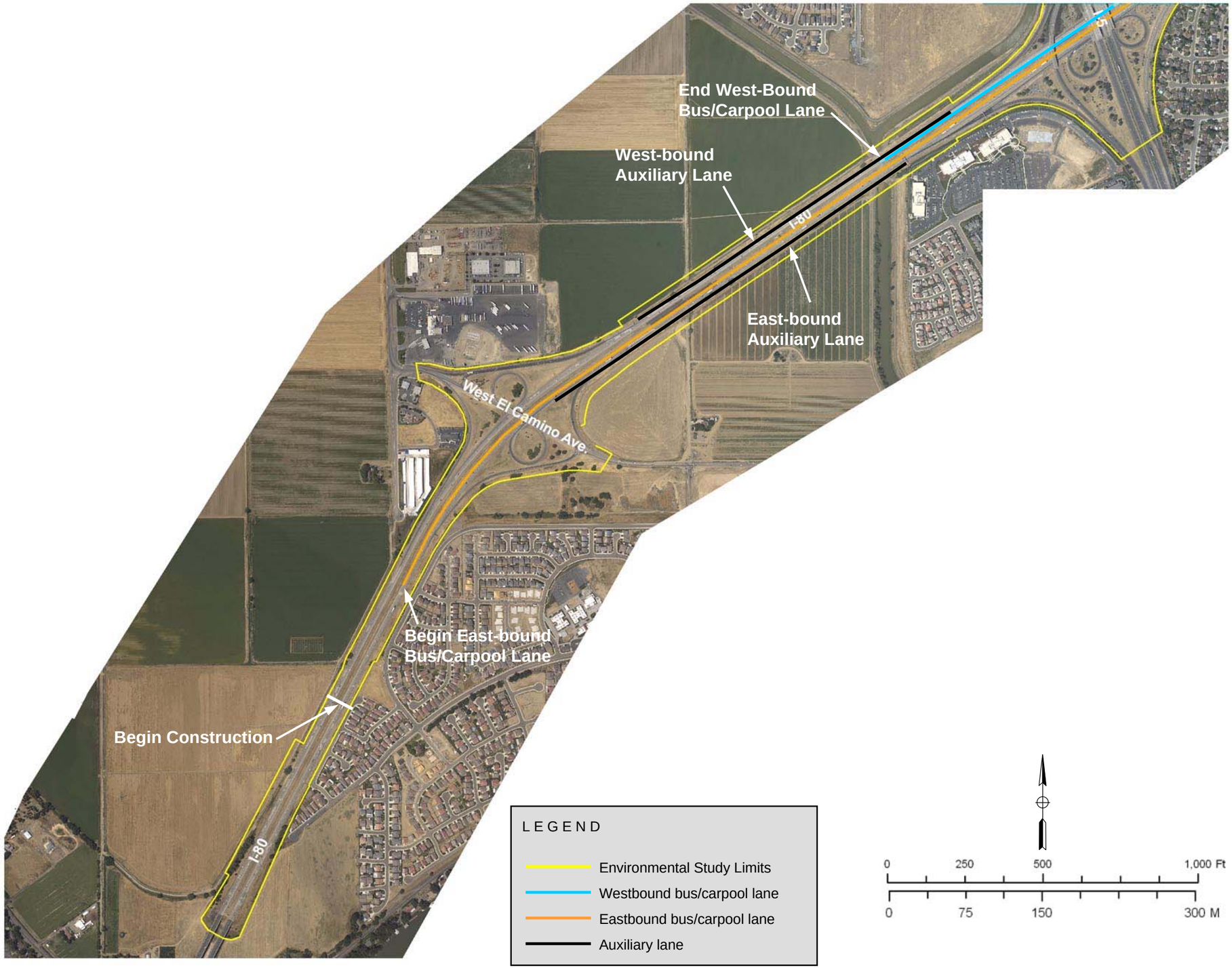


FIGURE 1-3a
Project Features

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.30 / M10.40
EA 03-37970

State of California
Department of Transportation

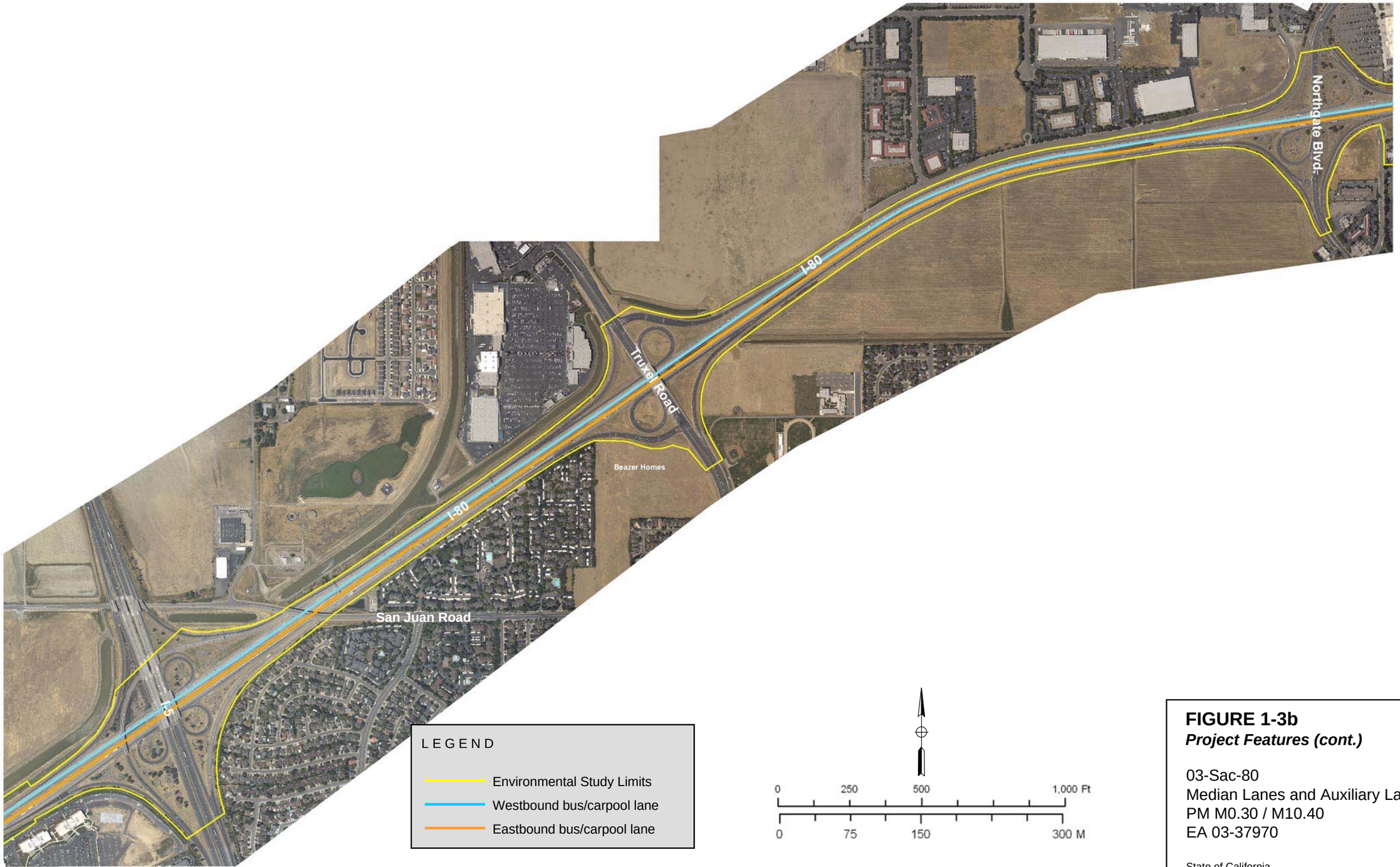


FIGURE 1-3b
Project Features (cont.)

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.30 / M10.40
EA 03-37970

State of California
Department of Transportation

LEGEND

- Environmental Study Limits
- Westbound bus/carpool lane
- Eastbound bus/carpool lane
- Auxiliary lane

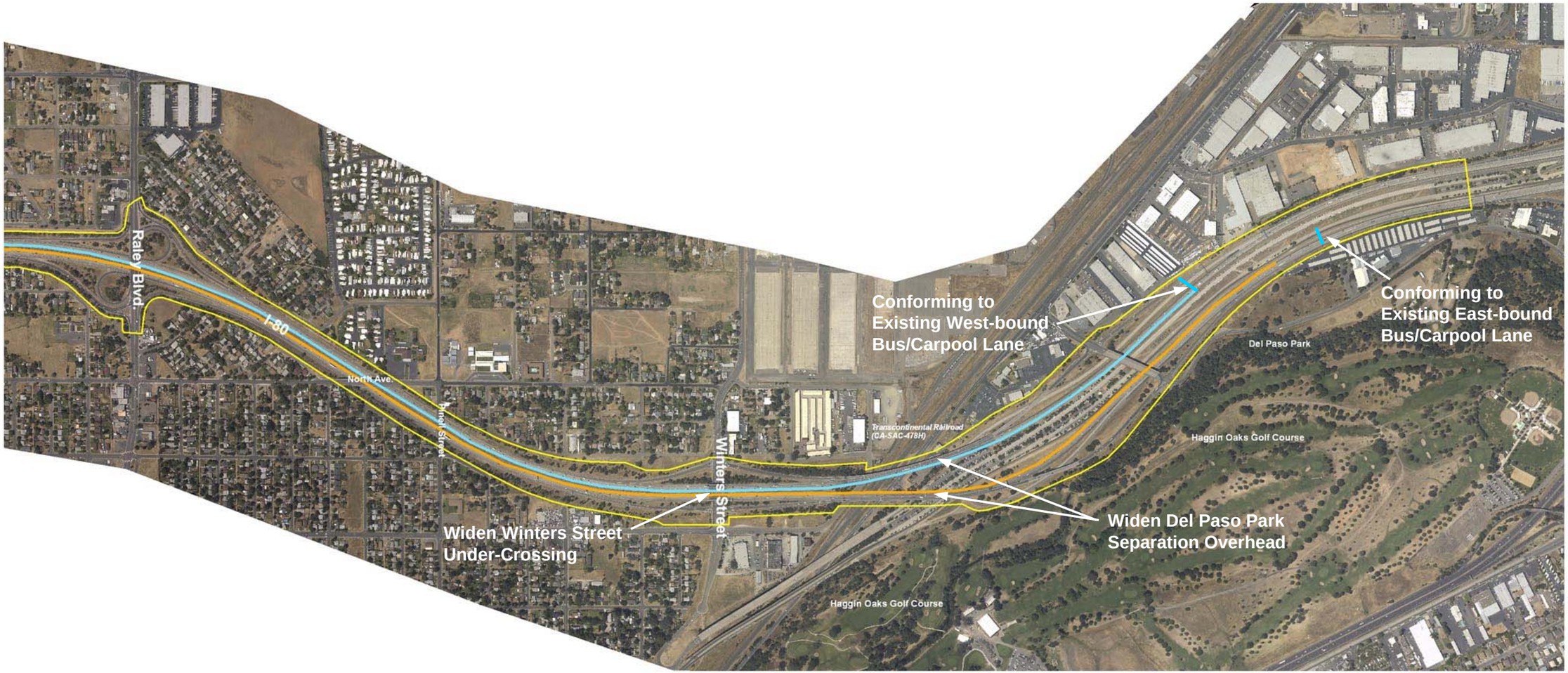
0 250 500 1,000 Ft

0 75 150 300 M

FIGURE 1-3c
Project Features (cont.)

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.30 / M10.40
EA 03-37970

State of California
Department of Transportation



LEGEND

- Environmental Study Limits
- Westbound bus/carpool lane
- Eastbound bus/carpool lane

0 250 500 1,000 Ft

0 75 150 300 M

FIGURE 1-3d
Project Features (cont.)

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.30 / M10.40
EA 03-37970

State of California
Department of Transportation

CHAPTER 2 - AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

HUMAN ENVIRONMENT

For the community sections included in Human Environment (land use, growth inducement, community impacts, and community facilities), the area considered for potential effects ("Study Area") consists of Year 2000 United States Census Tracts that border the project limits along the corridor. There are 12 US Census Tracts that border the project limits and span an approximate 2-mile area on the north and south sides of the corridor. The Study Area includes portions of the City of Sacramento and Sacramento County. Potential impacts that may occur outside the Study Area have been noted where appropriate and applicable.

A Community Impact Assessment (CIA) was completed in February 2007 (bound separately). A copy is available form Caltrans District 3 office in Sacramento.

2.1 LAND USE AND PLANNING

2.1.1 Affected Environment

2.1.1.1 Existing Land Use Patterns

Land use along the study area in the I-80 corridor is a mix of residential, agriculture, community commercial, professional businesses, industrial, and public/quasi-public uses. Farmland is concentrated along the north side of I-80 from just west of the Sacramento River east to West El Camino Avenue. According to the Department of Conservation, much of the farmland is classified as "prime." At the south side of I-80, along the same section of the corridor, the open space areas are classified as "urban and built-up land" (CDC 2004). This area was graded for development in the fall of 2006.

The South Natomas area, a dense residential area with some commercial uses, is just south of this open space area. This entire area on the south of I-80 is part of the South Natomas Community Plan Area.

North of I-80, from the County line to Northgate Boulevard, lies the North Natomas Plan Area. This area contains light industrial, office employment center, a sports complex, and residential land uses. There are extensive commercial uses at Truxel Road on the north side of I-80. Strip malls, anchored by Home Depot, Walmart and other major outlets, are situated on the east and west sides of Truxel Road. More commercial is under construction or planned north of the I-80/Truxel Road interchange. Raley Industrial Office Park and Arco Arena are located to the north. There are housing developments near Arco Arena and Del Paso Boulevard. Construction of new homes is occurring at a rapid pace in that general area.

The North Sacramento Plan Area lies to the north and south sides of the Interstate from just east of Northgate Boulevard to Winters Street. The area is dominated by residential uses, with some industrial and other categories, and a light rail station at Longview Drive.

2.1.1.2 Study Area Plans and Policies

<u>Sacramento Area Council of Governments (SACOG)</u>

Regional Blueprint

Typical of areas undergoing increasing development and growth, Sacramento County is faced with a lack of affordable housing close to urban job centers and increasingly distant residential housing

developments from such centers, increasing traffic congestion, environmental pollution, and encroachment on open space and agricultural lands. In 2002, SACOG began its Sacramento Regional Blueprint planning effort (Blueprint). SACOG consists of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties, along with their constituent municipal governments. The Blueprint's purpose is to establish a long-term plan for growth within the region.

As part of the effort, SACOG studied current land use patterns and their potential effects on the region's transportation system, air quality, housing, open space and other resources. Assuming that recent trends continue, the studies found large-lot, low-density housing would consume 660 square miles of undeveloped land by 2050. This would lead to longer commutes, greater air pollution, and a loss of open space and agricultural land. The preferred Blueprint scenario integrates smart growth concepts, such as high- and medium-density, mixed-use development, reinvestment in existing developed areas, and the expansion of transportation alternatives. Through changes in land use, the Blueprint seeks to halve the amount of open space that would otherwise be consumed. Through higher density development and greater transit choices it also seeks to shorten commute times, reduce traffic congestion, lessen dependence on automobiles, and provide for housing choices that more closely align with the needs of the population (SACOG 2004).

In December 2004, SACOG defined a preferred Blueprint scenario that focuses on compact, mixed-use development and a greater variety of transit choices. This Blueprint is intended to guide regional development through 2050. The proposed project is one of the transportation improvements included in the Blueprint's Preferred Scenario. The project is consistent with SACOG's Regional Blueprint.

2006 Metropolitan Transportation Plan
SACOG's 2006 Metropolitan Transportation Plan (MTP) endorses the concept of a regional network of bus/carpool lanes, including the proposed project. In response to the idea that congestion management would be better accomplished with investments in public transit, the MTP states that:

> With more than a million empty seats in autos, but fewer than 10,000 empty seats in buses every morning and afternoon, carpools clearly have a place in the picture. [The projected]…53 percent increase in travel by 2027 means that, even if transit use could be increased tenfold and bicycle/walk trips tripled, the region still would face a 40 percent increase in travel by auto. At least in some places the road system must be expanded too.

The proposed project is included in the 2006 MTP.

<u>City of Sacramento General Plan</u>

Table 2.1-1 provides a summary of applicable goals, policies, and objectives from the current City of Sacramento and Sacramento County general plans.

The current City of Sacramento General Plan was adopted in January 1988. The City of Sacramento is currently in the process of developing an updated general plan. This process has included town hall meetings and community forums, aimed at making sure that the updated general plan reflects residents' views and concerns.

General Plan Update
In November 2005, the City adopted its "Vision and Guiding Principles" document, which sets out the City's key values and goals for the future. This document is designed to guide the development of the General Plan throughout the update process. The "guiding vision" identified in this document is to make Sacramento "the most livable city in America." In terms of transportation choices, the City's guiding principles emphasize multi-modal transportation and greater investment in transit systems.

As background to the "Visions and Guiding Principles" document, the City has also adopted (in November 2005) a "Planning Issues Report" that identifies key planning issues. The first of these issues mentioned is "Smart Growth," typified by compact development, higher residential densities, mixed-uses, a range of transportation choices, walk able neighborhoods, and open space protection. The "Planning Issues Report" mentions SACOG's Regional Blueprint as advocating this type of growth. As mentioned above, the proposed project is included in the Regional Blueprint.

The City's guiding principles for mobility emphasize that future transportation investments should provide City residents with a range of transportation options. The City's "Vision and Guiding Principles" document emphasizes alternatives to the automobile, such as transit and walking. The proposed project provides an incentive to use bus transit, since buses would be able to use the bus/carpool lanes.

The City of Sacramento anticipates adopting the General Plan Update in early 2008.

Current General Plan
At the time of the 1988 General Plan, the Circulation Element described Sacramento's freeways as "beginning to suffer from peak hour congestion." Traffic delays were described as "sporadic," lasting 10-20 minutes in several places. The Circulation Element anticipated that this condition would lead to worsening future congestion. The Circulation Element states:

> The distribution of employment centers as well as residential developments have reduced the effectiveness of the radial freeway and transit system. The City cannot solve the regional problem of dispersed land uses and increasing congestion. The City can, coordinated with other jurisdictions and transportation agencies, attempt to manage the growing problem.

The City of Sacramento's General Plan recommends a number of strategies to reduce future congestion on the region's freeways, including developing additional freeway capacity through the use of ridesharing, transit improvements, preferential treatment for buses and other high occupancy vehicles, ramp metering and flextime, and by adding additional lanes in existing rights-of-way.

The existing General Plan's Circulation Element includes three goals designed to increase vehicle occupancy, including Central City Transportation Goal C: "Develop a balanced transportation system which will encourage the use of public transit, multiple occupancy of the private automobile, and other forms of transportation." Transportation Systems Management Goal B supports increasing the transportation system's capacity.

The City's existing General Plan also includes goals to preserve the quality of the City's neighborhoods and direct traffic away from neighborhoods.

<u>Sacramento County General Plan</u>

Current General Plan
Sacramento County adopted its General Plan in December 1993. At the time of the General Plan's preparation, 65 percent of unincorporated Sacramento County was zoned for agriculture and 20 percent was zoned for single-family homes on parcels of one or more acres. The Study Area is located in the City and County of Sacramento. In its overall philosophy regarding future growth, the County's General Plan has much in common with SACOG's Regional Blueprint. The General Plan warns of problems associated with continuing the traditional pattern of low-density suburban development. The County's General Plan states:

> Maintaining the status quo is unrealistic: the incremental financial environmental cost of low-density urban fringe growth is greater than existing and new residents are willing to pay. The General Plan resolves the problems of increased development costs, premature development,

> and regional shifts by strategies which direct the unincorporated area towards a more urban than suburban character.

The County's General Plan Circulation Element reflects this concern with sprawling development patterns. The Circulation Element is critical of what it calls the automobile and road-oriented transportation system, associating it with low density, sprawling communities. The Circulation Element states that:

> The present land use and transportation system is oriented towards private automobiles. A road network releases forces throughout the economy that causes increased driving because destinations are expanding outward…. Improving land use and transportation planning will reduce these future spillover effects.

The Circulation Element's overall objectives are described as seeking imaginative means to increase the supply of transportation options, managing the demand for transportation, and building a transportation system balanced between roads and transit.

Regarding proposed expansions of the freeway system, the County's General Plan supports the construction of a regional network of high occupancy vehicle (HOV), or bus/carpool, lanes. Circulation Element Policy 24 describes HOV lanes as having a "significant potential to increase the effective carrying capacity of the existing road network by increasing the number of individuals in each vehicle." As a result, HOV lanes benefit air quality and transit operations (since transit vehicles may also use HOV lanes).

But the Circulation Element points out that "the traditional Caltrans policy to never take an existing lane for an HOV lane is outdated. That Caltrans policy would allow HOV lanes only when they are newly constructed, but new construction is only an inducement to additional automobile travel which will worsen congestion and air quality."

General Plan Update
Sacramento County is currently updating its General Plan. A Public Review Draft was released in November 2006 and included a Circulation Element. Under High Occupancy Vehicle Lanes, it states:

> High Occupancy Vehicle (HOV) lanes are restricted to carpools, vanpools, and transit vehicles. Most HOV lanes may be used by any vehicle carrying two or more people, although some are restricted to vehicles with three or more passengers. HOV lanes are intended to increase the person-carrying capacity of the transportation system without requiring additional vehicle capacity. This is cost-effective for government, and improves air quality. Sacramento County supports the development of a regional network of HOV lanes as shown in the inset map on the Transportation Plan Map.

According to Sacramento County, the bus/carpool inset on the updated Transportation Plan Map should be consistent with the current 1993 Transportation Plan Map, which shows bus/carpool lanes along the entire length of I-80 within Sacramento County.

2.1.1.3 Jobs/Housing Balance and Commuting Patterns

How land uses are distributed within communities has implications for local and regional commuting patterns. A city with very little land used for housing, relative to its supply of industrial or commercial land, will be a destination for commuters. A city that is predominantly residential will be a source of commuters.

Typically, a community is considered "balanced" when the number of employment opportunities is approximately equal to the number of homes. The ratio of jobs to housing units in a place provides an

estimate of the overall tendency of workers to commute in or out of that place. In theory, a balanced community would be one in which no workers were obliged to leave the community for work.

The major employment centers in the Study Area are located in the City of Sacramento. According to SACOG, in 2000 there were 1.6 jobs for each housing unit in the City of Sacramento. In Sacramento County there were 1.2 jobs per housing unit (SACOG 2001).

However, commuting patterns are more complicated than the jobs-housing balance alone would indicate. While the City of Sacramento is the major employment center in the region, 40 percent of its workers work outside of the City, according to data from the 2000 Census (up from 32 percent at the time of the 1990 Census) (US Bureau of the Census 2000).

One alternate destination for commuters along the I-80 corridor is the City of Roseville, located well east of the proposed project's eastern limits, in Placer County. Between 1990 and 2000, Roseville's employment base grew by 120 percent, from 27,000 jobs to over 60,000 jobs.

Jobs / Housing Balance Projections

SACOG's projections indicate that between 2000 and 2025, Sacramento County population will grow 39 percent and employment will grow 45 percent. The City of Sacramento estimates that between 2000 and 2025, it's population will increase by 38 percent, while employment opportunities will increase by 70 percent (Table 2.1-2). Based on these projections, the City of Sacramento will continue to be a destination for commuters from throughout the region through the next 20 years. Transportation alternatives of all kinds will become more important, as workers from outlying areas travel to employment centers in Sacramento.

SACOG's projections show Roseville's employment base expanding by an additional 90 percent by the year 2025, making it an employment center a third the size of the City of Sacramento.

SACOG's projections for the study area indicate that Roseville will continue to develop employment-generating activity more quickly than residences through to year 2025. The imbalance in the ratio of jobs to housing was expected to grow more pronounced between 1990 and 2000. By 2025, Roseville is expected to have nearly two-and-a-half jobs for every home.

Placer County as a whole is expected to become increasingly active as an employment center, relative to its housing supply. The projection for the year 2000 indicated that the County would have more jobs than homes, and that this margin would increase by 2025. The SACOG region as a whole is expected to attract more jobs than homes overall, reaching a ratio of 1.23 jobs for every home in 2025.

Jobs / Housing Balance

The proposed project is part of SACOG's Regional Blueprint, and so is part of a larger land use and transportation plan that encourages a balance of jobs and housing opportunities within the region's communities. Under the Preferred Blueprint Scenario, SACOG projects that the City of Sacramento would have 1.7 jobs for each housing unit in 2050, compared to 2.6 under the base case. One of the purposes of SACOG's Blueprint is to reduce vehicle miles traveled in the year 2050 by encouraging communities to balance their supply of employment opportunities and their supply of housing. Data on the "base case" represent the expected outcome if present trends continue to 2050.

By improving commute times, the project may encourage some commuters to look for housing in communities farther east than they otherwise would. This would be true of any improvement in commute times, whether by light rail, bus, or freeway. Given better travel times, commuters can choose to travel farther, taking advantage of the time savings to access new housing markets farther from the central city.

In the case of the proposed project, bus/carpool lane users may be able to travel an additional five miles in the time that they would otherwise spend making the commute between downtown Sacramento and Auburn.

At the same time, the emergence of Roseville as an employment center means that, to some extent, this eastward shift is already occurring and that the proposed project would do little to affect Placer County-based commuters' travel times. According to data from the Placer County Regional Transportation Planning Agency, the greatest increase in jobs for Placer County residents in the I-80 corridor is projected to be in Roseville, not downtown Sacramento. The proposed project would have a minimal effect on commute times between Sacramento and Roseville, and points further east along the corridor.

Ultimately, congestion on the I-80 corridor is likely to be driven by the expansion of the employment base in the cities of Sacramento and the greater Roseville area. Sacramento is anticipated to add 140,000 jobs by 2030.

According to historical census data, the City of Roseville became a major employment center in 1990. There were 1.5 jobs for every housing unit, indicating that at least one third of the employees in Roseville were living somewhere else in 1990. The Sacramento Metropolitan Statistical Area had slightly more jobs than housing units in 1990, indicating this area's status as a source of employment for some residents in outlying areas (US Bureau of the Census 1990).

SACOG's projections for the study area indicate that Roseville will continue to develop employment-generating activity more quickly than residences through to year 2025. The imbalance in the ratio of jobs to housing was expected to grow more pronounced between 2000 and 2025. By 2025, Roseville is expected to have nearly two-and-a-half jobs for every home (SACOG 2002).

Placer County as a whole is expected to become increasingly active as an employment center, relative to its housing supply. SACOG data also shows that in the year 2000 the County would have more jobs than homes and that this margin would increase by 2025 (SACOG 2002).

The SACOG region as a whole is expected to attract more jobs than homes overall, reaching a ratio of 1.23 jobs for every home in 2025. These data suggest that Roseville will increasingly offer opportunities for employment for residents of this part of Placer County. The types of employment that have been drawn to Roseville in recent years have been service-oriented or technology driven. There is also a large amount of medical services employment in Roseville. Salaries from these employers are likely to keep pace with increasing housing costs in this area.

As a result, more and more commuters will be drawn to these cities from surrounding communities, whether or not the proposed project is constructed. If the project is not constructed, past trends and data from other cities suggest that commuters are willing to tolerate lengthy commutes in order to maintain their preferred locations for home and work. In the San Francisco Bay Area, for example, median commute times for workers in some of the outlying suburbs were as high as 40 minutes at the time of the 2000 Census.

2.1.1.4 Community / Planned Development/Neighborhood Characteristics

The Study Area includes several neighborhoods and commercial business parks within the City of Sacramento. Neighborhoods/business parks located on the north side of I-80 are, from west to east: Gateway West, Natomas Crossing, Pell/Marin Industrial Park, Glenwood Meadows, Norwood I-80, Parker Homes, and Village Green. Neighborhoods/business parks on the south side of I-80 are, from west to east: Willow Creek, Metro Center, Gateway Center, South Natomas, Northgate, Norwood Tech, Johnson Heights, Del Paso Heights, East Del Paso Heights, and Del Paso Park. Additionally, the study

area includes communities that do not closely border the I-80 corridor, but are within the 2-mile radius of the study area delineated by the 12 referenced Census Tracts.

There are relatively small new planned housing developments along the I-80 corridor within the project limits. These developments include a Beazer homes tract (Willow Creek Area), a River View Homes tract (Gateway West Area), another Beazer homes tract (South Natomas Area), a Parkebridge homes and condominiums tract (Northgate Area), and other unnamed new planned home developments between Dry Creek Road and Raley Boulevard. These developments are primarily located in urban fill build out areas. Grouped together these new tracts are expected to contain less than approximately 2500 new housing units.

Most of the recent population growth in the study area has been concentrated in proximity to the area surrounding the I-5/I-80 interchange (IC). Relatively new developments of single-family residential units and some multi-family residential units dominate the Willow Creek Area near the westerly limits of the project area. The Gateway West Area near Truxel Road and the Natomas Crossing Area have also been more recently developed areas. New housing is still being constructed and planned for in these areas, but at a much smaller scale. Agriculture, drainage ditches, wetlands, and existing suburban sprawl limit further residential and commercial expansion in these spots within the study area.

Areas where growth of population and housing is continuing at a rapid rate lie about a mile and more further west of the study area along the I-5 corridor. The Arco Arena/Del Paso Boulevard area has substantial new housing developments planned. Further to the north and northeast near the Natomas Creek Area and east to Elkhorn Boulevard there is also substantial new construction of homes planned and underway. The main avenue of vehicular access for these residential areas is the I-5 corridor, providing direct entry to urban Sacramento and points east and west along the I-80 corridor.

Neighborhoods within the study area can be primarily characterized as having middle class residential inhabitants. The race and income characteristics are similar to the City of Sacramento as a whole. The area west of Northgate Boulevard is largely composed of newer housing units, while the areas east of Northgate Boulevard contain older more established neighborhoods/communities and have more MFR units and lower cost housing in general.

2.1.2 Environmental Consequences

2.1.2.1 Right of Way Impacts

Neither Alternative 1 or Alternative 2 would require full or partial acquisition of private or publicly owned right of way. Alternative 1 would require temporary construction easements at various locations.

2.1.2.2 Farmlands

There are farm/agriculture parcels located on the west end of the projects limits within the study area to the north of I-5. Farmlands span an approximate three and half-mile area in proximity to I-5. It is not anticipated that Alternative 1 or Alternative 2 will cause the conversion of farmland to other uses, such as housing or retail. Other factors, such as local planning and economic pressures, are affecting the conversion of agricultural lands. The degree to which the project would decrease commute times into the urban Sacramento area is nominal and any impetus to develop these farmland areas would not be based upon the degree of congestion relief that is expected from implementation of the proposed project.

2.1.2.3 Jobs/Housing Balance

Like any project that improves travel times to work, including public transit projects, Alternative 1 would provide a benefit to intercity commuters. By improving travel times for commuters in carpools or buses, Alternative 1 would provide these workers with a marginal increase in the geographic areas in which they seek housing and/or employment. However, Alternative 1 is included in SACOG's Regional

Blueprint, a planning framework that is expected to improve jobs/housing balance in the communities in the region, compared to future conditions without the Blueprint.

Alternative 2 would not affect jobs or the housing balance.

2.1.2.4 Consistency With Local Plans and Policies

Sacramento Area Council of Governments (SACOG)

Regional Blueprint
Alternative 1 is one of the transportation improvements included in the Blueprint's Preferred Scenario, and is thus consistent with SACOG's Regional Blueprint.

2006 Metropolitan Transportation Plan (MTP)
Alternative 1 is included in the 2006 MTP, and as a result is consistent with the 2006 MTP.

City of Sacramento General Plan

General Plan Update
The City's guiding principles for mobility emphasize that future transportation investments should provide City residents with a range of transportation options. The City's "Vision and Guiding Principles" document emphasizes alternatives to the automobile, such as transit and walking. Alternative 1 provides an incentive to use bus transit, since buses would be able to use the bus/carpool lanes.

Current General Plan
The City of Sacramento's General Plan recommends a number of strategies to reduce future congestion on the region's freeways, including developing additional freeway capacity through the use of ridesharing, transit improvements, preferential treatment for buses and other high occupancy vehicles, ramp metering and flextime, and by adding additional lanes in existing rights-of-way.

The existing General Plan's Circulation Element includes three goals designed to increase vehicle occupancy, including Central City Transportation Goal C: "Develop a balanced transportation system which will encourage the use of public transit, multiple occupancy of the private automobile, and other forms of transportation." Transportation Systems Management Goal B supports increasing the transportation system's capacity. The City's existing General Plan also includes goals to preserve the quality of the City's neighborhoods and direct traffic away from neighborhoods.

Sacramento County General Plan
Regarding proposed expansions of the freeway system, the County's General Plan supports the construction of a regional network of high occupancy vehicle (HOV), or bus/carpool, lanes. Circulation Element Policy 24 describes HOV lanes as having a "significant potential to increase the effective carrying capacity of the existing road network by increasing the number of individuals in each vehicle." As a result, HOV lanes benefit air quality and transit operations (since transit vehicles may also use HOV lanes). But the Circulation Element points out that "the traditional Caltrans policy to never take an existing lane for an HOV lane is outdated. That Caltrans policy would allow HOV lanes only when they are newly constructed, but new construction is only an inducement to additional automobile travel which will worsen congestion and air quality." However, Caltrans traffic modeling shows that converting an existing mixed flow lane to bus/carpool use would be worse for traffic congestion than selecting the No Build alternative.

Alternative 2 is not included in SACOG's Regional Blueprint or the 2006 MTP, does not encourage carpooling or transit use, and is not part of the regional bus/carpool lane network.

Table 2.1-1. Summary of Goals, Objectives, and Policies For Local General Plans

City of Sacramento

Number	Goal/Objective/Policy	Consistency
Land Use Goal A	Improve the quality of residential neighborhoods Citywide by protecting, preserving and enhancing their character.	As an improvement to mainline I-80, Alternative 1 would not directly affect the City's neighborhoods. Alternative 1 includes potential sound barriers, which may enhance adjacent neighborhoods. Alternative 2 does not include these features.
Circulation Overall Goal A	Create a safe, efficient surface transportation network for the movement of people and goods.	Alternative 1 would improve people-moving efficiency on I-80; Alternative 2 would not.
Circulation Overall Goal B	Provide all citizens in all communities of the City with access to a transportation network, which serves both the City and region, either by personal vehicle or transit. Make a special effort to maximize alternatives to single occupant vehicle use, such as public transit.	Alternative 1 would reduce travel times for commuters using buses and carpools. Alternative 2 would not reduce travel times.
Circulation Overall Goal C	Maintain a desirable quality of life, including good air quality while supporting planned land use and population growth.	Alternative 1 does not adversely affect regional air quality. The project is part of the Regional Transportation Plan. Alternative 2 would not improve air quality.
Central City Transportation Goal C	Develop a balanced transportation system which will encourage the use of public transit, multiple occupancy of the private automobile, and other forms of transportation.	Alternative 1 would give commuters in buses and carpools travel time saving over single occupant vehicles. Alternative would not provide travel time saving to transit users or carpools.
Central City Transportation Goal C, Policy 1, Action A	Consider requiring the use of carpool and vanpool program incentives to and within the Central City.	Alternative 1would provide an incentive to carpool / vanpool users in the form of travel time savings. Alternative 2 does not provide such an incentive.
Transportation Systems Management Goal A	Increase the commute vehicle occupancy rate by fifty percent. According to the 1980 Census, the vehicle occupancy rate for the City of Sacramento was 1.28 persons/vehicle. A goal of increasing vehicle occupancy will incorporate all of the strategies considered in a TSM program, reducing vehicular trips therefore increasing road capacity and allowing continued growth with good air quality.	The Traffic Report prepared for this project anticipates vehicles in bus/carpool lanes would have 2.25 occupants. Bus/carpool lanes would provide more efficient people-moving potential during the peak hour than the No Build alternative.
Transportation Systems Management Goal A, Policy 1	Encourage and support programs that increase vehicle occupancy.	Alternative 1 would provide an incentive to carpool. Alternative 2 does not provide such an incentive.
Transportation Systems Management Goal B	Increase the capacity of the transportation system.	Alternative 1 would increase people-moving capacity on the I-80 corridor by making the most efficient use of existing freeway right of way. Alternative 2 would not increase capacity.
Commerce and Industry Land Use Element, Heavy Commercial / Warehouse Industrial Areas	Assist private interests to maintain and strengthen the competitive advantages of Sacramento's warehousing/distribution industry.	The Commerce and Industry Land Use Element identifies the region's extensive transportation network as giving Sacramento an edge as a warehousing hub. By improving traffic flow on a major interstate freeway, Alternative 1 would help maintain this competitive edge. Alternative 2 would not improve traffic flow.

Number	Goal/Objective/Policy	Consistency
Noise Element, Goal C	Eliminate or minimize the noise impacts of future development on existing land uses in Sacramento.	Noise levels are expected to be reduced at some areas with additional sound wall along I-80. Alternative 2 does not provide sound walls.
Circulation Policy C.2.5	Provide safe and convenient bicycle access to all parts of the community.	Alternative 1 or Alternative 2 will not interfere with the current bicycle lane system.

Sacramento County

Number	Goal/Objective/Policy	Consistency
Circulation Policy CI-4.	Require full and accurate analysis of all alternatives for public transit, including expanded bus service, private carrier operations, road capacity improvements, and rail transit, prior to committing funds for construction. Evaluation shall specifically include full social and economic costs and benefits, as well as net system effects and per-new-rider costs.	Alternative 1 may boost bus ridership by providing bus riders with a time saving advantage over vehicles in the mixed flow lane. Alternative 2 does not provide time savings.
Circulation Policy CI-24.	Sacramento County shall support a program to develop a regional network of High Occupancy Vehicle (HOV) Lanes throughout the urban area that includes provisions to designate existing mixed flow lanes for HOV use. Discussion: HOV lanes have a significant potential to increase the effective carrying capacity of the existing road network by increasing the number of individuals in each vehicle. This benefits air quality, road funding programs (since HOV lanes can be created from existing lanes), and transit operations (since transit vehicles may also use HOV lanes). The traditional CALTRANS policy to never take an existing lane for an HOV lane is outdated. That CALTRANS policy would allow HOV lanes only when they are newly constructed, but new construction is only an inducement to additional automobile travel which will worsen congestion and air quality.	Caltrans traffic modeling shows that converting an existing mixed flow lane to bus/carpool use would be worse for traffic congestion than selecting the No Build alternative.

Table 2.1-2. 1990, 2000, and 2025 (Projected) Population, Housing, and Employment Data

Year	City of Sacramento	County of Sacramento	Placer County	SACOG Region
1990				
Population	369,365	1,041,219	160,949*	1,548,539
Households	144,444	394,530	58,582	580,123
Housing Units	153,362	417,574	75,397	655,312
Employment (SACOG)*	230,651	457,591	53,447	627,263
2000				
Population	407,018	1,218,860	237,145*	1,886,165
Households	154,581	453,602	57,492	700,636
Housing Units	163,957	473,211	98,730	738,000
Employment (SACOG)*	267,400	561,728	114,812	850,147
Jobs / Housing Ratio	1.6	1.2	1.2	1.2
2025				
Population	559,939	1,695,498	415,335	2,814,223
Households	217,048	691,548	104,124	1,147,212
Housing Units	224,952	662,004	175,039	1,106,602
Employment (SACOG)*	454,882	814,220	227,510	1,361,276
Jobs / Housing Ratio	2.0	1.2	1.3	1.2

* Placer County data from SACOG do not include the Lake Tahoe Basin
1990 Data from US Census, except Jobs data and data for SACOG Region and Placer County from SACOG 1999 MTP
Year 2025 data from SACOG's 2004 Projection, except for City of Sacramento, from City's Population Housing and Employment Report 2004
Year 2000 Data from US Census (City of Sacramento) and SACOG 2025 MTP

2.2 GROWTH INDUCEMENT

The Council on Environmental Quality (CEQ) regulations, which implement NEPA, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

Growth inducement applies to the relationship between a proposed transportation project and growth within the project area. The relationship between transportation and growth is usually looked at as either "facilitating planned growth or inducing unplanned growth" (Caltrans 1997). A transportation improvement that is growth inducing must directly cause economic or population increases greater than what is planned by the local agency without the project. If the improvement is the cause of new development and an influx of residents and economic strength in an area, then it may be growth inducing.

Growth accommodating and growth constraining are two important terms that describe growth. Growth accommodating is designing a system to best handle upcoming growth trends. It is important to forecast future trends and determine what changes are needed to insure the highways are safe and efficient for the public's needs. Resulting highway improvements are not the cause of development, but a result of development.

Growth constraining effects occur when necessary highway improvements are not made. It is assumed, in some areas, growth will occur regardless of the highway system. More desirable land (cheaper or better), jobs, or planning by local agencies will bring new residents to the area even if there is considerable congestion on the roadways. If the highways do not expand with the influx of new residents and businesses, the growth level will slow. A project may increase highway capacity, but often will only facilitate smoother passage for growth that has occurred and is planned to come.

According to SACOG, the transportation planning process, as it is indicative of potential growth issues, it is double sided. The 1999 MTP Environmental Impact Report stated the following:

> The growth forecast upon which the MTP is based identifies faster-growing sub areas within the region; the structure of the planning process results in these areas receiving priority for new development, thereby allowing more people and jobs to locate in growth areas. Without these facilities, the lack of access could force development into areas with existing transportation infrastructure, thereby shifting population and employment growth from one area of the region to another. The phenomenon has two possible side effects. The lack of new transportation facilities in the MTP could result in less population and employment growth in areas that would have otherwise received new facilities.
>
> On the other hand, the lack of new transportation facilities in some areas could also result in increased growth in areas with existing transportation infrastructure, growth that may not have been anticipated in the local general planning process. In addition, this increased growth may exacerbate what may already be congested conditions on the existing roads and transit facilities. From that standpoint, the lack of new transportation facilities could be considered growth inducing in some other localities.

When gauging the “growth inducement” potential, the timing and eventual actual construction completion date of a capacity-increasing project must be looked at carefully. By the time many capacity increasing projects actually come on line they often do not accommodate previously projected growth. Completion of the proposed project is not expected to occur until after 2010.

This project seeks to reduce congestion and encourage alternative means of commuting through the addition of a bus/carpool lane to I-80 between the Sacramento City limits and Watt Avenue. The project would provide greater connectivity within the bus/carpool lane system in the Sacramento region, which consists of existing and planned bus/carpool lanes on I-80, I-5, U.S. 50, and SR 99. These improvements are being proposed because of demands put on the region’s transportation system due to the existing rapid rates of growth in the area. The projects are also part of a long-term regional effort to encourage the use of transit and multi-passenger occupied vehicles.

The Sacramento region has been growing rapidly over the past two decades and is expected to continue growing over the next 20 years. SACOG predicts over 900,000 new residents in the six-county region between 2000 and 2025. Sacramento County alone is expected to add more than 500,000 people between 2000 and 2025, a 41 percent increase. At the same time, job growth in Sacramento County is expected to increase by approximately 52 percent (SACOG 2002).

Growth in the region can be attributed to the vibrant economic activity in California’s Central Valley due to affordable land, labor, and housing costs. This growth has been occurring, and will continue to occur, regardless of any highway and road improvements. Accordingly, the development projects previously mentioned are not clustered around any major road or highway improvement projects. Most development has already been approved or is in progress. Approximately 182,000 to 195,000 housing units may be added in Sacramento County over the next 10-15 years and development of over 53,000 acres (SACOG 2002).

The existing development in Sacramento, Roseville, the suburbs, and along the I-80 corridor has resulted in congestion and travel delays along I-80 during peak hours. According to the project traffic report produced for Caltrans by Fehrs & Peers, the current level of service (LOS) of I-80 within the study area at key portions of the route during peak hours is “ F”, where traffic experiences forced or breakdown flow and more vehicles are arriving than are leaving. This congestion would only worsen with development anticipated for the years ahead.

While improvements in LOS along I-80 may increase the corridor’s attractiveness to potential residents and businesses, the degree of capacity increase of the project in response to the rapid rates of planned growth in the region would be nominal at best. As a result, the project would not be growth inducing for several reasons. The bus/carpool lane is designed to provide an alternative to single-occupancy vehicle travel and encourage drivers to carpool, combine vehicle trips, or take transit using the bus/carpool lane, thus removing some cars from the highway. The project would not create excessive new capacity that would induce new, unplanned growth. According to the traffic report, implementation of the preferred alternative would increase the LOS on I-80 to "E" by the year 2014, where traffic operations are still at or near capacity and flow is unstable, and by 2024 the LOS is expected to fall back to F. Further, the design of the project does not create any new access points or alter current ramp locations. Finally, the project would not remove any key restraints to growth—it would not change any land use designations or open any new areas to development.

Similarly, the project would not contribute to any cumulative growth inducement impacts with regard to the existing and planned bus/carpool lanes or the other transportation projects listed in Table 2.18-1. While the addition of transportation infrastructure may induce growth by allowing access to previously inaccessible areas, it does not remove constraints to growth alone.

Community comprehensive plans and planning laws, such as land use and zoning regulations, are most often the primary means of controlling growth and development. County and local governments use these plans and regulations to encourage or discourage growth in their communities as they see appropriate. Any changes to these plans or regulations would involve considerable public review and input. Other constraints to growth can include public utility services such as water, natural gas, electric, and sewage.

2.3 COMMUNITY IMPACTS AND ENVIRONMENTAL JUSTICE

2.3.1 Affected Environment

2.3.1.1 Demographic Characteristics-Population, Households, and Income

There has been a demographic shift within the Study Area; more people are residing away from commercial growth areas. Based on year 2000 Census data, Sacramento County had a total population of over 1.2 million, representing an estimated 17.5 percent increase from the County's 1990 population count of just over 1 million (Table 2.1-2).

Between 1990 and 2000, the total number of households in the City of Sacramento increased by seven percent, from approximately 144,000 to 154,000, while the number of households increased countywide by 15 percent (Table 2.1-2).

The 2000 Census reported median household income of $39,094 in the Study Area, which was lower than the County's ($43,816), but higher than that of the City of Sacramento ($37,049).

The poverty rate in the Study Area for the population aged 18 to 64 was approximately 19.5 percent, compared to 12.3 percent in the County and 20 percent in the City of Sacramento (Tables 2-3-1 and 2-3-2).

At the time of the US Census Bureau's 2004 American Community Survey (ACS), median household income in the County had increased to $49,600, per capita income had increased to $23,600, and the poverty rate had fallen to 12.4 percent. In the City of Sacramento, median household income increased to $39,400, per capita income increased to $20,300, and poverty fell to 17.8 percent.

Year 2000 Census data regarding income and poverty levels in the study area indicate potential clusters of low-income areas. These areas are centered east of Norwood Avenue within the project limits in Census Tracts 67.02, 67.04, 70.01.

2.3.1.2 Ethnicity

Year 2000 Census data indicates that percentages of minorities located in the study area are similar to those located in the City of Sacramento as a whole (Table 2.3-3). However, specific Census Tract data indicates that there is a possible concentration of African American and Asian populations in at least two Tracts (67.02 and 65). The 2000 African American population in Census Tract 67.02 (located just northeast of Northgate Boulevard and I-80) was 11 percentage points higher than the City and 20 percentage points higher than Statewide. The 2000 Asian population in Census Tract 65 (located just east of Norwood Avenue and I-80) showed a 14 percentage point increase over the City and 20 percentage point increase over the State. African Americans in Tract 65 also showed greater percentages than the City and State (approximately 20 and 28 points, respectively). There are other potential concentrations of these minorities in other Census Tracts.

2.3.2 Environmental Consequences

2.3.2.1 Property / Housing Values

Property values for residences in the vicinity of any major expressway are generally negatively affected by highway traffic noise, but positively affected by their proximity to freeway access. Because traffic noise isn't anticipated to increase considerably, property value changes are not likely to occur (see Section 2.13). The addition of sound walls may improve property values for some homes.

2.3.3 Title VI and Environmental Justice

This project has been developed in accordance with the Civil Rights Act of 1964, as amended, and Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” The Executive Order requires Caltrans, as a recipient of federal highway funding, to take the appropriate and necessary steps to identify and address ‘disproportionately high and adverse’ effects of federal projects on minority and low-income populations.

Increased noise levels resulting from the proposed project may affect residents adjacent to the proposed project. However, considerable noise increases are not anticipated, and noise increases would generally affect all residents along the project corridor similarly (see Section 2.13).

No permanent substantial socioeconomic impacts are expected to any population within the study area due to implementation of the proposed project. Temporary construction related impacts are expected due to noise, air, dust and debris. Disruption to the traveling public is expected to be kept to a minimum as travel lanes and ramps (with slight exceptions) are expected to remain open during peak and daylight hours. Temporary impacts from noise during construction can be held to a minimum by strategically staging the construction of new sound walls in more sensitive areas (the Norwood Avenue/Northgate Boulevard I-80 locations).

Any cumulative socioeconomic impacts from related projects to residents and their neighborhoods would be minimized by implementation of a Regional Transportation Management Plan (RTMP). Please see Section 2.18 for more information on this Plan.

Moreover, there is a demand for congestion relief and capacity improvement as expressed by the general public at previous public meetings and by the passage of several transportation funding measures (Sacramento County Measure A and State Proposition 1B).

Because the socioeconomic impacts due to implementation of the proposed project are generally spread evenly throughout the project area and because any temporary impacts during construction are not expected not to reach a “high and adverse” level of concern; no disproportionately high and adverse impacts will occur to minority or low-income populations as a result of the proposed project.

Table 2.3-1. Population by Race Within the Study Area

Census Tract	Population	White	African - American	Native American	Asian	Hispanic	Other
64	5,290	63.6%	12.1%	00.2%	04.6%	18.1%	Not Known
65	5,890	30.1%	34.7%	0.06%	16.6%	16.6%	--------
67.01	7.862	41.4%	21.5%	0.01%	13.5%	23.5%	--------
67.02	7,745	22.8%	26.8%	01.6%	29.0%	18.2%	--------
70.01	3,097	46.0%	05.2%	01.5%	05.1%	42.0%	--------
70.04	6,899	37.8%	20.0%	0.16%	12.4%	29.4%	--------
70.08	1,171	75.1%	02.2%	0.00%	09.8%	11.4%	--------
70.09	1,194	76.3%	06.7%	0.00%	05.0%	11.7%	--------
70.10	2,653	65.6%	10.4%	00.6%	08.0%	15.2%	--------
70.11	5978	45.1%	15.8%	00.7%	13.9%	24.1%	--------
73	662	58.0%	28.7%	0.00%	07.2%	04.6%	--------
74.13	6,332	60.5%	10.5%	01.4%	12.0%	13.5%	--------
Totals	**54,773**	**44.3%**	**19.0%**	**01.2%**	**13.2%**	**22.2%**	--------

Source: Year 2000 US Census

Table 2.3-2. Population by Race Within the City, County, and State

Area	Population	White	African - American	Native American	Asian	Hispanic	Other
City of Sacramento	407,018	48.3%	15.5%	00.9%	16.6%	21.7%	Not Known
Sacramento County	1,223,499	64.0%	10.0%	00.8%	11.0%	16.0%	--------
State of Ca	33,871,648	59.5%	06.7%	00.7%	10.1%	32.4%	--------

Source: Year 2000 US Census

Table 2.3-3. Income and Poverty Status in the Study Area, City, and County

Census Tract	Population 18 to 64 Years Old	1999 Median Household Income	Percentage of 18 to 64 Years Olds With Income Below the Poverty Line
64	2,993	$28,176	23.6%
65	3,150	$28,047	02.1%
67.01	4,461	$36,311	15.4%
67.02	3,716	$25,702	31.9%
70.01	1,707	$21,302	33.3%
70.04	4,230	$43,228	10.6%
70.08	789	$59,750	06.0%
70.09	905	$79,614	01.0%
70.10	2,160	$50,365	05.0%
70.11	3,781	$38,397	11.3%
73	511	$32,266	00.0%
74.13	3,595	$25,966	29.9%
Study Area Totals	**31,998**	**$39,094 (Study Area average)**	**19.5%**
City of Sacramento	251,552	$37,049	17.2%
Sacramento County	757,055	$43,816	12.3%

Source: Year 2000 US Census

2.4 COMMUNITY FACILITIES

2.4.1 Affected Environment

Sacramento County and the City of Sacramento provide public services in the study area. The locations of the pertinent public services and facilities are outlined below.

2.4.1.1 Schools

The Natomas Unified School District, North Sacramento and Del Paso Heights Unified School Districts, Grant Union High School District, and the Rio Linda Unified School District provide public educational services in the project area. Natomas Unified and Grant Union Unified are the primary provider of school services within the study area. There are also several private schools in the area. The following list the schools that serve students within the project area:

Grant Union Unified High School District:
Grant Union High School
Highland High School/ Rio Linda High School
Foothill High School
Norwood Junior High School
Foothill Farms Junior High School
Don Julio Junior High School
Pacific Career Technology High School
Futures Charter School
Grant Community Outreach Center Academy
Nova Community Charter School
Grant Adult Education

Natomas Unified School District
Natomas High School
Inderkum High School
Discovery Continuation High School
Leroy Greene Middle School
American Lake Elementary
Bannon Creek Elementary
Jefferson Elementary
Natomas Park Elementary
Two Rivers Elementary
Natomas Pacific Pathways Prep
Sacramento Valley Technical High School
Westlake Charter School

Del Paso Heights School District
Fairbanks Elementary School
Morey Avenue Early Childhood Development School
Del Paso Heights Elementary School
North Avenue Elementary School
Garden Valley Elementary School

North Sacramento Unified School District
Michael J. Castori Elementary School
Althea B. Smythe Elementary School
Hagginwood Elementary School
Hazel Strauch Elementary School

Rio Linda School District
Oakldale Elementary School

Private Schools
Peace Lutheran Ecec School
Gospel Assembly Christian Academy

2.4.1.2 Parks and Recreation

Sacramento County's Department of Regional Parks, Recreation, and Open Space manages and operates a total of 14,000 acres of land through which it provides countywide parks, open space and recreational facility services. Three existing parks are adjacent or within the within the project limits: Ueda Parkway (Natomas East main Drain Canal), Sacramento Northern Parkway (adjacent to Rio Linda Boulevard), and Del Paso Park. There are also several proposed parks as well: River Otter Park (Barandas Drive) and Ninos Parkway (south of I-80 and west of Northgate Boulevard).

2.4.1.3 Public Health and Safety

Police
Primary public safety services are provided by the Sacramento Police Department (SPD) within the City of Sacramento and by the Sacramento County's Sheriff Department (SCSD) in the unincorporated areas of the study area. The California Highway Patrol also provides public safety services along I-80, but does not have facilities within the study area. The Kinney Substation of the SPD is located at 3550 Marysville Boulevard, south of I-80,

Fire Stations
The Sacramento Fire Department (SFD) provides firefighting services in the study area. SFD serves the City of Sacramento. There are three SFD stations located within the study area: Station #15 (1591 Newborough Drive), Station #20 (2512 Rio Linda Boulevard), and Station #18 (746 North Market Street).

2.4.1.4 Hospitals

There are no major medical hospital facilities located within the study area. Kaiser Hospital on Morse Avenue in Sacramento and Mercy-San Juan Hospital in Citrus Heights serve the project area. Heritage Oaks Mental Hospital on Auburn Boulevard is located near the eastern project limits.

2.4.1.5 Utilities and Public Services

Utilities such as water, storm drains, sanitary sewer systems, gas, and electrical lines traverse the study area.

Water Supply and Distribution
According to Sacramento County's General Plan, 28 public and private water purveyors are responsible for the treatment and distribution of surface and groundwater within the County. The County's water purveyors are dependent water districts, autonomous water districts, cities, and private and mutual water companies. Drinking water is supplied by various agencies, including the City of Sacramento's Department of Utilities (85 percent from the American River and 15 percent from groundwater), Sacramento County Department of Water Resources, Arden Water Service, California American Water Service, and Southern California Water Company.

Flood Control
The Sacramento Area Flood Control Agency (SAFCA) has been charged with the responsibility of providing the Sacramento area with flood protection from the American and Sacramento rivers. Storm water drainage and flood control services in the study area are provided by the Sacramento County Storm Water Utility of the County's Water Resources Department.

Wastewater Collection and Treatment
The Sacramento Regional County Sanitation District (SRCSD) provides sewer and wastewater collection, conveyance, and treatment services in the urbanized areas of the County. Wastewater within the City of Sacramento is routed to the Sacramento Regional County Treatment Plant where it receives primary and secondary treatment. The study area is serviced by the CSD and the City of Sacramento's Department of Utilities.

Solid Waste Disposal
The City of Sacramento and the Sacramento County Department of Waste Management and Recycling Division (WMRD) provide solid waste disposal and recycling services. The City of Sacramento services all residential and a third of the commercial customers, transporting the waste initially to a transfer station and then to the Lockwood Landfill in Sparks, Nevada. Private franchised haulers service the remaining commercial customers in the City of Sacramento and dispose of the waste at various facilities, including the Sacramento County Keifer Landfill, the Yolo County Landfill, L and D Landfill, Florin Perkins Landfill, and private transfer stations. WMRD disposes their collected waste at Keifer Landfill, which is the primary municipal solid waste disposal facility in Sacramento County. Keifer Landfill is also the only landfill facility in the County permitted to accept household waste from the public.

2.4.1.6 Natural Gas and Electricity

Within the project area, Sacramento Municipal Utility District (SMUD) provides electricity and Pacific Gas and Electric Company (PG&E) provides natural gas.

2.4.1.7 Telecommunications

Multiple companies provide telecommunications services in the Sacramento area, including land line and cellular telephony, cable television, and internet connectivity. The primary telecommunications service providers are AT&T, Sprint, Comcast, Surewest, Electric Lightwave, Inc., and Strategic Technologies, Inc.

2.4.2 Environmental Consequences

Alternative 1 is unlikely to have negative impacts on public service, and the public service institutions and facilities identified within the proposed project area. Access to public faculties is expected to improve as circulation and access along I-80 is enhanced. Alternative 2 would not improve circulation and access.

Neither alternative will affect Sacramento Northern Parkway, Del Paso Park, River Otter Park (proposed) or Ninos Parkway (proposed).

Construction work at the bridge that crosses over Ueda Parkway will occur during the day and at night. The bike path will remain open to the public during the hours in which the parkway is open (sunrise to sunset). No construction equipment will be left on the bike path, blocking access. The staging area will be south of the bridge, either in or adjacent to the Caltrans maintenance yard. The project will not negatively affect the park.

2.4.2.1 Emergency Service Providers (Police, Fire, Ambulance)

Overall, access routes for emergency vehicles would not change. The addition of new bus/carpool lanes would improve access to Sacramento neighborhoods. For incidents occurring in the project area and requiring emergency transportation to Kaiser Hospital, for example, Alternative 1 would provide a benefit in terms of freeway access and travel time on the freeway. Access would not improve under Alternative 2.

2.4.3 Construction Impacts

2.4.3.1 Emergency Vehicles

Detours and Ramp Closures

Temporary ramp closures are anticipated for ramp widening. The closure will occur in the late night-early morning (12:00 AM to 4:00 AM). Local streets and adjacent Interchanges will be used as detour routes. Detour plans will be developed in the plans and estimates phase of the project. Since the mainline of I-80 is expected to remain open during daylight and peak hours during construction activities, no impacts are anticipated to circulation and access during the construction stage.

2.4.4 Minimization Measures

- Completion of a Regional Transportation Management Plan (RTMP) is recommended because of the large amount of highway construction currently approved and planned in the Sacramento region over the next four to seven years.

- Development of traffic detour plan.

2.5 TRAFFIC & TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES

This section provides a description of the transportation setting and assesses the potential circulation impacts associated with the implementation of the proposed project. This section also discusses the impact to pedestrian and bicycle facilities. Caltrans completed a Traffic Study in December 2006. A copy is available from the Caltrans District 3 office in Sacramento.

2.5.1 Traffic and Transportation

2.5.1.1 Affected Environment

I-80 is a national east-west route that connects California to Nevada and points east. This interregional route serves as an important corridor for freight trucks. Regionally, I-80 provides an important recreational route for travel to and from the Reno/Lake Tahoe and San Francisco Bay areas. In the Sacramento area, I-80 is a vital commuter route for residents traveling into the city of Sacramento from northeast Sacramento County and the growing southern Placer County cities of Roseville, Rocklin, and Lincoln. Sacramento-area commuters traveling to and from the San Francisco Bay Area also use I-80.

In the project area, I-80 is located either adjacent to or wholly within the Sacramento City limits. The study area runs from the Sacramento River on the west to Longview Drive on the east. There are eight interchanges within the project: West El Camino Avenue, I-5, Truxel Road, Northgate Boulevard, Norwood Avenue, Raley Boulevard, Winters Street, and Longview Drive. The freeway has three grade-separated crossings of one former and two existing railroad rights-of-way: Natomas East Main Drain Canal Overhead, Rio Linda Boulevard, and Roseville Road (Del Paso Park Separation Overhead).

Transit Operations

The Sacramento Regional Transit District (RT) is the primary provider of public transportation within the project area. RT currently operates 97 bus routes and 37 miles of light-rail over a 418 square-mile service area throughout the Sacramento region (SRTD 2006). RT operates two light rail lines: Watt Avenue to downtown to Meadowview Road (Blue Line) and downtown to the City of Folsom (Gold Line). The Blue Line's last stop is at I-80/Watt Avenue.

Bus stops are located on surface streets adjacent to I-80 throughout the project area. However, no RT bus routes currently travel I-80 in the study area.

RT's 20-Year Vision Plan includes expanding light rail from I-80/Watt Avenue to the City of Roseville.

Paratransit is a private nonprofit corporation that provides on-demand transportation services to individuals with disabilities, the elderly, and related agencies throughout the Sacramento County area.

Placer County Transit operates the Placer Commuter Express and buses from Auburn to the light rail station at Watt Avenue. Placer Commuter Express currently runs two morning commuter buses to and two afternoon commuter buses from downtown Sacramento every workday. Auburn to light rail buses run 15 times per day, both to and from the Watt Avenue Station.

Greyhound and Amtrak provide interregional bus and train service, respectively. Greyhound operates a bus station in downtown Sacramento at 8th and L Streets. The Amtrak Train Station is also located in downtown Sacramento, on 4th and I Streets.

Existing Traffic Conditions

I-80 is a national east-west route that connects California to Nevada and points east. Within the project, I-80 area is a six lane divided freeway with 12-foot lanes and sections of auxiliary lanes between interchanges. The freeway is divided by a continuous metal beam or concrete median barrier. Inside and outside shoulders are 8 - 10 feet wide.

Traffic congestion is classified as recurrent or non-recurrent. Recurrent congestion is repeated at the same location and same time of day. Recurrent congestion is defined as a condition where vehicle speeds are reduced to 35 mph or less and lasting for 15 minutes or longer during an incident-free period. Non-Recurrent congestion is non-repeating and caused by incidents such as traffic accidents, weather and road construction.

Table 1-1 shows the volumes for the heavier peak direction for the 4-hour peak AM and PM periods for 2004 and 2034. The increase in the 4-hour future peak period demand volumes from 2004 to 2034 in both directions ranges from 46% to 120%. Capacity for this segment of I-80 is between 1,800 – 2,000 vehicles per hour per lane.

I-80 Eastbound Traffic Conditions (PM)

The 2006 Traffic Study (Fehr & Peers 2006) summarized existing congestion along this portion of I-80. In the eastbound direction during the PM peak hour, the main bottleneck is at the Northgate Boulevard interchange, which causes queues that extend to I-5. The congestion lasts from 3:00 to 6:15 PM. However, downstream bottlenecks also exist near the Norwood Avenue on-ramp and the Winters Street off-ramp, which cause minor congestion.

During the evening peak period, recurrent traffic congestion in this segment of I-80 in the eastbound direction occurs in and near the I-5/I-80 separation and east of Winters Street on I-80. In 2004, this segment experienced delays of 97,500 vehicle-hours per year. Congestion monitoring showed the average speed during the peak period to be 28.7 mph. The normal travel time at 65 mph is under 4 minutes, and increases to 9 minutes (28.7 mph average speed) when congested. The congestion is due to the considerable volume of traffic weaving and merging between eastbound I-80 from the northbound I-5 connector and Truxel Avenue. Additional congestion is also caused by a combination of high traffic volumes ascending the grade on the Natomas East Main Canal Bridge with a large number of vehicles merging from the Northgate Boulevard interchange.

Level of service (LOS) is used to express the traffic flow conditions of a road segment in relation to the capacity of the roadway. LOS generally describes traffic conditions in terms of speed and travel time, volume and capacity, traffic interruptions, and safety. LOS uses the letters “A” through “F” to describe traffic flow, with “A” being free flow and “F” being gridlock (see Figure 1-2). During the PM peak period, the freeway operates with level of service (LOS) C conditions the Yolo/Sacramento county line to I-5 and with LOS D conditions Winters Street to Watt Avenue, with LOS F in between.

Increasing growth along the I-80 corridor and in areas east of Sacramento will put more pressure on the mainline capacity by infusing greater volumes of traffic into already congested areas. Increased traffic volumes will also reduce traffic speeds to congestion levels (35 mph or less) in other parts of this segment.

I-80 Westbound Traffic Conditions (AM)

Between the Watt Avenue interchange and the Sacramento River, the westbound direction experiences recurrent traffic congestion during the morning peak period. Traffic delays have typically occurred within the limits west of Watt Avenue and Northgate Boulevard. In 2004, the average speed during the peak period was 31.5 mph. Without major highway improvements in this area, anticipated future growth is expected to increase the limits of westbound congestion further west beyond Norwood Avenue towards the I-80/I-5 separation.

In the westbound direction during the AM peak period, the bottlenecks between Raley Boulevard and Northgate Boulevard cause queues that extend back to the Longview Drive interchange. The end of the existing bus/carpool lane and the associated lane drop just west of the Longview Drive off-ramp

also create congested conditions that extend to the Watt Avenue on-ramp. The congestion conditions (speeds below 35 mph) last from 6:45 to 8:45 AM. These conditions are reflected in the peak hour analysis results, which are LOS F from the Watt Avenue Northgate Boulevard. From Northgate Boulevard to the Yolo/Sacramento county line, all locations operate at LOS D or better.

Current traffic conditions on the I-80 corridor between the Watt Avenue interchange and the Sacramento River during the evening peak period do not yet warrant congestion monitoring in the westbound direction.

Interstate 80 also serves as a principal recreational route between the Sacramento/Bay Area and the North Tahoe area. Consequently, westbound traffic volumes on Sunday afternoons and evenings are typically heavier than during other "off-peak" periods.

Accidents

Caltrans' Office of Traffic Operations produced a Traffic Accident Surveillance and Analysis System (TASAS) accident data for the three-year period July 1, 2002 through June 30, 2005. During this period, I-80 within the project limits experienced 760 accidents, 2 involved a fatality. Of the total number of accidents, 330 (43%) were rear end type, 214 (28%) hit object, 148 (20%) sideswipe, and 66 (9%) classified as other (head-on, broadside, overturn, etc.).

The AM and PM four-hour peak periods (one-third of the day) accounted for majority of the accidents (57 percent). More accidents occurred during the PM peak period than the AM peak period (37% vs. 20%), which is consistent with the higher level of congestion during the PM peak period. Rear-end collisions, which are associated with congested conditions, were the most frequent type of accident, accounting for 43 percent of all accidents.

The actual accident rate for I-80 between the Yolo – Sacramento County Line and Longview Drive was lower than the average accident rate for similar freeways.

Parking

Sacramento Regional Transit maintains parking areas for light rail riders between Longview Drive and Watt Avenue, which are located in the median of I-80. A total of 1,578 parking spaces are available at the three light rail stations park and ride lots: Watt/I-80 (243 spaces), Watt/I-80 West (248 spaces), and Roseville Road (1,087).

2.5.1.2 Environmental Consequences

Transit Operations

Transit ridership is anticipated to increase as a result of the project. Based on the traffic study and data from previously completed bus/carpool lane projects, the proposed project could greatly improve travel time for commuter buses. Implementation of bus/carpool lanes on I-80 would allow buses to bypass congested mixed flow traffic lanes, resulting in improved travel times during peak commuting periods. While buses would benefit from any extension of bus/carpool lanes, the decreased travel times may not provide incentive to add additional routes on I-80 in the short-term. As growth in the region continues, however, the need for additional public transit services will also continue to increase.

Traffic

The purpose of the proposed project is to reduce peak-period traffic congestion. This can be accomplished in two ways: either increasing roadway capacity or reducing traffic demand volume. Capacity can be increased through the addition of through lanes along the corridor or the addition of auxiliary lanes at bottleneck locations. Traffic demand volume can be reduced through encouraging ridesharing and transit use with bus/carpool lanes.

To analyze traffic operations, Fehr & Peers used the VISSIM microsimulation software to develop models of the eastbound direction for the PM peak period and the westbound direction for the AM peak period. Existing conditions models were constructed from geometric data (aerial photographs, field observations, as-built plans), traffic control data (ramp meter signal timing plans), and traffic flow data (traffic counts, travel time measurements, field observations, etc.). The existing conditions models were calibrated and validated to observed traffic volumes, travel time, and queues.

TYLIN International prepared the travel demand forecasts for the project alternatives under 2014, 2024, and 2034 conditions. TYLIN prepared traffic forecasts by using the Sacramento Regional Travel Demand Model (SACMET). SACMET models were developed for the base year (2005) and each of the forecast years (2010, 2020, and 2030). To determine the traffic forecasts for the analysis years of 2014, 2024, and 2034, TYLIN used linear interpolation or extrapolation. For the No Project alternative (Alternative 2), the model growth between the base year and future year was added to the existing count. The forecasts for Alternative 1 were developed from the Alternative 2 forecasts.

The traffic report analyzed five project alternatives: bus/carpool lanes, mixed-flow, bus/carpool lanes with bus/carpool connectors on I-5, bus/carpool lanes with additional improvements to EB I-80, and the no-build. The results for the bus/carpool lanes and no-build alternatives are included in this report.

- Alternative 1: Add bus/carpool lanes – Two contiguous, peak-period bus/carpool lanes would be added in the median (one in each direction) and auxiliary lanes would be constructed between West El Camino Avenue and I-5.

- Alternative 2 (No Build) – The existing freeway lane configuration would be maintained although other separate projects would be constructed (including the auxiliary lanes between Northgate Boulevard and Norwood Avenue).

The following separate transportation projects are proposed for construction under all alternatives during all future years.

- I-5/I-80 Interchange – This project would enlarge the radius of two of the three existing loop ramps, replace the eastbound to northbound loop ramp with a flyover connection, and add direct bus/carpool connectors.
- I-80/West El Camino Avenue Interchange – This project would widen the overcrossing, widen the ramps, and install signals at the ramp terminal intersections.
- Ramp Meter System – This future project would install ramp meters and associated bus/carpool bypass lanes on the on-ramps that do not currently have them.

Table 2.5-1 compares the network statistics under existing and 2034 conditions for Alternative 1 and Alternative 2. By 2034, in the eastbound PM direction, the number of persons served through the corridor may increase as much as 49 percent over existing conditions. The difference in the number of persons served and average speed between Alternative 1 and Alternative 2 would be considerable. For example, according to the traffic study, Alternative 1 would serve 14% more people, provide 13% higher average speeds for all vehicles and 31% higher average speeds for carpools than Alternative 2.

Under existing conditions, the main bottleneck in the eastbound direction is at the grade between Northgate Boulevard and Norwood Avenue. A minor bottleneck also exists downstream at Winters Street. The proposed auxiliary lanes between Northgate Boulevard and Norwood Avenue would increase capacity, but the bottleneck would move downstream to the grade between Norwood Avenue and Raley Boulevard. Under 2034 Alternative 2 conditions, the lane drop at I-5 would be a considerable bottleneck causing queues to extend past the Sacramento River. Alternative 1 would also increase capacity over existing conditions, but the I-5, Norwood Avenue, and Winters Street bottlenecks would remain.

The traffic analysis results for the westbound direction shows that Alternative 1 performed better than Alternative 2. According to the traffic study, Alternative 1 would serve 10% more people, provide 10% higher average speeds for all vehicles and 11% higher average speeds for carpools than Alternative 2.

Under existing conditions, two bottlenecks exist in the WB direction – the lane drop at Longview Drive and the grade between Raley Boulevard and Norwood Avenue. These bottlenecks would remain under 2034 Alternative 2 conditions. Alternative 1 would increase capacity at these locations although the bottlenecks would remain. Additionally, two new bottlenecks would form. The first would be at the Sacramento River Bridge since the peak hour demand would be greater than the three-lane capacity. The second would form when the queue from the Sacramento River Bridge extends into the weaving section between Truxel Road and I-5. This disruption added to the high on-ramp volume from southbound Truxel Road reduces the freeway capacity.

Table 2.5-2 shows the peak bus/carpool lane volume served for Alternative 1 under each analysis year. The Caltrans bus/carpool lane guidelines recommend a threshold of 800 vehicles per hour (vph) in the bus/carpool lane during the opening year. Under the bus/carpool lane alternative, both the eastbound and westbound directions would have less than 800 vph in the 2014 construction year; however, the peak volume is within 50 vph of the threshold. By 2024, both directions would have peak bus/carpool lane volumes greater than 800 vph for at least one interchange-to-interchange freeway section.

Under the design-year 2034, Alternative 2 would not reduce peak-period congestion since no additional capacity would be provided. Bottlenecks in the study area would create long delays and could result in a number of different responses by future travelers. The delays are severe enough that some people may decide not to travel while others that choose to travel could divert to other routes, other times of day, and/or other travel modes.

Under current conditions, the accident rate in the study area is lower than the statewide average for similar facilities. A review of accident rates before and after bus/carpool lanes were constructed on US-50 and I-80 in the Sacramento area showed no notable increase in the number of accidents related to the bus/carpool lane, such as rear-end or sideswipe crashes in the bus/carpool lane (Fehr & Peers, 2006a). As a result, the alternative with the most congestion would be likely to have the higher accident rates.

<u>Additional Considerations</u>
Although Alternative 1 would provide additional capacity, the following bottlenecks would exist under design-year conditions both within and adjacent to the study area:

- Sacramento River Bridge – In both directions, the three-lane freeway segment would not have sufficient capacity to serve the peak-hour demand volumes.
- I-5 to Truxel Road – In the eastbound direction, the demand volumes from eastbound I-80 and the I-5 onramps would exceed the capacity of the weaving section. In the westbound direction, the high forecasted volume for the southbound Truxel Road on-ramp and queues from the downstream bottleneck at the Sacramento River Bridge would lead to congestion in this weaving section.
- Norwood Avenue to Raley Boulevard – With the auxiliary lanes provided between Northgate Boulevard and Norwood Avenue, the eastbound bottleneck would shift to this location. In the westbound direction, the existing bottleneck at this location would also occur under future traffic volumes.
- Winters Street to Longview Drive – Although auxiliary lanes are provided, the weaving length between these interchanges is relatively short. Combined with the grade over Roseville Road and the Union Pacific railroad tracks, the forecasted traffic volumes would exceed the capacity.

- Longview Drive to Watt Avenue – In the westbound direction, the high forecasted volume for the southbound Watt Avenue on-ramp would lead to congestion in this weaving section.

Given the above bottlenecks, further improvements for the I-80 corridor should be considered but only within the context of better managing the freeway system.

Table 2.5-3 is a summary of time saving for existing bus/carpool lanes along I-80 (Longview Drive to the Placer/Sacramento County line), US 50 (El Dorado Hills Boulevard to Sunrise Boulevard), and State Route 99 (E Street to Elk Grove Boulevard) in Sacramento County. As shown on the table, commuters using the bus/carpool lanes experienced time saving on each route in the AM and PM peak direction, with average time saving of 10 minutes.

Parking

Although Alternative 1 would not require the acquisition of properties that are used for parking, two parking spaces would be lost from the construction of the bus/carpool lane at the Longview Drive ramp and Longview Drive Light Rail Station. New columns placed to deck the freeway's median would eliminate the two parking spaces. These parking spaces are on Caltrans property and are not currently under lease. Caltrans has the legal right to determine this property's usage as needed.

It is anticipated that a portion of other parking spaces near the Light Rail Station would be used for temporary storing construction equipment and as a staging area for construction crews during project construction. Construction staging would likely slightly disrupt parking or other activities in the areas near the Longview Drive Light Rail Station. Advance notification and signing will help minimize the amount of impact from construction related activities. This would not be a long-term impact on parking in the area.

Alternative 2 would not affect parking facilities.

2.5.2 Pedestrian and Bicycle Facilities

2.5.2.1 Affected Environment

Pedestrian Over crossing Structures

Several pedestrian/vehicle overcrossings are located within the project limits, providing connections to neighborhood locations on the freeway's north and south sides: at San Juan Road, Rio Linda Boulevard, North Avenue, and Pinell Street.

The City of Sacramento is proposing a pedestrian overcrossing between West El Camino Avenue and I-5. The construction date is unknown.

Bicycle Routes

The City of Sacramento is currently updating their bikeway master plan. The City proposes to include Class II bicycle routes that cross under or over I-80 on West El Camino Avenue, San Juan Road, Truxel Road, Northgate Boulevard, Norwood Avenue, Raley Boulevard, Pinell Street, and Roseville Road. Within the City of Sacramento a Class II bicycle route currently crosses under I-80 just south of Truxel Road. An off-street bike trail (Class I) is located within the Ueda Parkway, which crosses under I-80 east of Northgate Boulevard, and along an abandoned railroad right of way east of Rio Linda Boulevard. Sacramento County adopted the 2010 Sacramento City/County Bikeway Master Plan in 1993.

2.5.2.2 Environmental Consequences

Alternative 1 will not affect any of the existing pedestrian overcrossings. If necessary, Caltrans will work with the City of Sacramento regarding the proposed pedestrian overcrossing between West El Camino Avenue and I-5. The project will not affect the City's proposed pedestrian overcrossing.

Alternative 1 will not permanently affect any bicycle routes.

Alternative 2 would not affect pedestrian or bicycle facilities.

2.5.2.3 Construction Impacts

The bike path along the Ueda Parkway will remain open to the public during the hours in which the parkway is open (sunrise to sunset). No construction equipment will be left on the bike path during open hours. The staging area will be south of the bridge, either in or adjacent to the Caltrans maintenance yard. Impacts to the bike path are not anticipated.

2.5.2.4 Minimization Measures

- Bike routes and bike paths will remain open during construction.

Table 2.5-1. Peak-Period Network Summary for Existing and 2034 Conditions

Direction & Peak Period	Alternative	Vehicles Served	Persons Served[1]	Average Speed (All)	Average Speed (Bus/carpool)	Travel Delay[2]
Eastbound PM Peak	Existing (2005)	43,800	55,500	36.1	36.9	2,690
	Alternative 1	60,000	76,800	19.7	25.7	13,100
	Alternative 2	53,000	65,900	17.1	17.8	13,400
Westbound AM Peak	Existing (2005)	39,500	48,600	45.1	46.1	1,440
	Alternative 1	56,600	73,700	32.2	43.4	12,300
	Alternative 2	55,500	66,300	28.9	38.5	7,100

1. Bus/carpools and non-bus/carpools are assumed to have vehicle occupancies of 2.25 and 1.1 persons per vehicle, respectively.
2. Delay, measured in vehicle-hours, is the additional travel time when traveling less than the desired free-flow speed.
Source: Fehr & Peers, 2006

Table 2.5-2 Highest Peak-Hour Bus/Carpool Lane Volume Served

Direction & Peak Period	2014	2024	2034
Eastbound PM Peak	785	975	1,167
Westbound AM Peak	691	807	1,683

Source: Fehr & Peers, 2006

Table 2.5-3: Summary of Time Savings on Existing Bus/Carpool Routes in Sacramento County

Year	Length of Bus/Carpool Section (Miles)	Length of Congested Section (Miles)	Actual Travel Time (Min:Sec) (A)	Bus/Carpool Travel Time (Min:Sec) (B)	Time Saved Using Bus/Carpool Lane (Min:Sec) (A-B)
I-80 Westbound (Sacramento-Placer County Line to Watt Avenue) – AM					
*2004	9.6	9.6	19:00	8:55	10:05
2005	9.6	9.6	20:30	8:51	11:39
** Opened 7/04*					
I-80 Eastbound (Watt Avenue to Sacramento-Placer County Line) - PM					
2003	5.6	0.0	5:15	5:10	0:05
2004	9.6	1.7	7:30	6:15	1:15
2005	9.6	1.7	8:20	7:30	0:50
SR-99 Northbound (Elk Grove to Downtown Sacramento) – AM					
2003	14.3	8.2	20:30	14:40	5:50
2004	14.3	9.7	29:00	18:00	11:00
2005	14.3	9.8	28:00	17:10	10:50
SR-99 Southbound (Downtown Sacramento to Elk Grove) – PM					
2003	14.3	6.4	21:40	15:00	6:40
2004	14.3	6.3	31:45	18:31	13:15
2005	14.3	10.0	34:06	17:10	16:35
US-50 Westbound (El Dorado Hills to Sunrise Boulevard) – AM					
2003	11.5	6.5	18:50	11:20	7:30
2004	11.5	6.0	22:00	11:24	10:36
2005	11.5	6.0	22:45	11:35	11:10
US-50 Eastbound (Sunrise Boulevard to El Dorado Hills) – PM					
2003	11.5	4.7	16:30	9:40	6:50
2004	11.5	4.8	21:30	11:30	10:00
2005	11.5	4.8	17:50	10:36	7:13

Source: Caltrans District 3 Office of Traffic Operations.

2.6 VISUAL / AESTHETICS

2.6.1 Regulatory Setting

NEPA establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. FHWA, in its implementation of NEPA [23 U.S.C. 109(h)], directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

CEQA establishes that it is the policy of the State of California to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities." [CA Public Resources Code Section 21001(b)].

2.6.2 Affected Environment

This section presents the results of a Visual Impact Assessment (VIA) completed in September 2006. A copy of the VIA is available from the Caltrans District 3 office in Sacramento.

The assessment of visual impacts is based on several factors; existing visual qualities, viewer exposure, and the level of viewer concern to change created by improvements within the project limits. While affected viewers may subjectively evaluate change, the analysis attempts to provide an objective evaluation of the proposed visual changes.

Travelers include commuters, truck drivers, and others who drive to recreational areas, shopping centers and residential communities. These individuals view the project corridor from the highway. Their trips can consist of one or more links between interchanges or the entire span of the corridor.

Neighbors include observers from adjacent land uses such as shopping centers, office buildings, fast food restaurants, or residential areas. Their views vary greatly by location, elevation relative to the highway, and density of existing vegetation.

The project lies on the valley floor in northern Sacramento County. Land uses adjacent to I-80 include urban residential, commercial, office complex, industrial, open space, and agricultural fields. There are also various on/off ramps, interchanges, crossing support structures, and frontage roads adjacent to the highway, which are a part of the visual environment. Throughout most of the project limits the traveled way is at grade with the surrounding neighborhoods. Sound walls are located along I-80 primarily west of Truxel Road. Landscaping varies from mowed annual grasses and broadleaf vegetation to full planted and irrigated roadsides.

2.6.3 Environmental Consequences

Under Alternative 1, there are several project components that may create visual impacts. These impacts will be reduced by various avoidance and minimization measures (see Section 2.6.5).

<u>Grading</u>
Grade changes will occur at several locations, primarily to accommodate bridge widening. There will be no negative impact after landscaping and slope paving.

<u>Median Lanes & Barriers</u>
Existing mowed median will become the new asphalt bus/carpool lanes. Metal beam guard railing (30" high) will be replaced with 43,500 linear feet of concrete safety barriers (36" high). The mowed median will be covered with asphalt for new traveled way. Glare will increase with the additional concrete and asphalt. The concrete safety barriers should have an aesthetic treatment to compensate for the

additional height and visual impact. Integral brown color should be added to reduce glare and visual boredom. No negative impacts from median lanes and barriers are anticipated.

Auxiliary Lanes
Highway users will experience one additional lane of traffic in each direction on the outside of the existing traveled way in two locations: between West El Camino Avenue and I-5 and between Northgate Boulevard and Norwood Avenue. These additional lanes will result in more pavement/shoulder and the removal of trees and shrubs. All affected trees, vegetation, and irrigation will be replaced. Additional new trees, shrubs, and irrigation may be installed between the property line and the new auxiliary lanes as compensation for the increased hard surface. Installing new landscaping reduces the potential negative visual impact of additional asphalt within the right of way, which can minimize glare, reduce sound and provide a more aesthetically pleasing environment.

Sound walls
New sound walls are proposed at various locations and heights on both sides of I-80 (see Figure 2.1-1h to 1l). Walls would block views of the highway from at-grade residential and commercial locations. Windows in two story homes are above the 8' sound walls. Sound walls covered in graffiti can distract the highway traveler.

The proposed sound walls will have an aesthetic treatment to compensate for the additional height and visual impact. Vines will be planted to reduce potential graffiti and maintenance in time. Vines will not be planted in areas so as to obscure aesthetic treatments. Sound wall graffiti has been reduced from the combination of aesthetic treatment and vines. The aesthetic treatment and vines will reduce the impact to visual resources.

Tree and Vegetation Removal
Alternative 1 will remove existing trees and shrubs. All removed trees should be replaced with a minimum of 15-gallon size container trees. All removed shrubs should be replaced with a minimum of 5-gallon size container plants. Each oak tree removed should be replaced with three 5-gallon container size oaks trees. All new trees and shrubs are to have permanent irrigation. There will be no negative visual impact after replacement of removed trees and vegetation.

Alternative 2 does not change the visual landscape.

2.6.4 Construction Impacts

The "construction process" is a temporary visual impact. The elements involved in the temporary visual impacts are normal to highway travelers. These elements include heavy equipment, traffic management equipment, and construction delays. These "visual impacts" are temporary changes to what the normal visual environment offers.

2.6.5 Avoidance, Minimization Measures

- All grade changes should be landscaped/irrigated with drought tolerant trees, shrubs, and groundcovers. Landscaping provides permanent pollution prevention and Best Management Practice in storm water management. In addition, slopes under the bridge should be paved full length to minimize maintenance and potential for erosion.
- New concrete median barriers should have an aesthetic treatment to compensate for the additional height and visual impact.
- Install new landscaping along proposed auxiliary lanes.
- Include aesthetic treatments and plant vines in front of new sound walls to reduce potential graffiti and sound wall maintenance.
- Replant removed trees and shrubs.
- Replace removed irrigation, and install new irrigation where needed.

Best Management Practices (BMPs)

1. Where possible, cut and fill slopes will be contour graded and rounded so as to reflect the contours of adjacent, undisturbed topography to the extent feasible. To the extent feasible, grading operations will not result in angular landforms.

2. During clearing and grubbing, stockpiling of existing surface soils and duff from the construction site will occur as part of the excavation work. All new cut/fill slopes with stockpiled material to enhance re-vegetation efforts will be resurfaced.

3. When re-vegetation is being required, plant low maintenance plants, such as drought-tolerant groundcover or native trees with mulch.

4. Erosion Control will be applied to all disturbed areas.

5. Projects disturbing more than 2.4 acres of land require a National Pollution Discharge Elimination System (NPDES) permit. Disturbance includes all newly paved land surfaces. This permit regulates all storm water discharges associated with construction activities. Compliance with the Storm Water Management Plan and Storm Water Quality Standards is also required. These regulations protect fish and wildlife as well as set standards for re-vegetation and erosion control.

2.7 CULTURAL RESOURCES

2.7.1 Regulatory Setting

"Cultural resources" as used in this document refers to all historical and archaeological resources, regardless of importance. The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) among the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA takes the place of the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans.

2.7.2 Affected Environment

Caltrans prepared a Historic Property Survey Report (HPSR) in March 2007 in accordance with the PA and CEQA. The HPSR is bound separately and available from Caltrans.

A Finding of Effect (FOE) was complete in January 2007. Caltrans determined that Alternative 1 would not have an adverse effect on historic properties. The FOE included two historic properties: Reclamation District 1000 (RD 1000) and the Union Pacific Railroad Transcontinental Railroad; CA-SAC-478H/P34-505). Caltrans expects SHPO concurrence on the FOE by May 2007.

Various sources of information were reviewed for the cultural resource analysis, including:

- National Register of Historic Places
- California Register of Historical Resources
- California Inventory of Historic Resources
- California Historical Landmarks
- California Points of Historical Interest
- State Historic Resources Commission
- Caltrans Historic Highway Bridge Inventory
- Archaeological Site Records (North Central Information Center, California State University, Sacramento)
- Other sources consulted:
    - Sacramento Preservation Roundtable, California State Library, Caltrans cultural resources library

Public participation and Native American consultation are an essential element of the Section 106 compliance process. The following agencies, tribes, groups, and individuals were contacted for this project:

Agencies:

- California Office of Historic Preservation
- Native American Heritage Commission
- Sacramento Historical Society

Tribes:

- Shingle Springs Band of Miwok Indians

- United Auburn Indian Community of the Auburn Rancheria

Individuals:

- Rose Enos
- Jeff Murray, Cultural Resources Manager, Shingle Springs Band of Miwok Indians
- Nicholas Fonseca, Chairperson, Shingle Springs Band of Miwok Indians
- Jessica Tavares, Chairperson, United Auburn Indian Community of the Auburn Rancheria

In addition, one public open house/scoping meeting occurred September 27, 2006, at the Robertson Community Center, Sacramento, CA. Please see Chapter 4 for more information on this meeting.

On October 19, 2006, a project Area of Potential Effects (APE) was established in consultation with Richard Olson, Caltrans professionally qualified staff (PQS) in Archaeology, Andrew Hope, Caltrans PQS in Architectural History, and Carlos Portillo, Project Manager. The APE maps are included in the Historic Property Survey Report. The archaeological APE was established as the limits of the proposed construction and includes all areas of direct impact, including existing right of way, temporary construction and drainage easements, and all proposed staging areas. The built environment APE for the proposed project comprises the area of direct impact and adjacent parcels that might be indirectly affected by project-related activities (such as sound walls).

The horizontal construction extent of the APE includes ground disturbance from the existing edge of pavement to the extent of construction activities, varying throughout the project limits from approximately 10 feet to 60 feet. Locations of proposed sound walls will require construction near the existing State right of way, as well as minor ground disturbing activities on adjacent properties within temporary construction easements.

The vertical construction extent of the APE included proposed vertical cuts of approximately 14 feet below existing grade to accommodate wing walls near the abutments at the west end of the Del Paso Park Separation bridge. Maximum proposed embankment fills would be approximately 5 feet above existing ground level. The embankment fill is necessary for the inside widening near the Regional Transit light rail station east of the Del Paso Park Separation bridge. Average vertical drilling depth is approximately 150 feet at the four structures (NEMDC, Rio Linda Boulevard, Winters Street, and Del Paso Park overhead).

Research included consultation on April 3, 2006 of the records maintained at the North Central Information Center (NCIC), California State University, Sacramento, of the California Historical Resource Information System (CHRIS), a function of the California State Office of Historic Preservation. The standard records/literature search includes published material and historic maps kept on file at the NCIC, and computerized lists of state historic resources maintained by CHRIS.

The NCIC record search revealed that twenty-eight cultural resource studies had been conducted within a ¼ mile radius to the project APE. These studies resulted in the identification of four historical sites, and one prehistoric archaeological site. Three previously identified archaeological sites were located within the proposed project APE, CA-SAC-517H (Debris/trash scatter on East Levee road of the Natomas East Main Drainage), CA-SAC-463H (east levee of the Natomas Main Drainage Canal), and CA-SAC-478H. CA-SAC-478 H is segment 1 of the First Transcontinental Railroad and is listed on the California Inventory of Historic Resources (1976) as California Historical Landmark No. 780-8. The railroad passes through the project APE at the east end of the project under the Del Paso Park Bridge Overhead. One previously identified prehistoric site was located on the west end and outside the project limits/APE. CA-SAC-164/Sandy Cove (P-34-191) consists of a buried shell midden with abundant and diverse cultural materials, faunal and human remains on an elevated floodplain adjacent to the Sacramento River. CA-SAC-164 has been nominated to the National Register and California Register of Historic Places in 2002, but currently remains unevaluated. In addition, there is one

previously evaluated historic property that is located partially within the project APE; The Reclamation District 1000 (RD 1000), organized in 1911, is a historic landscape consisting of 55,000 acres of land, as well as a network of canals, levees, and local roads. It was previously evaluated by the USACE and determined eligible for National Register listing as a rural historic landscape in 1994, under Criterion A, with a period of importance from 1911-1939. The southern portion of this historic landscape has continued to suffer a loss of integrity since 1994 due to residential and commercial construction in the Natomas area.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and Importance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact [*insert appropriate project proponent contact, e.g., District Environmental Branch*] so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.7.3 Environmental Consequences

The portion of I-80 that passes through RD 1000 is not a contributing feature of the historic landscape. However, two features of RD 1000 cross I-80 within the project limits: the Natomas Main Drainage Canal and the Natomas East Main Drainage Canal. A concrete culvert (bridge 24-0332) carries the Main Drainage Canal under I-80, while a pair of bridges (24-0218L and R) carry I-80 over the East Main Drainage Canal. The culvert and bridges were constructed in 1970 and are not contributing features of RD 1000.

The Historic Property Survey for the project resulted in the identification of nine historic-era architectural properties, all of which are residences constructed between 1940 and 1952. None of these properties have been determined to be eligible for listing in the National Register of Historic Places, and none are considered historical resources for the purpose of compliance with CEQA. In addition, a segment of the Union Pacific Railroad (Transcontinental Railroad; CA-SAC-478H (P-34-505) could be a contributor to a larger railroad property that has not been evaluated. For the purpose of this project the railroad segment is considered eligible for the National Register under Criterion A. As California Historical Landmark 780-8, the railroad segment is also included in the California Register of Historical Resources (1976) and is a historic property for the purpose of compliance with CEQA.

No newly discovered archaeological resources were identified during the course of the study

A Finding of Effect (FOE) was complete in January 2007. Caltrans determined that Alternative 1 would not have an adverse effect on historic properties. The FOE included two historic properties: Reclamation District 1000 (RD 1000) and the Union Pacific Railroad Transcontinental Railroad; CA-SAC-478H/P34-505). Caltrans expects SHPO concurrence on the FOE by May 2007.

No other potential historic districts, historic landscapes, archaeological, or Native American resources were identified within or immediately adjacent to the project APE.

Alternative 2 would not affect cultural resources.

PHYSICAL ENVIRONMENT

2.8 FLOODPLAIN

2.8.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The 100-year floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the 100-year floodplain.”

2.8.2 Affected Environment

Caltrans completed a Floodplain Hydraulic Study in September 2006 (bound separately). A copy of this study is available from the Caltrans District 3 office in Sacramento.

The ten-mile long project, located within Sacramento County and on generally flat terrain, is identified on three California USGS 7.5-minute quadrangle maps: Taylor Monument, Sacramento West, and Rio Linda. The Federal Emergency Management Agency (FEMA) refers to areas exposed to flooding as specific zones. The 100-year flood zones identified within this project are of three types; Zone AO, AE, and A. Zone AO indicates areas with average flooding depths determined to be 1 - 3 feet. Zone AE indicates areas where the base flood elevation has been determined, and Zone A indicates areas where flooding occurs but no base flood elevations have been determined.

Highway encroachments are present at four locations. The encroachments, the Flood Zone, and the FEMA map panel numbers are as follows,

FIRM PANEL NUMBER	PANEL DATE	ENCROACHMENT PM LIMITS	FLOODPLAIN SOURCE	ZONE
060262 0160 F	July 6, 1998	PM 2.12 - 2.14	Natomas Main Drainage Canal	A
060266 0020 F	July 6, 1998	PM 2.12 - 2.14	Natomas Main Drainage Canal	A
060266 0005 F	July 6, 1998	PM 5.10 - 5.18	Natomas East Main Drainage Canal	AE
060266 0005 F	July 6, 1998	PM 5.19 - 5.28	Lower Magpie Creek	AE
060266 0005 F	July 6, 1998	PM 8.90 - 9.41	Lower Magpie Creek	AE
060262 0070 D	July 6, 1998	PM 8.90 - 9.41	Magpie/Arcade Creek	AO

Two floodplain locations, PM 2.12 – 2.14 and PM 5.10 – 5.18, arise from the Natomas Main Drainage Canal and the Natomas East Main Drain Canal (NEMDC). Paul Devereux, General Manger of RD 1000, describes the channels as confined by well-defined sides and levees under the jurisdiction of the State Reclamation Board (RD 1000 and the American River Flood Control District) (Devereux 2006). FEMA has designated these as Zone A and Zone AE (base flood elevation at approximately 32 feet), respectively. The encroachments at these locations occur at a quadruple box culvert (Natomas Main) and a girder bridge (NEMDC), both of which are capable of passing the 100-year flood without overtopping.

The third floodplain encroachment is at Lower Magpie Creek (PM 5.19 – 5.22) and is identified as Zone AE with a base flood elevation of approximately 19 feet. The existing bridge is designed for a high water of 34.7 feet. Project work proposed at this location is an overlay.

The fourth encroachment is at the Del Paso Park overhead (OH), (Bridge Number 24-193), located at PM 9.0. The Del Paso Park OH marks the division between two floodplains, Zone AO with a depth of 2 feet to the north and Zone AE with a base flood elevation of approximately 52.5 feet to the south. The bridge deck has an elevation of approximately 93 feet and spans across the floodplain limits of PM 8.90 – 9.41.

Recorded Flood History

Caltrans District 3 Hydraulics Branch records indicate some flooding has occurred within the limits of the project. Several occurrences were recorded at multiple locations within the project limits on bridge decks above the 4th floodplain location. Although not all flooding occurrences may have been documented, the recorded incidents have been associated with inlet problems (freeway drainage) and not water surface elevations at the base floodplain elevation.

The project lies within the Caltrans Northgate Maintenance Area, which is overseen by Maintenance Area Supervisor Craig Mincer. Mr. Mincer had no report of flooding associated with large storm events on this section of the highway and indicated that there are 5 pumps within the area to prevent flooding. Impacts to the floodplain are not anticipated (Mincer 2006).

2.8.3 Environmental Consequences

Under Alternative 1, the level of risk associated with the additional paved surface area within floodplain limits is low. Much of the work will not occur within a floodplain. Areas where work does occur within a floodplain will be at an elevation greater than that of the base flood elevation. Impacts to the floodplain are not anticipated.

Alternative 2 will not affect the floodplain.

2.9 HYDROLOGY, WATER QUALITY AND STORM WATER RUNOFF

Caltrans completed a Water Quality Technical Study in September 2006 (bound separately). A copy of this study is available from the Caltrans District 3 office in Sacramento.

2.9.1 Affected Environment

The primary federal law regulating water quality is the Clean Water Act (CWA). Section 401 of CWA requires a water quality certification from the State Water Board or Regional Water Board when a project: 1) requires a federal license or permit (a Section 404 permit is the most common federal permit for Department projects), and 2) will result in a discharge to Waters of the United States.

Section 402 of CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant (except dredge or fill material) into Waters of the United States. To ensure compliance with Clean Water Act Section 402, the State Water Resources Control Board (SWRCB) has issued a NPDES Statewide Storm Water Permit to regulate storm water discharges from Caltrans properties and activities. The permit regulates storm water discharges from the Caltrans right of way both during and after construction, as well as from existing facilities and operations.

In addition, the SWRCB has issued a construction general permit for most construction activities disturbing an area greater than one acre, or that have the potential to considerably impair water quality. Some construction activities may require an individual construction permit. All Caltrans projects that are subject to the construction general permit require a Storm Water Pollution Prevention Plan (SWPPP), while all other projects require a Water Pollution Control Program (WPCP). Subject to Caltrans' review and approval, the contractor prepares both the SWPPP and the WPCP. The WPCP and SWPPP identify construction activities that may cause pollutants in storm water and measures to control these pollutants.

The project resides in a city setting at an elevation of approximately 10 feet above mean sea level. Average annual precipitation is approximately 18.8 inches with a rainfall intensity of approximately 0.2 inches per hour during storms.

The project area is located within the drainages of the American River in the Sacramento Valley. The project lies equally within two distinct watersheds: the Lower Sacramento (USGA Cataloging Unit 18020109) and Lower American (USGA Cataloging Unit 18020111).

The project is located within Hydrologic Sub Areas (HSA) 519.21 and 519.22 (Valley-American; Lower American 519.21 and Pleasant Grove 519.22). Storm water from the project limits discharges indirectly to the American River (Valley–American, HSA 519.21). The reach of the American River within the project limits is listed in Section 303(d) of the Water Quality Control Plan for the Central Valley Regional Water Board (Basin Plan) as impaired for water quality for the following constituent: mercury and unknown toxicity (both categorized as low priority). The project will not contribute mercury or unknown toxicity (this is usually associated with pesticides of unknown origin).

2.9.2 Environmental Consequences

Caltrans has a Statewide National Pollutant Discharge Elimination System (NPDES) Permit issued by the State Water Resources Control Board, (Board Order 99-06-DWQ). This permit regulates the storm water and non-storm water discharges associated with project construction activities and discharges associated with normal maintenance and operations of Caltrans facilities (also know as a Municipal Storm Water Permit). The permit also serves as a State of California Waste Discharge Requirement.

Under Alternative 1, during the construction phase of the project, compliance with the permit requires the appropriate selection and deployment of both structural and non-structural Best Management Practices (BMPs) that achieve the performance standards of Best Available Technology economically

achievable/Best Conventional Pollutant Control Technology to reduce or eliminate storm water pollution. To limit any sediments and pollutants from impacting drainages as well as diminish erosion in the project area, BMPs will be implemented during construction.

Alternative 1 is not expected to contribute pollutants 303(d) listed of concern.

Alternative 2 does not include any of the drainage improvements.

2.9.3 Avoidance, Minimization Measures

Adherence to the following measures is recommended to prevent receiving water pollution as a result of construction activities:

- The project shall adhere to the conditions of the Caltrans Statewide NPDES Permit CAS # 000003, (Order # 99-06-DWQ), issued by the State Water Resources Control Board.
- Construction projects with a disturbed area of more than 1 acre or by request of a Regional Water Quality Control Board require a Caltrans approved SWPPP containing project specific effective erosion and sediment control measures. These measures must address soil stabilization practices, sediment control practices, tracking control practices, and wind erosion control practices. In addition, the project plan must include non-storm water controls, waste management and material pollution controls.
- The disturbed soil area appears to exceed 1 acre and it is anticipated that a SWPPP level of temporary pollution controls will be specified for the project; Standard Special Provision 07-345 therefore shall be included in the PS&E to address these temporary construction water pollution control measures.
- As directed by Caltrans' SWMP and the Project Planning and Design Guide an evaluation of the project using the most recent approved evaluation guide is essential in determining if the incorporation of permanent storm water runoff treatment measures shall be considered for this project.
- If a SWPPP is specified, then a Notification of Construction shall be submitted to the Central Valley Regional Water Quality Control Board at least 30 days prior to the start of construction.

Proposed Design Pollution Prevention BMPs

<u>Downstream Effects / Potentially Increased Flow</u>

Due to the additional impervious areas added by this project, there will be small increases in surface runoff to roadway storm drain systems. The additional volume and peak discharges are not expected to be substantial. Many culverts require modification and new drainage facilities are required because of new roadway drainage or inadequate existing drainage conveyance. Existing outlets and proposed outlets will be extended and rock energy dissipaters planned.

<u>Slope/Surface Protection Systems</u>

New cut and fill slopes will have a maximum steepness of 1.5:1 as recommended by Caltrans' Geotechnical Services Branch. This is the maximum steepness of the existing slopes, which are currently performing well. Cuts that are not rocky, as well as new fill slopes, will receive erosion control. Existing ditches and swales have been perpetuated to the maximum practical extent. Track-walking of new slopes to reduce runoff velocity will be included in the construction contract. Slope rounding will be included where feasible to prevent slumping of the upper colluvial layer of soil. Erosion Control Type D and the planting of tree seedlings on new slopes will be included in the project contract.

<u>Concentrated Flow Conveyance Systems</u>

Existing culverts, channels, and ditches are maintained where practical. Culverts will be extended and rock slope protection provided at culvert outlets and in channels where appropriate.

Preservation of Existing Vegetation

Existing vegetation has been preserved to the maximum practical extent. Clearing will only be allowed to 10 feet beyond the proposed cuts and fills, with the exception of specific locations needed for equipment access.

Permanent Treatment BMPs
This project may be exempt from consideration of treatment BMPs in accordance with the May 28, 2004 revision to the Project Planning & Design Guide. Design efforts are considering treatment BMP's as a means to minimize partnering costs and providing adequate storm water discharge treatment.

Proposed Temporary Construction Site BMPs
The contractor will be required to prepare a SWPPP which will include, as a minimum, the use of fiber rolls, check dams, two stabilized construction entrances, and a concrete washout area as temporary construction site BMP's.

2.10 PALEONTOLOGY

2.10.1 Regulatory Setting

Paleontological resources are classified as non-renewable scientific resources and are protected by California's environmental regulations. The Society of Vertebrate Paleontology has established professional standards for assessment and mitigation of adverse impacts on paleontological resources. Design, construction, and operation of the proposed project will be conducted in accordance with local, state, and federal laws, ordinances, regulations, and standards applicable to paleontological resources.

2.10.2 Affected Environment

Cogstone Resource Management, Inc. prepared a paleontological resource study in June 2006. A copy of the study is available from the Caltrans District 3 office.

2.10.2.1 Geologic Setting

Sacramento County exists as a portion of the North American Plate within the California Geomorphic Province known as the Great Valley. The Great Valley Province is described as "an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River and its southern part is the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago)." (Wagner 2002).

2.10.2.2 Stratigraphy

In Sacramento, just north of the joining of the Sacramento and American rivers, I-80 cuts through several Pleistocene and at least one Plio-Pleistocene formation. The Laguna, Turlock Lake, Riverbank, and Modesto formations are widespread across the Sacramento and San Joaquin basins, extending approximately 50 miles north and 150 miles south of Sacramento. All are Pleistocene in age and relatively difficult to distinguish from one another in the field. The Pleistocene era was the first epoch of the Quaternary Period, beginning 2 to 3 million years ago and ending approximately 10,000 years ago.

Riverbank Formation

Named by Davis and Hall (Keroher 1966), the type section of the mid to late Pleistocene (130,000 – 450,000 thousand years ago) and occurs in San Joaquin County, CA. Thought to be approximately 200 feet thick, and spanning portions of the Sacramento and San Joaquin basins, the formation represents the basal portion of the Victor Formation, which occurs near Mokelumne, CA (Keroher 1966).

Described as Pleistocene river terrace deposits, the Riverbank Formation consists of two members. Although both members consist of clays, sands, and gravels typical of river deposits, the upper member is more widespread, with less soil development or erosion than the lower member (Blake 1999). Helley and Harwood (1985) described the lower Riverbank formation in the study area as of red semi-consolidated gravel, sand, and silt. At the Arco Arena in Sacramento, the formation consists of river overbank deposits, primarily of clay to sand sized particles that contains vertebrate fossils (Hilton, Dailey, and McDonald 2000).

In Sacramento, the Riverbank Formation lies above a well-developed soil horizon resting on top of the Turlock Lake Formation, which ceased deposition about 600,000 years ago. Here, the Riverbank Formation consists of fluvial deposits, which have locally been dated to 103,000 ± 6000 years old (Hilton, Dailey, and McDonald 2000), or Rancholabrean (less than 120,000 years old) in age (Hilton, Dailey, and McDonald 2000).

Modesto Formation

Named by Davis and Hall (Keroher 1966), the type section of the Pleistocene (12,000 - 42,400 years ago, Marchand and Allwardt 1981) Modesto Formation occurs in Modesto, CA. Spanning portions of

the Sacramento and San Joaquin basins, the formation represents the upper portion of the Victor Formation, which occurs near Mokelumne, CA (Keroher 1966).

The Modesto Formation is described as Pleistocene river terrace deposits, consisting of two members. Both members lack erosion as they are some of the most recent terrace deposits in the area. Because of their recent history, the Modesto Formation is likely derived from the rivers it borders. Although both members consist of clays, sands, silts, and gravels typical of river deposits, the lower member contains soils of the pedogenic unit B horizon (Blake 1999). At the type section the Modesto Formation consists of lenticular beds of silt and sand, which are commonly crossbedded, suggesting that the sediments represent coalescing alluvial fans (Davis and Hall 1959).

2.10.2.3 General Overview of Regional Paleontology

During the Pliocene Epoch (approximately 5 - 2 million years ago), coastal California began to emerge progressively from the sea, and most deposits of this age represent relatively shallow, near shore marine environments. The Laguna Formation occurs as a terrestrial deposit associated with glacial deposits of the Sierra Nevada. As the ocean continued to recede (or the land to rise), coastal California changed from shallow marine to terrestrial by the Pleistocene Epoch (between 1.8 million - 10, 000 years ago). The developing terrestrial landscape had a climate that was moister than the present, with free flowing streams and relatively abundant standing water. Numerous water sources provided various opportunities for fossilization, giving a fairly complete view of Pleistocene life. Megafauna present in the region included ground sloths, mammoth, mastodon, horse, camel, antelope, peccary, wolf, and saber-toothed cat. Bison made their way into the area between 75,000 to 125,000 years ago during the Sangamonian interglacial, (oxygen-isotope stage 5), and their emigration signaled a transition from the Irvingtonian to the Rancholabrean Land Mammal age (McDonald 1981). Small animals were abundant and included most of the same species found in the same areas today.

2.10.3 Environmental Consequences

Record Search Results

A search for paleontological records was completed at the Sierra College Natural History Museum, online at the University of California, Museum of Paleontology (UCMP), and in published materials. The University of California at Davis and California State University at Sacramento were also queried for collections – neither reported any material. The project area and a minimum of a ten-mile radius were searched for resources in all potentially fossil bearing formations that may be affected by this project.

<u>Riverbank Formation</u>

The UCMP online database lists Rancholabrean aged fossils from several localities in the Sacramento area, including Davis Gravel Pit, Ehrhardt Avenue, and the Teichart Gravel Pit (Jefferson 1991; Hansen and Begg 1970; Harris 1985). Fauna from these localities include mammoth, coyote, dire wolf, extinct horse, extinct bison and other artiodactyls, rabbit, wood rat, pocket gopher, broad-footed mole, bird, garter snake, pond turtle, frog, and blackfish.

A search of the SCNHM database and other references described a Late Pleistocene fauna from the ARCO Arena in Sacramento. Recovered from overbank deposits, the fauna included Harlan's ground sloth, mammoth, coyote, extinct horse, yesterday's camel, ancient bison, antelope or deer, squirrel, and bird. Additionally a seed from a hollyleaf cherry was recovered from the site (Jefferson 1991; Hilton, Dailey, and McDonald 2000).

<u>Modesto Formation</u>

The UCMP online database recorded one fossil locality from this formation in Yolo County, roughly 10 miles to the west of the project. No fossils are known from this formation in the project area.

Most of the project alignment is at or near grade. Both the median and outer limits of the project alignment were generally heavily vegetated limiting ground visibility. Fill was obvious in several locations in contrast to the local native sediment. The contrast was mostly observable at the northern portion of the project where the roadway is below grade but fill was observed all along the route.

Potential impacts to Paleontological Resources

Impacts to paleontological resources are considered to be important if they provide new data on fossil animals, distribution, evolution or other scientifically important information. No fossils were observed on the survey, which was hampered by dense vegetation. Although the native sediments are known to have high potential to produce important, non-renewable paleontological resources, potential impacts can be avoided by following a properly designed and implemented avoidance program.

Areas of the proposed roadway that are at grade will have less subsurface impacts than areas of the roadway that are below grade. When the grading plans are prepared, the paleontologist performing mitigation should review them to adjust the monitoring plan according to depth of impacts.

Alternative 2 will not affect paleontological resources.

2.10.4 Avoidance, Minimization Measures

Caltrans recommends monitoring where excavation or road cuts will disturb fossil-bearing sedimentary strata. The goal of monitoring is to reduce potential impact on paleontological resources within the project area by collecting scientifically important vertebrate fossils. The contractor undertaking monitoring will adhere to the paleontological plan that detail the procedures for collecting vertebrate fossils, including recording pertinent geographic and stratigraphic information, stabilization (preservation) methods for the specimens, and make provisions for the remains to be accessioned into the collections of an appropriate repository, and catalogued for future scientific study. Following completion of monitoring, collection, and specimen processing, the contractor should generate a final report detailing the results of the program.

2.11 HAZARDOUS WASTE/MATERIALS

Geocon Consultants completed an Initial Site Assessment (ISA) in October 2006. A copy is available from Caltrans District 3.

Various state and federal laws regulate hazardous materials and hazardous wastes. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for "cradle to grave" regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety & Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the federal RCRA, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

2.11.1 Affected Environment

The purpose of an ISA is to protect construction workers and the public from exposure during construction. The ISA documents hazardous waste issues that could affect construction of the project. Hazardous waste issues include impacts to soil and groundwater due to leaking underground storage tanks (USTs), releases to the land, and highway spills.

It is Caltrans policy to avoid hazardous waste, whenever possible. The protection of employees, workers and the community would be employed if involvement becomes necessary prior to, during and/or after construction. Caltrans would confirm and document suspected hazardous waste issues, and attempt to have responsible parties perform cleanup activities.

The ISA involved a field review and a search of regulatory agency files, published government documents, a review of current aerial photographs, Sanborn fire insurance maps, environmental data resources reports, and other sources.

The Central Valley Regional Water Quality Control Board (CVRWQCB) regulates groundwater contamination, whereas the Sacramento County Hazardous Materials Division (SCHMD) regulates soil contamination.

The results of site reconnaissance, historical research, and regulatory file reviews identified 22 properties as having potential hazardous waste impacts to the project. Two properties were assigned high rankings based on their known and potential impacts to soil and groundwater, as well as their location to the project. Both of these sites are Union Pacific Railroad tracks that cross the project at the Natomas East Main Drain Canal and near Roseville Road. Two properties were assigned medium rankings based on the same criteria (49er truck stop at el Centro Road and West El Camino Avenue and the Shell service station on Northgate Boulevard). The remaining 18 properties were assigned low rankings because they posed no hazardous waste impacts to soil and groundwater and/or are located away from the project. These low ranking properties are not addressed further. However, the location and type of hazardous waste issues of these low ranking properties are included in the ISA report (bound separately).

Additional soil and/or investigations are recommended at the two high and two medium ranked properties (see the Section 2.11.3). The investigation would involve the drilling of test holes and the collection of samples for laboratory analysis. The locations of the properties receiving high or medium rankings are depicted on the Figure 2.1-1 and summarized on Table 2.11-1 at the end of this section.

High Ranked Sites:

- **Union Pacific Railroad Tracks, Map ID No. 7**. Union Pacific railroad tracks cross beneath I-80 east of the Natomas East Main Drain Canal. Based on the historic railroad activities, affected soil and groundwater may be present beneath the project. Investigation activities should include soil and groundwater sampling for petroleum hydrocarbons, pesticides, and metals.

- **Union Pacific Railroad Tracks, Map ID No. 19**. Union Pacific railroad tracks cross underneath I-80 near Roseville Road. Based on the historic railroad activities, affected soil and groundwater may be present. Investigation activities should include soil and groundwater sampling for petroleum hydrocarbons, pesticides, and metals.

Medium Ranked Sites:

- **49er Truck Stop, 2828 El Centro Road, Map ID No. 2**. This facility is located adjacent to the westbound off-ramp at West El Camino Avenue. Petroleum hydrocarbon-impacted groundwater extends to the southern boundary of the facility, with the groundwater flow direction seasonally toward the project. Although the proposed improvements are located within the median of I-80, and the affected groundwater does not likely extend beneath the project, if the proposed work changes to include the on- and/or off-ramps, the potential exists for contact with petroleum hydrocarbon-impacted groundwater during future construction activities. If this is the case, investigation activities should include groundwater sampling for petroleum hydrocarbons.

- **Shell, 3801 Northgate Boulevard, Map ID No. 8**. This facility is located adjacent to the eastbound off-ramp at Northgate Boulevard, south of I-80. Groundwater impacts have been reported at this facility; however, the groundwater flow direction is southeast, away from the project. Although the proposed improvements are located within the median of I-80, and the affected groundwater does not likely extend beneath the project, if the proposed work changes to include the on- and/or off-ramps, the potential exists for contact with petroleum hydrocarbon-impacted groundwater during future construction activities. If this is the case, investigation activities should include groundwater sampling for petroleum hydrocarbons.

Asbestos, Lead, Underground Storage Tanks (USTs)

In addition to the known and potential impacts to the properties mentioned above, there is a potential for the presence of asbestos and lead-based paint on the bridges within the site boundaries. Asbestos and lead-based paint surveys are recommended for the bridges affected by project construction activities.

Results of a culvert study performed by Caltrans in 2006 did not identify any asbestos-containing pipe; however, if asbestos-containing pipe is encountered during project activities, proper handling and disposal of the piping, in accordance with Sacramento Air Quality Management District requirements, would be required.

Aerially deposited lead from vehicle emissions may also be present on the shoulders and median of I-80. Aerially deposited lead site investigations are recommended to determine the potential presence of lead in soil.

The results of site reconnaissance and regulatory file reviews did not indicate the presence of USTs within the existing State right of way. However, undocumented USTs associated with former facility operations may exist. If encountered during excavations for pilings, new signs, outside lane widening, ramp modification, installation of drainage, or construction of sound walls and retaining walls, USTs and associated piping should be removed in accordance with SCHMD requirements. Septic systems, leach fields and/or water wells, if encountered, should also be properly abandoned in accordance with SCHMD requirements.

Hazardous Waste Spills – I-80
According to the Caltrans *Hazardous Materials Spill Contingency Plan,* all hazardous spills or releases (regardless of size), must immediately be reported to the Caltrans district dispatch office by the California Highway Patrol and incident reports completed. Specific contingency plans are referenced in the *Hazardous Materials Spill Contingency Plan* in the event that flammable or toxic vapors are released, a fire or explosion occurs, or a hazardous material is released.

The party responsible for the spill shall be given the opportunity to clean up the spill; however, if the responsible party does not have a means to clean up the spill, Caltrans will contact a pre-approved contractor to perform mitigation activities.

The following three hazardous waste spills occurred along I-80 within the site limits.

Westbound I-80 at West El Camino Avenue. In 1989, a release of an unknown substance occurred on I-80 near the West El Camino Avenue off ramp. Based on the length of time since this release occurred, adverse impact to the project is not expected.

Junction of I-80 and I-5. A release of ammonia on I-80 near the I-5 interchange occurred in 1987. Based on the substance released and the length of time since the release, adverse impact to the project is not expected.

I-80 West of Winters Street. In 1990, a release of an unknown substance occurred on I-80 west of Winters Street. Based on the length of time since this release occurred, adverse impact to the project is not expected.

2.11.2 Environmental Consequences

Under Alternative 1, benefits to the water quality of groundwater will likely occur if the investigation of potential hazardous waste properties results in the remediation of affected soil and groundwater.

During site investigation, remediation activities, and subsequent construction activities, public health and the health of the construction workers could potentially be affected by airborne dust particles

containing heavy metals, petroleum hydrocarbons, asbestos, and lead. To minimize impacts to the public and construction workers, Caltrans (or its contractors) would prepare health and safety plans that address potential effects of the various chemical compounds that could be encountered.

Based on available records, it does not appear that there have been large highway hazardous spills on I-80 within the site boundaries, which have affected or had the potential to affect a large population.

In the event that the No Build Alternative is adopted, potential hazardous waste issues will not be addressed.

2.11.3 Avoidance, Minimization Measures

It is Caltrans policy to avoid all potential aspects of hazardous waste, whenever possible. If involvement becomes necessary prior to, during and/or after construction, protection for employees, workers, and the community would be implemented. Confirmation and documentation of suspected hazardous waste issues will be performed, and an attempt will be made to have responsible parties perform the cleanup activities.

For affected soil encountered beneath the project, possible cleanup methods include excavation and disposal of the affected soil at appropriately permitted landfills, aeration of soil in place or above ground, and bioremediation. Selection of a soil cleanup method will be dependent on the severity of the impacts, the volume of impacted soil, access restrictions to the property, soil conditions, depth to groundwater, and available funding, among other factors.

For affected groundwater encountered beneath the project, possible cleanup methods include removal of affected water, with subsequent disposal or treatment. Treatment of the affected groundwater may consist of aeration or carbon filtration prior to discharge or injection into the aquifer. Air sparging, another possible groundwater cleanup method, involves injecting oxygen below the groundwater surface in an attempt to strip volatile compounds from the water. Increasing the oxygen content of the groundwater may also benefit natural biodegradation of the compounds. Selection of a groundwater cleanup method will be dependent on the severity of the impacts, the volume of impacted groundwater, depth to groundwater, soil conditions, and available funding, among other factors.

Caltrans will perform site investigations prior to construction to confirm or dismiss potential hazardous waste issues. Upon confirmation of hazardous waste issues, responsible parties will be sought for appropriate remediation.

Table 2.11-1. Potential Hazardous Facilities (High and Medium Ranking)

MAP ID #	SITE NAME	ADDRESS	CHEMICAL OF CONCERN	AFFECTED MEDIA	CASE STATUS	RANK
2	49er Truck Stop	2828 El Centro Road	Petroleum Hydrocarbons	Soil and Groundwater	Site Assessment	**Medium**
7	Union Pacific Railroad Tracks	East of Natomas East Main Drain Canal	Petroleum Hydrocarbons/ Pesticides/Metals (slag)	Unknown	N/A	**High**
8	Shell	3801 Northgate Blvd.	Petroleum Hydrocarbons	Soil and Groundwater	Site Assessment	**Medium**
10	Union Pacific Railroad Tracks	Near Roseville Road	Petroleum Hydrocarbons/ Pesticides/Metals (slag)	Unknown	N/A	**High**
---	I-80 Shoulders and Median	Yolo County Line to Longview Drive	Lead	Soil	N/A	**High**
---	I-80 Bridges	Yolo County Line to Longview Drive	Asbestos/ Lead-Based Paint	Bridge Materials	N/A	**High**

2.12 AIR QUALITY

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards, established by the US Environmental Protection Agency (USEPA), are called National Ambient Air Quality Standards (NAAQS).

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

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

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

Environmental laws require Caltrans to analyze the impact of proposed transportation projects on the air environment. The usual procedure is to perform project-level impact analysis to predict future pollutant levels for considered project alternatives including the “No Build” condition, and make comparison with the ambient air quality standards.

Air quality impacts are generally assessed using one of the three possible scales of analysis: microscale, mesoscale, or macroscale. The dynamics of transport, dispersion, and chemical transformation for particular pollutants dictate which type of analysis is the most appropriate. While transportation facilities as a whole make contributions to both mesoscale and macroscale air quality problems, the impacts of a single project do not. Therefore, project-level air quality analyses only consider impacts within the microscale region. This region is defined as the area within approximately 980 feet of the transportation facility. Carbon monoxide (CO) is considered the foremost microscale

problem related to transportation sources, and was analyzed to determine air quality impacts at the microscale level.

Caltrans prepared an Air Quality Report in November 2006. A copy is available from Caltrans District 3 in Sacramento.

2.12.1 Affected Environment

The proposed project is located within the Sacramento Valley Air Basin. Sacramento County is designated by the USEPA as an attainment area (an area attaining the air quality standard) for CO and fine particulate mater ($PM_{2.5}$), and non-attainment area for particulate matter 10 microns or less in diameter (generally designated as PM_{10}) and ozone (O_3).

The proposed project is located in Sacramento County, and Sacramento County is designated as in attainment/unclassified for $PM_{2.5}$. As such, $PM_{2.5}$ conformity (including hot spot analysis) requirements do not apply.

2.12.1.1 Air Quality Standards

Federal and State Air Pollutants and Ambient Standards

Air quality impacts are evaluated by comparing predicted air pollutant concentrations to the NAAQS established by the USEPA.

National Standards have been established for the following air pollutants:

1. Ozone (O_3)
2. Carbon Monoxide (CO)
3. Nitrogen Dioxide (NO_2)
4. Sulfur Dioxide (SO_2)
5. Suspended Particulate Matter 10 microns or less (PM_{10})
6. Fine Particulate Matter ($PM_{2.5}$)
7. Lead (Pb)

The California Air Resources Board (CARB) has adopted additional standards for these and other pollutants.

A project level conformity analysis shows that the project will conform with the State Implementation Plan (SIP), including the localized impact analysis for CO and PM_{10} required by 40 CFR 93.116 and 93.123. This project is not anticipated to be a Project of Air Quality Concern regarding PM_{10} as defined in 40 CFR 93.123(b)(1) and meets the requirements of the Clean Air Act and 40 CFR 93.116, therefore, an explicit PM_{10} hot-spot analysis is not required. Caltrans is coordinating with SACOG to meet the PM_{10} interagency requirements.

Direct emissions from automobiles contain mainly hydrocarbons, NO_2, and CO. Indirect emissions include ozone and PM_{10}. Lead emissions from automobiles have declined in recent years through the increased use of unleaded gasoline. Ozone is formed when nitrogen oxides (NOx) and reactive organic gases (ROG) react in the presence of sunlight. PM_{10} emissions from vehicular source are largely due to aerosols formed in the atmosphere from NOx and ROG compounds and, to a lesser extent, directly from vehicle travel over materials previously deposited on the travel surface or tire and brake wears. Due to their formation and/or dispersion patterns, hydrocarbons, NO_2, and O_3 can only be reasonably analyzed from a regional perspective. PM_{10} is a project-level pollutant as well as a regional pollutant. CO is a relatively stable and site-specific pollutant with major concentrations found immediately adjacent to roadways. It is analyzed to determine air quality impacts at the project specific microscale level.

Table 2.12-1 summarizes the National and California standards. The NAAQS are comprised of both primary and secondary standards. Primary standards are designed to protect public health, while secondary standards protect public welfare from known or anticipated adverse effects of air pollutants (e.g., reduced visibility or property damage). For the purposes of this project, the importance of an impact will be based upon comparison with the more stringent primary standards.

The primary NAAQS and California Standards are based on medical studies that relate pollutant concentration and duration of exposure to morbidity and mortality rates for "at risk" populations. The standard must therefore specify both a concentration and an averaging time. Higher concentrations can be tolerated when exposure (or averaging) times are shorter (Table 2.12-1). The averaging time plays a critical role in the modeling process.

The NAAQS for CO is established for two averaging times: 1-hour and 8-hours. These standards are not to be exceeded more than once per year. The procedures described in the Caltrans' Transportation Project-Level CO Protocol are designed to estimate the second highest 1-hour and 8-hour annual CO concentrations (called the second annual maximum) (Institute of Transportation Studies 1997). If either of these values exceed the NAAQS, the impact is considered substantial. This approach is often referred to as a "worst case" analysis. Predictions made for an assumed set of concurrent, worst case conditions guarantee a conservative estimate of the impacts. The California CO standards are not to be exceeded at any time.

2.12.1.2 Attainment Status and Regional Air Quality Plans

Federal and State air quality laws require identification of areas not meeting the ambient air quality standards. These areas must develop regional air quality plans to eventually attain the standards. Under federal law, the plans are referred to as State Implementation Plans (SIPs). In California, the SIP is composed of regional air quality plans from throughout the state.

Authority for air quality planning is divided. Under California law, air pollution control districts and air quality management districts have full regulatory authority for achieving State standards. In Sacramento County, the Sacramento Metropolitan Air Quality Management District (SMAQMD) holds that authority. Under federal law, however, the designated responsible air quality planning agency is the Sacramento Area Council of Governments (SACOG).

In addition to planning responsibilities, SMAQMD has permitting authority over stationary sources of pollutants. Authority over mobile sources of pollutants is given to the CARB.

Under both the California Ambient Air Quality Standards (CAAQS) and NAAQS, Sacramento County is currently designated as in "attainment" for CO and $PM_{2.5}$ and "non-attainment" for O_3 and PM_{10}.

2.12.1.3 Local Carbon Monoxide Impact Analysis

Ambient CO concentrations associated with a transportation project are the sum of background CO levels and the project contribution from vehicular emissions. Background CO is attributable to a variety of emission sources that exist locally and outside of the highway network being specifically modeled in the microscale analysis.

Computer simulation models have been used to estimate project-related CO concentrations for this project. The estimation of project-related CO concentrations is based on three major categories of data:

1. An estimate of the number of vehicles (peak hour traffic volumes);
2. Emission factors (the rate of CO emitted by vehicles); and
3. Dispersion patterns (how CO from vehicles disperses).

The analysis of CO concentrations was conducted following methods described in Caltrans' Transportation Project-Level Carbon Monoxide Protocol (Institute of Transportation Studies 1997).

The air quality microscale dispersion model used for this air quality report, CALINE4, is a line source model developed by Caltrans. It is based on the Guassian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion over the roadway. Given source strength, meteorology and site geometry, CALINE4 can predict pollutant concentrations for receptors located within 1,500 feet of the roadway.

The CALINE4 model was used to estimate one-hour average CO concentrations at receptor locations. A persistence factor of 0.7 was applied to the one-hour average values to estimate eight-hour average values (Institute of Transportation Studies 1997).

Location Analyzed

High concentrations of CO are typically a localized occurrence. High concentrations of CO due to on-road vehicles are associated with high traffic volumes and heavily congested roadway facilities. The CO analysis conducted for the project focused on the locations considered to have the greatest potential for experiencing high CO concentrations based on a review of the project traffic study.

Receptor Locations

The CALINE4 model estimates CO concentrations at specific locations. These locations are referred to as "receptors", and represent specific locations in the study area. Receptors were located according to guidelines presented in the Transportation Project-Level Carbon Monoxide Protocol (Institute of Transportation Studies 1997). Twenty-one receptors (R1 through R21) were analyzed for purposes of this report. For the locations of these receptors, see Figure 2.1-1.

Background Carbon Monoxide Levels

The CARB monitoring station located at T Street in Sacramento was used as a representative for background CO information. The maximum daily 1-hour data for the last three years of the winter months was analyzed at this monitoring station. The highest value for the maximum daily 1-hour measurement was 5.6 parts per million (ppm). Hence, 5.6 ppm was selected as background CO levels for input into the CALINE4.

Traffic Data

The CALINE4 modeling analysis used peak hour traffic data from the traffic analysis conducted for the proposed project. The traffic data included peak hour volumes, interchange geometric, and interchange operational characteristics. Traffic data for the 2014, 2024, and 2034 conditions were used.

Emission Factors

On-road motor vehicle emission rates, usually expressed in grams per vehicle mile, were used in the analysis of CO concentrations. The estimate of motor vehicle emission rates takes into account the combined effects of vehicle operating mode, types of vehicles, temperature, vehicle speed, year, and altitude. Motor vehicle emission rates used for this project were generated from CARB emission factor model EMFAC2002 (Version 2.2). Emission rates used were based on the following data:

- The project location is at 200 feet elevation,

- The adjusted January mean minimum temperature is 40° F,
- The project location has a motor vehicle inspection and maintenance program, and
- The traffic mix listed in Appendix A of the air quality report.

The output files for EMFAC2002 (Version 2.2) are included in Appendix A of the air quality report.

Meteorology

Assumed meteorological conditions are important factors in estimating CO concentrations. The meteorological conditions assumed for this project are from the Transportation Project-Level Carbon Monoxide Protocol (Institute of Transportation Studies 1997). The following meteorological assumptions were used:

- Wind speed (U) = 1.6 ft/sec
- Wind Direction = Worst Case
- Atmospheric Stability Class = 7(G)
- Mixing Height = 3,281 feet
- Sigma Theta = 5 degrees
- Surface Roughness = 39.4 inches
- Temperature = 40° F
- Altitude = 200 feet

2.12.2 Environmental Consequences

2.12.2.1 Carbon Monoxide

Project-level impact analysis was performed to predict CO concentrations for the years 2014, 2024, and 2034. Under peak traffic volumes and worst-case meteorological conditions, when combined with background CO levels, the predicted CO concentration for all build and no build alternatives are below both federal and state CO standards.

A summary of the results of the CALINE4 CO analysis for existing, 2014, 2024, and 2034 Build (Alternative 1) and No Build (Alternative 2) conditions are depicted in Tables 6, 7, and 8 of the air quality report. The highest 1-hour and 8-hour values for each alternative are include in Table 2.12-2.

Under Alternative 2, the highest 1-hour values for 2014, 2024, and 2034 are 7.8 ppm, 6.4 ppm, and 6.1 ppm; the highest 8-hour values are 5.5 ppm, 4.5 ppm, and 4.3 ppm, respectively. Under Alternative 1, the highest 1-hour values for 2014, 2024, and 2034 are 8.0 ppm, 6.6 ppm, and 6.3 ppm; the highest 8-hour values are 5.6 ppm, 4.6 ppm, and 4.4 ppm, respectively. The result for Alternative 1 is below both federal and state air quality standards.

The CALINE4 output files are included in Appendix B of the air quality report (bound separately).

2.12.2.2 Particulate Matter

Particulate Matter (PM_{10}) is required to be considered and evaluated on a local impact basis for projects in federal PM10 non-attainment areas per Section 93.116 of the federal transportation conformity rule.

Based on PM_{10} monitoring records of SMAQMD near the project area at North Highlands – Blackfoot Way Air Quality Monitoring Station, there is no PM_{10} exceedance of the primary Federal 24-hour standard of 150 µg/m^3. Therefore, there is no PM_{10} violation to NAAQS. The project is not located in a climate zone that requires heavy wintertime sanding operations for snow control or does it have unpaved shoulder in loose material. Alternative 1 will not increase vehicle miles of travel (VMT) and is

anticipated to relief future traffic congestion and improve level of services; therefore, increased PM_{10} emissions are not anticipated. In addition, Alternative 1 will not cause a substantial change to truck volumes that exceeds the regional growth rate nor serve interchanges with large truck volume or provide access to major industrial/truck traffic generators. Hence, this project will not substantially change diesel emissions. According to 40 CFR 93.123(b)(1)(i) and (ii), this project is not anticipated to be a Project of Air Quality Concern regarding PM_{10}. Caltrans is coordinating with SACOG to meet the PM_{10} interagency requirements.

USEPA had signed the final rule on February 23, 2006, establishing requirements for project-level conformity determinations in $PM_{2.5}$ non-attainment and maintenance areas. This final rule is part of USEPA's implementation of the current $PM_{2.5}$ standards. The proposed project is located in Sacramento County, and Sacramento County is designated as attainment/unclassified for $PM_{2.5}$. As such, $PM_{2.5}$ conformity (including hot spot analysis) requirements do not apply.

2.12.2.3 Mobile Source Air Toxics

Mobile source air toxics (MSATs) are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxic also result from engine wear or from impurities in oil or gasoline. The six air toxics labeled by the USEPA as priority transportation MSATs are benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. Alternative 1 will not result in any meaningful changes in vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT. Moreover, USEPA regulations for vehicle engines and fuels will cause overall MSATs to decline substantially over the next 20 years. According to an FHWA analysis, even if vehicle miles traveled (VMT) increase by 64 percent, reductions of 57 percent to 87 percent in MSATs are projected from 2000 to 2020 (FHWA 2006).

2.12.2.4 Regional Air Quality Impacts

Transportation projects have the potential to affect air quality on a regional level. Ozone is the regional air quality pollutant most likely to be affected by transportation projects. Because ozone is formed over time by a chemical reaction involving precursor emissions such as oxides of nitrogen (NO_x), its concentration is distributed over a geographically regional area.

Before adopting the MTP and MTIP, SACOG performed a quantitative analysis to determine if implementation of the set of projects included in these documents would result in violations of the ozone air quality standard. Based on this analysis, SACOG has concluded that implementing the set of projects included in the MTP and MTIP would not result in a violation of the ozone standard.

Alternative 1 is a component of the set of projects included in the MTP and MTIP. Since this set of projects have been found to not result in a violation of the ozone air quality standard' Alternative 1 does not impact regional air quality.

2.12.2.5 Conformity With the State Implementation Plan (SIP)

The Federal Clean Air Act requires that transportation plans, programs, and projects approved by a Metropolitan Planning Organization conform to the SIP. The Metropolitan Planning Organization for Sacramento County is SACOG. Demonstrating a project's conformity with the SIP involves inclusion of the project in the MTP and MTIP by SACOG. Demonstrating a project's conformity with the SIP also involves determining that the project would not result in a violation of the CO air quality standard.

Alternative 1 has been included in both the MTP and MTIP by SACOG. In addition, as described earlier in this chapter, the project would not result in a violation of the CO air quality standard. Therefore, Alternative 1 is considered to be in conformance with the SIP.

2.12.2.6 Construction Impacts

Alternative 1 may result in the generation of short-term construction-related air emissions, including fugitive dust and exhaust emissions from construction equipment. Fugitive dust, sometimes referred to as windblown dust or PM_{10}, would be the primary short-term construction impact, which may be generated during excavation, grading, and hauling activities. However, both fugitive dust and construction equipment exhaust emissions would be temporary and transitory in nature. In order to minimize the temporary construction-related emission impacts, the contractor will be required to use Best Management Practices and comply with Caltrans Standard Specifications. Section 7-1.01F, “Air Pollution Control” and Section 10, “Dust Control.”

The contractor is also required to comply with all pertinent rules and regulations of the Sacramento Metropolitan Air Quality Management District (SMAQMD). On December 28, 2006, SMAQMD released a list tentative rulemaking actions scheduled for 2007. SMAQMD is proposing two tentative rules regarding construction emissions. Rule 1052, Construction Mitigation, is proposed for adoption in 2007. Rule 1025, Construction Equipment Fleet, is listed in case of adoption required during 2006.

There would be no construction impacts under Alternative 2.

2.12.2.7 Other

Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) is known to exist in serpentine, a greenish greasy-looking rock, found within the ultramafic rock. Based on the California Geologic Survey and National Resource Conservation Service soils map, no ultramafic rocks are found in Sacramento County. If NOA is found during construction, rules and regulation of the Sacramento Metropolitan Air Quality Management District regarding NOA must be adhered to when handling this material.

2.12.3 Avoidance, Minimization Measures

In order to minimize the temporary construction-related emission impacts, the contractor will be required to use Best Management Practices and comply with Caltrans Standard Specifications, Section 7-1.01F, “Air Pollution Control” and Section 10, “Dust Control.” The contractor is also required to comply with all pertinent and legally enforceable rules, regulations, ordinances, and statutes of the local air district.

2.12.4 Greenhouse Gas

2.12.4.1 Regulatory Settings

While climate change has been a concern since at least 1988 as evidenced by the establishment of the United Nations and World Meteorological Organization’s Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas emissions reduction and climate change research and policy has increased dramatically in recent years. Greenhouse gases related to human activity include carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23, HFC-134a, and HFC-152a. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck greenhouse gas emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's greenhouse gas emissions to: 1) 2000 levels by 2010; 2) 1990 levels by the 2020; and 3) by the year 2050 to reduce greenhouse gas emissions to 80% below the 1990 levels. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall greenhouse gas emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-17-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

Climate change and greenhouse gas reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing greenhouse gas emissions reductions and climate change.

2.12.4.2 Affected Environment

According to the Intergovernmental Panel on Climate Change (IPCC 2007), there is no doubt that the climate system is warming. Global average air and ocean temperatures as well as global average sea level are rising. Of the last 12 years, 11 years have ranked as among the warmest on record since 1850. While some of the increase is explained by natural occurrences, the 2007 report asserts that the increase in temperatures is very likely (> 90%) due to human activity, most notably the burning of fossil fuels.

For California, similar effects are described in the California Climate Change Center report, *Our Changing Climate: Assessing the Risks to California* (July 2006). Based on projections using state of the art climate modeling, the temperatures in California are expected to rise between 3 degrees F to 10.5 degrees F by the end of the century depending on how much California is able to reduce its greenhouse gas emissions. The report states that these temperatures increases will negatively impact public health, water supply, agriculture, plant and animal species, and the coastline.

2.12.4.3 Environmental Consequences

According to a recent white paper by the Association of Environmental Professionals (Hendrix 2007), "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases."

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human made greenhouse gas emissions are from transportation, Caltrans has created and is implementing the *Climate Action Program at Caltrans* (Caltrans 2006a).

One of the main strategies to reduce greenhouse gas emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour) and speeds over 55 mph. Relieving congestion by enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in greenhouse gas emissions. As detailed in the traffic section (2.5.1.2), this project is designed to reduce congestion and improve traffic flow. Also, according to the Metropolitan Transportation Plan (MTP) Environmental Impact Report, under the MTP scenario there will be a 1.8% reduction in the daily vehicle hours traveled (VHT) over the no project option in 2025 (SACOG 2002). This project is part of the MTP. Due to the reduction in VHT and improved traffic flow, carbon dioxide emissions would be reduced.

Caltrans recognizes the concern that carbon dioxide emissions raise for climate change. However, modeling and gauging the impacts associated with increase in greenhouse gas, including carbon dioxide, levels and the effect on climate change would be purely speculative. No federal, state or regional regulatory agency has provided methodology or criteria for greenhouse gas emission and climate change impact analysis. Therefore, Caltrans is unable to provide a conclusion regarding the project's contribution to climate change.

2.12.4.4 Avoidance and Minimization Measures

Two of the most effective means to reduce greenhouse gas emissions from transportation are outside of the direct control of Caltrans. The most direct approach to improving the energy efficiency of the transportation sector is to increase vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans does not control the fuel economy standards, United States Environmental Protection Agency and ARB have that control. Caltrans does, however, continue to be actively involved on the Governor's Climate Action Team as ARB works to implement AB 1493 and AB 32. The second approach is to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, transit-oriented development, and high density housing along transit corridors. As part of the *Climate Action Program at Caltrans* (December 2006), Caltrans will work closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority.

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, will continue to address greenhouse gas emission reductions through the following strategies in the Climate Action Program:

- Improve Transportation Energy Efficiency

Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools and information that advance cleaner transportation and reduce climate change emissions.

- Smart Land Use and Intelligent Transportation Systems (ITS)

Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. Governor Schwarzenegger is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a prosperous economy, social equity, and a quality environment. Smart land use, demand management, ITS, and value pricing are critical elements in this plan for improving mobility and transportation efficiency. Specific strategies include: promoting jobs/housing proximity and transit-oriented development; encouraging high density residential/commercial development along transit/rail corridors; valuing and congestion pricing; implementing intelligent transportation systems, traveler information/traffic control, incident management; accelerating the development of broadband infrastructure; and comprehensive, integrated, multimodal/intermodal transportation planning.

Table 2.12-1. State and Federal Criteria Air Pollutant Standards, Effects, Sources, and Status

Pollutant	Averaging Time	State Standard	Federal Standard	Health and Atmospheric Effects	Typical Sources
Ozone (O_3) [2] **State Status:** Non-Attainment **Federal Status:** Non-Attainment	1 hour 8 hours	0.09 ppm 0.070 ppm	--- [4] 0.08 ppm	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include a number of known toxic air contaminants.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROG) and nitrogen oxides (NOx) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes. Biologically-produced ROG may also contribute.
Carbon Monoxide (CO) **State Status:** Attainment **Federal Status:** Attainment	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm [1] 6 ppm	35 ppm 9 ppm ---	Asphyxiant. CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Respirable Particulate Matter (PM_{10}) [2] **State Status:** Non-Attainment **Federal Status:** Non-Attainment	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources (wind-blown dust, ocean spray).
Fine Particulate Matter ($PM_{2.5}$) [2] **State Status:** Non-Attainment **Federal Status:** Attainment	24 hours Annual	--- 12 µg/m^3	35 µg/m^3 15 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – considered a toxic air contaminant – is in the $PM_{2.5}$ size range. Many aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and ROG.
Nitrogen Dioxide (NO_2)	1 hour Annual	0.25 ppm ---	--- 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain.	Motor vehicles and other mobile sources; refineries; industrial operations.
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual	0.25 ppm --- 0.04 ppm ---	--- 0.5 ppm 0.14 ppm 0.030 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing.
Lead (Pb)[3]	Monthly Quarterly	1.5 µg/m^3 ---	--- 1.5 µg/m^3	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also considered a toxic air contaminant.	Primary: lead-based industrial process like batter production and smelters. Past: lead paint, leaded gasoline. Moderate to high levels of aerially deposited lead from gasoline may still be present in soils along major roads, and can be a problem if large amounts of soil are disturbed.

Pollutant	Averaging Time	State Standard	Federal Standard	Health and Atmospheric Effects	Typical Sources
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. NOTE: not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas.	See particulate matter above.
Vinyl Chloride[3]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter

1 Rounding to an integer value is not allowed for the State 8-hour CO standard. A violation occurs at or above 9.05 ppm.

2 Annual PM_{10} NAAQS revoked October 2006; was 50 µg/m^3. 24-hr. $PM_{2.5}$ NAAQS tightened October 2006; was 65 µg/m^3.

3 The ARB has identified lead, vinyl chloride, and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There is no threshold level of exposure for adverse health effect determined for toxic air contaminants, and control measures may apply at ambient concentrations below any criteria levels specified for these pollutants or the general categories of pollutants to which they belong.

4 12/22/2006 Federal court decision may affect applicability of Federal 1-hour ozone standard. Prior to 6/2005, the 1-hour standard was 0.12 ppm. Case is still in litigation.

Greenhouse Gases and Climate Change:
Carbon dioxide and similar "greenhouse gases" are not considered "pollutants" under the Federal Clean Air Act by U.S. EPA, and are not subject to current national ambient air quality standards. A Supreme Court decision on 4/2/2007 may change that position, but further litigation will most likely occur before the situation is settled. EPA is active in the climate change arena. For more information, see: http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html.

Carbon dioxide and similar "greenhouse gases" are not criteria pollutants under the California Clean Air Act, and ambient air quality standards have not been set. They are, however, regulated by the California Air Resources Board (ARB) based on legislation and Governor's executive orders. Carbon dioxide emission reduction measures adopted to date are in litigation. For more information on ARB's climate change program see: http://www.arb.ca.gov/cc/cc.htm.

There are a number of greenhouse gases, of varying potency. Since carbon dioxide (CO_2) is the most prevalent greenhouse gas, most "GHG" analyses express greenhouse gas emissions in terms of "CO_2 equivalent." CO_2 emissions themselves are closely related to fuel consumption.

Sources:

- California Air Resources Board Ambient Air Quality Standards chart (http://www.arb.ca.gov/aqs/aaqs2.pdf)
- Sonoma-Marin Area Rail Transit Draft EIR Air Pollutant Standards and Effects table, November 2005, page 3-52.
- U.S. EPA and California Air Resources Board air toxics websites, 05/17/2006
- U.S. EPA Final Rulemaking (Federal Register, 17 October 2006, 71 FR 61144)
- DC Circuit Court decision, South Coast AQMD v. EPA; opinion at the Court's web site accessed 4/2/2007: http://pacer.cadc.uscourts.gov/docs/common/opinions/200612/04-1200a.pdf
- Supreme Court decision, Mass. v. EPA; slip opinion at the Court's web site accessed 4/2/2007: http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf

Updated: 4/12/2007

Table 2.12-2. Highest 1-Hour and 8-Hour CO Value for Each Alternative, for the Years 2010, 2020, and 2030 (in parts per million)

Alternative	2010	2020	2030
No-Build			
1-Hour	7.8	6.5	6.1
8-Hour	5.5	4.5	4.3
Alt. 1			
1-Hour	8.0	6.6	6.3
8-Hour	5.6	4.6	4.4

2.13 NOISE

This noise analysis evaluates the effects of the proposed project on the noise environment and discusses noise abatement measures for affected areas. Caltrans completed the noise study for this project in April 2007. A copy of the report is available from Caltrans.

2.13.1 Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. For highway transportation projects with FHWA involvement, the federal-aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 2.13-1 at the end of this section lists the NAC.

In accordance with Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, October 1998*, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This section discusses noise abatement measures that would likely be incorporated in the project.

Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Other factors used in determining whether a proposed noise abatement measure is reasonable include: residents acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978, and the cost per benefited residence.

2.13.2 Affected Environment

The existing noise environment throughout the project corridor varies by location, proximity to I-80, other noise sources, the relative highway and local elevations and terrain, and any intervening structures or barriers. There is a mix of single-family and multi-family residential, commercial, and industrial land-uses throughout the project area.

2.13.2.1 Identification of Potentially Impacted Areas

Areas of potential noise impacts extend along I-80 throughout the majority of the project area. Regions within the study area where the proposed project could cause substantial noise increases, or cause noise levels to approach or exceed the NAC under Year 2034 Build conditions, were divided into 7 separate areas. Table 2.13-2 identifies the applicable receiver category associated with each of the noise measurement locations within each area. Noise measurement site locations are shown on Figures 2.1-1a to 1m.

2.13.2.2 Receivers and Noise Measurement Sites

There were 48 short-term measurements taken along the project to document the baseline noise environment. The measurement locations were chosen to accurately represent areas of Category B land uses that would benefit from lower future noise levels. Category B land uses include single-family and multi-family land uses, open space (such as parks), public areas (such as churches), and hotels and motels. The following is a discussion on existing noise levels for each seven areas that are within the project limit.

Area 1: Western Project Limit to West El Camino Avenue

Activity Category B land uses adjacent to I-80 in Area 1 include single-family residents located only on the east side of highway. The north side of the highway is currently undeveloped. There is an existing 11-foot sound wall shielding all four sensitive receivers from the highway noise (see Figures 2.13-1a and 1b). The terrain is flat in this area. Four short-term noise measurements (R1, R2, R3, R4) were taken to quantify the existing worst-hour noise levels. Loudest-hour noise level ranged from 51 to 60 dBA. None of the receivers approached or exceeded the NAC of 67 dBA.

Area 2: West El Camino Avenue to I-5

In Area 2, there are no Category B land uses on either side of I-80; however, two new subdivisions (Beazer Homes and River View Homes) are planned (see Figures 2.13-1b and 1c). Three short-term measurements (R44, R45, R46) that were made at River View Homes ranged from 66 to 67 dBA. The locations of these measurements are not considered noise sensitive receivers since they do not represent frequent human use areas. The common outdoor areas will be in front of second row of homes.

Area 3: I-5 to Truxel Road

Activity Category B land uses In Area 3 include single-family residential located on the south of the highway. Commercial facility Category C activity land use and undeveloped land are along the north side. There is an existing 10-foot noise barrier shielding all sensitive receivers (see Figures 2.13-1d and 1e). The terrain in Area 3 is relatively flat. Sensitive receivers included R7 through R12. The six short-term noise measurements ranged from 58 dBA to 66 dBA. One receiver approached the NAC of 67 dBA

Area 4: Truxel Road to Northgate Boulevard

Land uses on north side of I-80 of Area 4 are primarily non-noise sensitive commercial and industrial uses. On the south side there are single-family residents and Natomas High School, both located approximately 900 feet from I-80. It is Caltrans policy to limit noise assessment to approximately 500 feet from roadway under consideration. The loudest two short-term noise measurements (R13 and R14) were 54.5 dBA and 53.3 dBA, respectively. None of the receivers approached or exceeded the NAC of 67 dBA. There is a new residential subdivision (ParkBridge) proposed on the south side of I - 80. Noise levels ranged from 68 to 72 dBA. The developer will construct a sound wall sufficient of height (7 to 16 feet) to reduce noise levels below NAC of 67 dBA.

Area 5: Northgate Boulevard to Norwood Avenue

Category B receivers in Area 5 are located to the west of I-80 and include single-family residents. The south side of I-80 consists primarily of commercial and industrial uses. Two short-term noise measurements at R16 and R17 resulted in levels of 71.3 dBA and 67.6 dBA. There is an existing 6-foot noise barrier shielding receiver number 17 (see Figures 2.13-1g and 1h). Both receivers approached and exceeded the NAC of 67 dBA.

Area 6: Norwood Avenue to Raley Boulevard

Activity Category B land uses in Area 6 include the Taylor Apartments and single-family residences. There is an existing 8-foot noise barrier located at the Taylor Apartments shielding R19. A new subdivision will be constructed on west side of I-80 at Jessie Avenue, including a new noise barrier of

11 feet high placed adjacent to highway (see Figures 2.13-1h through 1j). The profile of I-80 in Area 6 starts above the receivers and then goes below receivers starting at Rio Linda Boulevard and continues until Area 7. Seventeen short-term measurements (R18 through R31) were measured ranging from 57.4 dBA to 69.4 dBA. Six receivers approached or exceeded the NAC of 67 dBA.

Area 7: Raley Boulevard to Winters Street

In Area 7, sensitive noise receivers are located approximately 20 ft above I-80. There are no existing sound walls along this segment. Category B land uses adjacent to I-80 include single-family residences. Twelve short-term noise measurements (R32-R42) were made and nine receivers approached or exceeded the NAC of 67 dBA.

2.13.3 Environmental Consequences

2.13.3.1 Traffic Noise Impacts

In the Traffic Study for the project, Fehr & Peers prepared the design year (2034) traffic data, which included traffic volumes and speed for the project. Typically, the combination of traffic volumes and speeds that occur with Level of Service (LOS) C conditions yields loudest sound levels. LOS C is typically 1,600 to 1,800 vehicle per hour per lane. When the peak hour traffic volumes predicted exceeded the LOS C conditions, the modeled volumes were scaled back to meet LOS C condition.

2.13.3.2 Pavement

Preliminary documentation of existing pavement types through the study area found that the pavement along I-80 was primarily fair to poor condition. As part of the project, I-80 would be repaved with open-graded asphalt concrete (OGAC) throughout the length of the study area. Recent studies by Caltrans and others indicate that OGAC can reduce traffic noise by 4 to 6 dB (Illingworth & Rodkin 2005). FHWA does not officially accept the noise reduction aspects of OGAC as a noise abatement measure (i.e. utilization of OGAC in lieu of noise barriers). However, pavement type may be taken into consideration for modeling and prediction purposes. As the longevity of the noise reduction benefits is still uncertain and as a conservative practice, the use of OGAC is not taken into consideration. Noise impacts are generally overstated in locations where OGAC would replace the existing PCC pavement. In these cases, the future traffic noise levels would be anticipated to be 4 to 6 dB lower than the modeled results detailed below.

2.13.3.3 Predicted Traffic Noise Levels

Traffic noise levels during the loudest of the day were computed for both no-build and build conditions for the project's design year (2034). The predicted noise levels obtained are the result of adjusted (calibrated) model for each area. Table 2.13-3 summarizes the results of the traffic noise modeling for existing conditions and future design-year conditions with and without the project. Predicted design-year traffic noise levels with the project are compared to existing conditions and to design-year no-project conditions. Modeling results indicate that predicted traffic noise levels in Areas 5, 6, and 7 approaches or exceeds the Activity Category B NAC of 67 dBA Leq (h). Because traffic noise impacts are predicted to occur at Activity Category B land uses, noise abatement must be considered. There are no NAC Category C land uses in the project area that are considered to have outdoor activity areas with frequent human usages that would benefit from a lower noise level.

2.13.3.4 Assessment of Noise Impacts and Abatement Options

As stated in the Protocol, noise abatement is only considered for areas of frequent human activity that would benefit from a lowered noise level. As a matter of practice, exterior locations are considered areas of frequent human use if people visit them for at least 1 hour on regular basis. Potential noise abatement measures may include:

- Avoiding the project impact by using design alternatives such as altering the horizontal and vertical alignment of the project.

- Constructing noise barriers.
- Acquiring property to serve as a buffer zone.
- Using traffic management measures to regulate types of vehicles and speeds.
- Acoustically insulating public use or nonprofit institutional structures.

Because of project topography and location, noise barriers are the only form of abatement evaluated for this project. Caltrans has evaluated the feasibility each noise barrier based on achievable noise reduction (see below). For each barrier found feasible, reasonable cost allowances were calculated. Table 2.13-4 summarizes the reasonable cost calculations, based on the allowance calculation procedure identified in the Protocol. For any noise barrier to be considered reasonable from a cost perspective, the estimated cost of constructing the noise barrier should be equal to or less than total allowance calculated for that barrier. Table 2.13-5 lists and Figures 2.13-1h to 1l depict the location of reasonable and feasible noise barriers.

Noise Abatement Feasibility
Noise abatement must reduce noise levels by at least 5 dBA at the affected receivers in order for the proposed noise abatement to be considered feasible. Greater noise reductions are encouraged as long as they meet the reasonableness guidelines. Feasibility can be restricted by various factors, including topography, access requirements for driveways, underground utilities, safety considerations and other noise sources in the area. TNM 2.5, the Federal Highway Administration's (FHWA's) Traffic Noise Model, was used to evaluate wall heights ranging from 8 foot to 16 foot (in 2-foot increments). TNM was also used to confirm that the proposed barrier height would break the line of sight between an 11.5 ft high truck stack and a 5 ft high receiver.

The feasibly of sound walls was considered for all locations where traffic noise impacts were identified. Potential sound walls are discussed below for each of the seven areas within the project limit. Once a noise barrier met feasibility criteria at a given receiver, the reasonableness was determined.

Noise Abatement Reasonableness:
Sound walls that are feasible must be evaluated for reasonableness as well. The preliminary reasonableness determination for providing exterior noise abatement for residential areas in Activity Category B begins with a $32,000 base allowance per benefited residence. The base cost per benefited residence is then adjusted by the five following reasonableness factors to determine a Total Reasonable allowance for each sound wall:

- Absolute noise levels
- Build vs. existing noise levels
- Achievable noise reduction
- New construction or predates 1978
- Total noise abatement allowance versus project cost

The Total Reasonable allowance was computed for each of the wall heights found feasible. Table 2.13-4 summarizes the maximum noise reduction, benefited receivers, and reasonable allowances for each assessed barrier.

Based on studies so far, Caltrans intends to incorporate noise abatement measures in the form of barriers (sound walls) at various locations, with respective lengths and average heights discussed below (see Table 2.13-5 for a list of proposed sound walls). Calculations based on preliminary design data indicate that the barriers will reduce noise levels by 5 to 14 dBA for approximately 350 residences at a cost of $12.7 million. If the project changes substantially during final design, noise barriers might not be provided. The final decision on the noise barriers will be made after completion of the public involvement process during the final project design process.

Area 1: Western Project Limit to West El Camino Avenue
The current existing 11-foot noise barrier, which is located on the south side of I-80 from the end of West River Drive to Barandas Drive, shields four short–term noise measurements (R1, R2, R3, R4). The loudest-hour Leq (h) for the design year (2034) was from 54 to 64 dBA. Since the noise levels predicted for all receivers do not approach or exceed the Activity Category B Noise Abatement Criteria of 67 dBA Leq (h), no noise abatement is considered.

Area 2: West El Camino Avenue to I-5
In Area 2, there are currently no Category B land uses on either side of I-80, however, as shown in Figures 2.13-1b and 1c, new homes are planned on the south and north side (west of I-5). Beazer Homes will be constructing a sound wall 14 feet in height adjacent to I-80. The sound wall will reduce future traffic noise levels to 65 dBA. Three short-term measurements (R44, R45, R46) tmade at River View Homes ranged from 66 to 68 dBA. The predicted loudest-hour Leq (h) for the design Year (2034) ranged from 67 to 69 dBA. The predicted noise levels approach or exceeds NAC. In lieu of constructing a 20-foot sound wall in order to reduce noise levels to below NAC of 67 dBA, the developer has utilized the first row of townhomes as a noise barrier for the rest of the proposed developments ('pull-apart'). The entire eastern and southern edges of the property, which are adjacent to the freeways, will consist of small lot townhomes, which are clustered together to provide a solid noise barrier between freeways and the remainder of the project. Two story townhomes will be positioned so that there is no space between them for sound waves to penetrate into the interior of the development. There are no outdoor common or private areas that are not sheltered from highway noise by buildings. The front row of houses that act as noise barrier will reduce noise levels from 10 to 14 dBA for all houses beyond the fist row. The houses in the fist row adjacent to the highway do not have yards (frequent human use) that are exposed to direct traffic noise. Yards and common areas are located on the interior of the project, with a row of houses acting as a screen.

Area 3: I-5 to Truxel Road
There is an existing 10-foot noise barrier located on south side of I-80. Six short-term noise measurements (R7 through R12) were made behind the existing sound wall. The loudest-hour Leq (h) for design year (2034) ranged from 61 to 69 dBA. This increase in noise levels is the result of increased traffic volumes. Since the noise levels predicted approach or exceed the Activity Category B NAC of 67 dBA Leq (h), noise abatement must be considered. Once noise abatement is considered then feasibility analysis must be performed to determine the effectiveness of the barrier.

The results of feasibility analysis for Area 3 indicated that increasing the height from the existing 11-foot to 14 feet and 16 feet did not achieve the 5-dBA reduction. Therefore, replacing this barrier with higher height was not feasible. Since feasibility was not achieved, reasonability analysis was not performed.

Area 4: Truxel Road to Northgate Boulevard
There are new homes and condominiums planned by Parkebridge Homes on the south side of I-80. The developer is planning to construct a sound wall to protect the new developments.

Land uses on north side of I-80 in this segment of highway are primarily non-noise sensitive commercial and industrial uses. On south side of I-80 there are single-family residents and the Natomas High School, both located approximately 900 feet from I-80. It is Caltrans practice to limit noise assessment to approximately 500 feet from the roadway under consideration. The loudest two short-term noise measurements (R13 and R14) were 54.5 dBA and 53.3 dBA, respectively.

Since the noise levels predicted for all receivers did not approach or exceed the Activity Category B NAC of 67 dBA, noise abatement was not considered.

Area 5: Northgate Boulevard to Norwood Avenue
There is an existing 6-foot wall shielding receiver R17. The loudest-hour Leq (h) for the design year (2034) ranged from 61 to 73 dBA. This increase in noise levels is the result of an increase in traffic

volumes. The predicted noise levels would approach or exceed NAC and therefore noise abatement in form of new sound barrier (W5) is considered.

The predicted Year 2034 loudest-hour noise level within this segment is 70 dBA. Receiver 17 is located behind the existing 6-foot noise barrier. Replacing the exiting wall with a higher noise barrier will not be feasible (less than 5-dBA noise reduction).

Barrier W5:
Predicted design-year traffic volumes have a maximum noise level of 70.3 dBA for noise-sensitive receivers in Area 5. Because predicted noise levels approach or exceed the NAC in this area, a noise barrier was evaluated. Proposed sound wall W5 begins at the existing sound wall and continues to the end of Du Bois Avenue. The barrier would reduce noise levels by 5 to 7 decibels. A minimum barrier height of 10 feet would break the line of sight between an 11.5-foot high truck stack and a 5-foot high receiver in the first row of residences. The reasonable allowance calculated in accordance with Protocol ranged from $2,160,000 to $2,750,000, depending upon the barrier height.

Area 6: Norwood Avenue to Raley Boulevard
There are no existing sound walls in Area 6. The loudest-hour Leq (h) for the design Year (2034) ranged from 61 to 73 dBA. The increase in noise levels is due to increased traffic volumes, and is not considered substantial. Since the noise levels predicted approach or exceed the Activity Category B NAC of 67 dBA Leq (h), noise abatement must be considered. Noise abatement in the form of new sound barriers (W6, E6A, and E6B) is considered for this area.

Three barriers (W6, E6A, E6B) were evaluated to reduce the noise impact on Area 6 receivers. Because the noise-sensitive receivers are located above I-80, the most acoustically effective location for the entire proposed barrier would be on top of slop, which is along the State right-of-way. The following is a discussion of each proposed barrier.

Barrier W6:
Predicted design-year traffic volumes have a maximum noise level of 68.8 dBA for noise-sensitive receiver in Area 6. Because predicted noise levels approach or exceed the NAC in this area, a noise barrier was evaluated. Proposed sound wall W6 is a continuous barrier, extending from Fell Street to Raley Boulevard. The barrier would reduce noise levels by 5 to 9 decibels. A minimum barrier height of 8 feet would break the line of sight between an 11.5-foot high truck stack and a 5-foot high receiver in the first row of residences. The reasonable allowance calculated in accordance with Protocol ranged from $1,452,000 to $2,070,000, depending upon the barrier height.

Barrier E6A:
Predicted design-year traffic volumes have a maximum noise level of 71 dBA for noise-sensitive receiver in this area south of I-80. Proposed sound wall E6A is a continuous barrier extending from May Street to Dry Creek Road. The barrier would reduce noise levels between 6 and 12 decibels. A minimum barrier height of 8 feet would be feasible and breaks the line of sight in the first row of residences. The reasonable allowance calculated in accordance with Protocol ranged from $1,196,000 to $2,400,000, depending upon the barrier height.

Barrier E6B:
Predicted design-year traffic volumes have a maximum noise level of 73 dBA for noise-sensitive receiver in this area south of I-80. Proposed sound wall E6A is a continuous barrier, extending from Dry Creek Road to west of Raley Boulevard. The barrier would reduce noise levels by 5 to 14 decibels. A minimum barrier height of 8 ft would break the line of sight for the first row of residences. The reasonable allowance calculated in accordance with Protocol ranged from $2,600,000 to $2,808,000, depending upon the barrier height.

The eastern portion of barrier E6B did not meet the Noise Abatement Criteria. Extension of the sound wall is recommended for aesthetic continuity. However, inclusion of this section depends on available funding.

Area 7: Raley Boulevard to Winters Street
There are no existing sound walls along this segment of highway. The loudest-hour Leq (h) for the design year (2034) ranged from 54 to 75 dBA. The increase in noise levels is due to increased traffic volumes, and is not considered substantial. Since the noise levels predicted approach or exceed the Activity Category B NAC of 67 dBA Leq (h), noise abatement must be considered. Noise abatement in the form of new sound barriers (W7A, W7B, W7C, E7A, E7B, E7C) is considered for this area.

The following is a discussion of noise abatement consideration for each area. An increase of 12 dB or greater is considered by Caltrans as substantial and therefore result in a traffic noise impact. Substantial increases also result in a finding of a significant environmental effect based on CEQA. No receivers for this project are expected to experience increase of 12 dB or more. All areas consist of Activity Category B residential land use unless otherwise noted.

There are currently no noise barriers in Area 7. Six barriers (W7A, W7B, W7C, E7A, E7B, E7C) were evaluated to reduce the noise impact on these receivers. Because noise-sensitive receivers are located above I-80, the most acoustically effective location for all the proposed barriers would be on top of slop, along State right-of-way. The following is a discussion of each proposed barrier.

Barrier E7A:
Predicted design-year traffic volumes have a maximum noise level of 75 dBA for noise-sensitive receivers. Because predicted noise levels approach or exceed the NAC in this area, a noise barrier was evaluated. Proposed sound wall E7A is a continuous barrier, extending from Raley Boulevard to North Avenue. The barrier would reduce noise levels by 5 to 14 decibels. A minimum barrier height of 8 feet would be feasible and break the line of sight for the first row of residences. The reasonable allowance calculated in accordance with Protocol ranged from $1,820,000 to $2,646,000, depending upon the barrier height.

Barrier E7B:
Predicted design-year traffic volumes have a maximum noise level of 70 dBA for noise-sensitive receivers. Proposed sound wall E7B is a continuous barrier, extending from North Avenue to Pinell Street. The barrier would reduce noise levels by 5 to 9 decibels. A minimum barrier height of 8 feet would be feasible and break the line of sight. The reasonable allowance calculated in accordance with Protocol ranged from $798,000 to $1,760,000, depending upon the barrier height

Barrier E7C:
Predicted design-year traffic volumes have a maximum noise level of 71 dBA for noise-sensitive receivers. Proposed sound wall E7C is a continuous barrier, but because of the profile change of the highway this barrier would consists of two different heights in order to meet feasibility and line of sight. A minimum barrier of height 8 feet would break the line of sight from Pinell Street to Ripley Street. The barrier would then be elevated to 14 feet from Ripley Street to west of Winters Street to meet the feasibility criteria. The proposed barrier would reduce noise levels by 6 to 10 decibels. The reasonable allowance calculated in accordance with Protocol ranged from $630,000 to $2,100,000, depending upon the barrier height.

The eastern portion of barrier E7C did not meet the Noise Abatement Criteria. Extension of the sound wall is recommended for aesthetic continuity. However, inclusion of this section depends on available funding.

Barrier W7A:
Predicted design-year traffic volumes have a maximum noise level of 73 dBA for noise-sensitive receivers. Proposed sound wall W7A is a continuous barrier from Raley Boulevard to North Avenue. The barrier would reduce noise levels by 5 to 10 decibels. A minimum barrier height of 8 feet would be feasible and break the line of sight for the first row of residences. The reasonable allowance calculated in accordance with Protocol ranged from $2,352,000 to $3,952,000, depending upon the barrier height.

Barrier W7B:
Design-year traffic volumes are predicted to have a maximum noise level of 73 dBA for noise-sensitive receivers. Proposed sound wall W7A is a continuous barrier from North Avenue to Pinell Street. The barrier would reduce noise levels by 6 to 10 decibels. A minimum barrier height of 8 feet would be feasible and breaks the line of sight. The reasonable allowance calculated in accordance with Protocol ranged from $192,000 to $200,000, depending upon the barrier height.

Barrier W7C:
Design-year traffic volumes are predicted to have a maximum noise level of 71 dBA for noise-sensitive receivers. Proposed sound wall E7C is a continuous barrier, but because of the profile change of the highway this barrier would consists of two different heights in order to meet feasibility and line of sight. A minimum barrier of height 8 feet would break the line of sight from Pinell Street to Ripley Street. The barrier would then be elevated to 14 feet from Ripley Street to Winters Street to meet the feasibility criteria. The proposed barrier would reduce noise levels by 6 to 9 decibels. The reasonable allowance calculated in accordance with Protocol ranged from $1,092,000 to $2,600,000, depending upon the barrier height.

No-Build Alternative
For the Year 2034 No Build conditions, noise increases of up to 1 dBA were predicted above Year 2006 levels. Noise level increases would not be considered substantial. However, due to existing conditions, noise levels at many first- and second-tier Category B receivers would continue to approach or exceed the NAC of 67 dBA.

2.13.3.5 CEQA Assessment

The Protocol states that a proposed project or proposed abatement measures are examined to determine whether they would result in a significant environmental effect if one or both of the following occur:

- Traffic impacts predicted are due to substantial noise increase.
- Proposed noise abatement has a potential for a significant effect on a competing resource, such as a designated scenic highway, a historical site or endangered species.

The Protocol defines a substantial noise increase as a 12 dB increase from existing conditions to design year project conditions. The modeling results indicate that the projected increases in noise are less than 12 dB. There are no scenic sites, historical sites, or biological resources that would be affected by the walls. Accordingly, no potential for the proposed abatement measures to result in a significant effect on competing resources has been identified, and thus are considered not significant under CEQA.

2.13.3.6 Construction Noise

Noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Construction noise is regulated by Caltrans standard specification Section 7-1.01 I, “Sound Control Requirements”. These requirements state that noise levels generated during construction shall comply with applicable local, state, and federal regulations, and that all equipment shall be fitted with adequate mufflers according to the manufacturers’ specifications.

Table 2.13-6 summarizes noise levels produced by various construction equipment commonly used on roadway construction projects. As indicated, construction equipment is expected to generate noise levels ranging from 70 dB to 90 dB at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. Because construction activity would be conducted in accordance with Caltrans' standard specifications and would be short term, intermittent, limited in physical extent, and in most cases dominated by local traffic noise, no substantial noise impacts from construction are anticipated.

Table 2.13-1. Noise Abatement Criteria (NAC)

Activity Category	NAC, Hourly A- Weighted Noise Level, dBA L_{eq}(h)	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	--	Undeveloped lands.
E	52 Interior	Residence, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Table 2.13-2: Summary of Noise Measurement IDs and Land Uses for Each Project Segment

Area Number and Location	Applicable Activity Category	Receiver ID
Area 1: Western project limit to West El Camino Avenue	B (residential)	R1, R2, R3, R4
Area 2: West El Camino Avenue to I-5	-	-
Area 3: I-5 to Truxel Road	B (residential)	R7, R8, R9, R10, R11, R12
Area 4: Truxel Road to Northgate Boulevard	-	R13, R14, R15
Area 5: Northgate Boulevard to Norwood Avenue	B (residential)	R16, M16A, M16B, R17
Area 6: Norwood Avenue to Raley Boulevard	B (residential)	R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R29A, R30, R30A, R30B, R31
Area 7: Raley Boulevard to Raley Street	B (residential)	R32, R33, R34, R35, R36, R37, R38, R39, R40 ,R41, R42

Table 2.13-3. Existing (2004) and Predicted (2030) Noise Levels

Receiver ID	Location	Area	Existing Noise Level (dBA, Leq (h))	Design-Year No-Project Noise Level (dBA Leq (h))	Design-Year With Project Traffic Noise Level (dBA)	Design-Year With Project Minus Existing (dBA)	Design-Year With Project Minus Design-Year No-Project (dBA)	Traffic Noise Impact*
R1	46 Blue Fleur Ct.	1	60.2	61.8	62.3	1.9	0.5	None
R2	12 Swinging Bridge Ct.	1	52.4	53.1	54.0	1.6	0.9	None
R3	539 Rosier Cir.	1	52.2	53.7	54.4	1.5	0.6	None
R4	7225 Weald Way	1	62.3	63.2	63.9	1.6	0.7	None
R44	Future Residence (I5 / I80)	2	68.4	69.2	69.9	1.5	0.7	A/E
R45	Future Residence (I-80)	2	68.1	69.0	69.6	1.5	0.6	A/E
R46	Future Residence (I-80)	2	69.3	70.1	70.7	1.4	0.6	A/E
R7	2234 Maricopa Way	3	61.9	62.8	63.4	1.5	0.6	None
R8	2222 Coroval Dr.	3	58.4	59.3	60.7	2.3	1.4	None
R9	3207 Osuna Way.	3	66.2	67.1	67.7	1.4	0.5	A/E
R10	Laurel H. Apartments	3	66.4	67.8	68.4	2.0	0.6	A/E
R11	Laurel H. Apartments	3	66.1	67.5	68.7	2.6	1.2	A/E
R12	Laurel H. Apartments	3	64.1	65.2	65.7	2.6	1.5	None
R13	Natomas High School	4	54.5	** No Modeling Performed.				
R14	15 Rio Camino Dr.	4	53.3	***No Modeling Performed.				
R15	3775 N. Freeway Blv.	4	74.0	****No Modeling Performed.				
R16	Dubois Ave.	5	68.2	69.5	70.3	2.1	1.3	A/E
M16A	Dubois Ave.	5	67.0	68.5	69.8	2.8	1.5	A/E
M16B	Dubois Ave.	5	67.5	69.1	70.1	2.6	1.6	A/E
R17	384 Eaton Ct.	5	63.9	65.2	66.1	2.2	0.9	A/E
R18	732 Display Ct.	6	59.1	59.9	60.5	0.8	0.6	None
R19	4404 Taylor St.	6	62.6	63.8	64.3	1.2	0.5	None

Receiver ID	Location	Area	Existing Noise Level (dBA, Leq (h))	Design-Year No-Project Noise Level (dBA Leq (h))	Design-Year With Project Traffic Noise Level (dBA)	Design-Year With Project Minus Existing (dBA)	Design-Year With Project Minus Design-Year No-Project (dBA)	Traffic Noise Impact*
R20	901 North Ave.	6	60.1	60.9	61.5	0.8	0.6	None
R21	511 Odonnell Ave.	6	69.3	69.8	71.0	1.7	0.2	A/E
R22	4111 Dry Creek Rd.	6	69.3	69.9	71.0	1.7	0.1	A/E
M23A	Rene Ave.	6	67.4	68.8	70.0	2.6	1.2	A/E
R23	1301 Rene Ave.	6	68.4	69.7	69.9	1.5	0.2	A/E
R24	1409 Rene Ave.	6	68.2	69.4	73.3	5.1	3.9	A/E
R25	4049 Balsam St.	6	61.3	62.5	63.4	2.1	0.9	None
R26	838 Jessie Ave.	6	59.4	59.7	60.5	1.1	0.3	None
R27	933 Jessie Ave	6	60.9	60.9	61.3	0.7	0.4	None
R28	4236 Dymic Way	6	55.8	56.3	57.4	1.6	0.9	None
R29	1200 Longshore Dr.	6	61.3	61.7	61.9	0.2	0.6	None
R29A	4228 Fell St.	6	57.4	58.0	58.4	1.0	0.4	None
R30	1370 Longshore Dr.	6	58.9	59.8	60.6	1.7	0.8	None
R30A	1401 Jessie Ave.	6	68.3	68.5	68.7	0.4	0.2	A/E
R31	1429 Jessie Ave	6	65.2	66.3	67.6	1.4	1.3	A/E
R32	605 Clinger Ct.	7	66.0	66.8	67.2	1.2	0.4	A/E
R33	202 MacArthur St.	7	70.7	71.7	72.4	1.7	0.7	A/E
R33A	414 MacArthur St.	7	68.0	68.7	69.4	1.4	0.7	A/E
R34	201 Doolittle St.	7	73.5	74.4	75.1	1.6	0.7	A/E
M34A	Doolittle St.	7	71.7	72.5	73.1	1.4	0.8	A/E
R35	402 Buckley Way	7	66.0	66.8	67.6	1.6	0.8	A/E
R36	Presidio St.	7	66.9	67.6	68.5	1.6	0.7	A/E
M36A	Presidio St.	7	67.1	68.1	69.0	1.9	1.0	A/E

Receiver ID	Location	Area	Existing Noise Level (dBA, Leq (h))	Design-Year No-Project Noise Level (dBA Leq (h))	Design-Year With Project Traffic Noise Level (dBA)	Design-Year With Project Minus Existing (dBA)	Design-Year With Project Minus Design-Year No-Project (dBA)	Traffic Noise Impact*
R37	Dayton St	7	66.7	67.4	67.9	1.2	0.5	A/E
R38	237 Majistic	7	59.9	60.7	61.4	1.5	0.7	None
R39	3917 Dayton St	7	53.2	54.0	54.7	1.5	0.7	A/E
R40	3900 Ripley St.	7	68.9	69.7	70.2	1.3	0.5	A/E
R41	3837 Dayton St	7	69.8	70.5	71.1	1.3	0.6	A/E
M41A	Dayton St	7	67.8	68.9	69.5	1.7	1.1	A/E
R42	2301 Ripley St.	7	65.9	66.7	67.2	1.3	0.5	A/E
M42A	Ripley St.	7	66.7	67.6	68.5	1.8	0.9	A/E

*Impact Types: A/E - noise abatement criteria approached or exceeded
None - no impacts identified

Glossary: Leq (h) = 1-hour A-weighted equivalent sound level
dB = decibels

Table 2.13-4. Feasible and Reasonable Allowances for All Barriers

Sound Wall ID	Approximate Stationing	Approximate Length Of Sound wall	Barrier Height (ft)	*Predicted Noise Reduction, dBA	Feasible? (Yes or No)	Number of Benefited Receivers	Total Allowance Per Residence ($)	Total Reasonableness Allowance ($)	Engineer's Estimate	Reasonable? (Yes or No)
W5	West Bound 521+00 to 535+00	1,400	8 ft	2.4	No	0	0	0	$835,838	No
			**10 ft	5.0	Yes	45	48,000	48,000	$946,100	Yes
			12 ft	5.8	Yes	45	48,000	48,000	$1,062,710	Yes
			14 ft	6.2	Yes	55	50,000	50,000	$1,176,560	Yes
			16 ft	7.2	Yes	55	50,000	50,000	$1,289,536	Yes
W6	West Bound 609+00 to 621+00	1,200	**8 ft	5.4	Yes	33	44,000	1,452,000	$1,133,362	Yes
			10 ft	6.6	Yes	33	46,000	1,452,000	$1,282,885	Yes
			12 ft	7.8	Yes	45	46,000	2,070,000	$1,440,872	Yes
			14 ft	8.5	Yes	45	46,000	2,070,000	$1,594,857	Yes
			16 ft	9.4	Yes	45	46,000	2,070,000	$1,747,784	Yes
W7A	West Bound 623+00 to 646+70	2,370	**8 ft	7.2	Yes	49	48,000	2,352,000	$1,843,314	Yes
			10 ft	8.4	Yes	49	48,000	2,352,000	$2,046,726	Yes
			12 ft	9.2	Yes	55	52,000	2,860,000	$2,261,776	Yes
			14 ft	10.0	Yes	76	52,000	3,952,000	$2,471,122	Yes
			16 ft	10.3	Yes	76	52,000	3,952,000	$2,679,962	Yes
W7B	West Bound 647+90 to 652+50	470	**8 ft	5.3	Yes***	4	48,000	192,000	$239,770	Yes***
			10 ft	6.5	No	4	50,000	200,000	$266,266	No
			12 ft	8.0	No	4	50,000	200,000	$293,820	No
			14 ft	8.5	No	4	50,000	200,000	$321,512	No
W7C	West Bound 653+40 to 667+00	1,360	**8 ft	5.7	Yes	26	42,000	1,092,000	$977,936	Yes
			10 ft	6.9	Yes	26	44,000	1,144,000	$1,085,852	Yes
			12 ft	8.0	No	26	44,000	1,144,000	$1,200,116	No
			14 ft	9.4	Yes	34	46,000	1,564,000	$1,310,838	Yes
			16 ft	10.1	Yes	34	46,000	1,564,000	$1,421,606	Yes
	West Bound 667+00 to 677+00	1,000	8 ft	1.8	No	0	0	0	$693,270	No
			10 ft	3.0	No	0	0	0	$769,791	No
			12 ft	5.3	Yes	16	44,000	704,000	$850,544	No
			**14 ft	6.9	Yes	23	46,000	1,058,000	$929,089	Yes
			16 ft	7.6	Yes	23	46,000	1,058,000	$1,008,278	Yes

Sound Wall ID	Approximate Stationing	Approximate Length Of Sound wall	Barrier Height (ft)	*Predicted Noise Reduction, dBA	Feasible? (Yes or No)	Number of Benefited Receivers	Total Allowance Per Residence ($)	Total Reasonableness Allowance ($)	Engineer's Estimate	Reasonable? (Yes or No)
E6A	East Bound 586+00 to 596+00	1,000	****8 ft** 10 ft 12 ft 14 ft 16 ft	**5.7** 8.5 9.6 10.7 11.7	**Yes** Yes Yes Yes Yes	**26** 30 48 48 48	**46,000** 48,000 50,000 50,000 50,000	**1,196,000** 1,440,000 2,400,000 2,400,000 2,400,000	**$717,746** $796,958 $880,402 $962,420 $1,043,058	**Yes** Yes Yes Yes Yes
E6B	East Bound 596+70 to 615+80	1,910	****8 ft** 10 ft 12 ft 14 ft 16 ft	**9.5** 11.0 12.4 13.1 14.1	**Yes** Yes Yes Yes Yes	**52** 52 52 52 52	**50,000** 52,000 54,000 54,000 54,000	**2,600,000** 2,704,000 2,808,000 2,808,000 2,808,000	**$1,899,593** $2,109,215 $2,330,475 $2,546,399 $2,761,035	**Yes** Yes Yes Yes Yes
E7A	East Bound 623+50 to 642+00	1,850	****8 ft** 10 ft 12 ft 14 ft 16 ft	**9.8** 11.0 12.4 13.0 13.8	**Yes** Yes Yes Yes Yes	**35** 35 42 49 49	**52,000** 52,000 54,000 54,000 54,000	**1,820,000** 1,820,000 2,268,000 2,646,000 2,646,000	**$1,406,961** $1,562,211 $1,726,983 $1,886,143 $2,045,579	**Yes** Yes Yes Yes Yes
E7B	East Bound 646+60 to 652+80	620	****8 ft** 10 ft 12 ft 14 ft 16 ft	**5.2** 6.3 7.1 7.8 8.5	**Yes** Yes Yes Yes Yes	**19** 25 25 40 40	**42,000** 44,000 44,000 44,000 44,000	**798,000** 1,100,000 1,100,000 1,760,000 1,760,000	**$640,265** $710,921 $785,809 $858,121 $930,755	**Yes** Yes Yes Yes Yes
E7C	East Bound 653+40 to 667+00	1,360	****8 ft** 10 ft 12 ft 14 ft 16 ft	**5.7** 6.9 8.0 9.4 10.1	**Yes***** Yes Yes Yes Yes	**15** 15 15 22 22	**42,000** 44,000 44,000 46,000 46,000	**630,000** 660,000 660,000 1,012,000 1,012,000	**$971,390** $1,078,616 $1,191,132 $1,302,222 $1,411,196	**Yes***** No No No No
	East Bound 667+00 to 677+00	1,000	8 ft 10 ft 12 ft ****14 ft** 16 ft	1.4 4.0 5.9 **6.9** 8.5	No No Yes **Yes** Yes	0 0 18 **24** 24	0 0 44,000 **44,000** 44,000	0 0 792,000 **1,056,000** 1,056,000	$717,746 $796,958 $880,402 **$962,420** $1,043,058	No No No **Yes** Yes

* Maximum Noise Reduction achieved.

** In red: Barrier height that is feasible, reasonable, and breaks the line of sight.

*** Even though the reasonable allowance of sound walls segment W7B and E7C is less than the engineer's estimate, these segments fall within the reasonable allowance when combined with the other segments of sound walls W7 and E7 (W7a and W7C, and E7A and E7B).

Table 2.13-5: Proposed Sound Walls

Proposed Sound Wall	Location	Height (feet)	Length (feet)	dBA Reduction	Number of Benefited Receivers
W5	Du Bois Ave. to existing 6-ft barrier	10	1,400	5	45
W6	Fell Street to Raley Blvd.	8	1,200	5.4	33
W7A	Raley Blvd. to North Ave.	8	2,370	7.2	49
W7B	North Ave. to Pinell Street	8	460	5.3	4
W7C	Pinell Street to Ripley Street	8	1,360	5.7	26
	Ripley Street to Winters Street	14	1,000	6.9	23
E6A	May Street to Dry Creek Road	8	1,000	5.7	26
E6B	Dry Creek Road to Raley Blvd.	8	1,910	9.5	52
E7A	Raley Blvd. to North Ave.	8	1,850	9.8	35
E7B	North Ave. to Pinell Street	8	620	5.2	19
E7C	Pinell Street to Ripley Street	8	1,360	5.7	15
	Ripley Street to Winters Street	14	1,000	6.9	24

Table 2.13-6. Construction Equipment Noise

Type of Construction Equipment	Maximum Level, dBA at 50 feet
Scrapers	89
Bulldozers	85
Heavy trucks	88
Backhoe	80
Pneumatic tools	85
Concrete Pump	82
Impact Pile Driver	95 to 105

2.14 ENERGY

Alternative 1 would reduce the energy demand by easing congestion and improving traffic flow along 1-80. This would increase fuel efficiency and reduce energy demand. The bus/carpool lanes would also encourage ridesharing that reduces energy demand further. Therefore, Alternative 1 will not have any direct, indirect, short-term, long-term or unavoidable impacts on energy demand or resources.

Alternative 2 would not encourage ridesharing, increase fuel efficiency, or reduce energy demand.

BIOLOGICAL ENVIRONMENT

INTRODUCTION

Caltrans prepared a Natural Environment Study Report (NESR) in January 2007. A copy is available from Caltrans District 3.

A list of species and habitats potentially occurring within the project vicinity was developed based on information compiled from the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game's Natural Diversity Data Base (CNDDB), and the California Native Plant Society (CNPS). A list of sensitive species considered as part of this evaluation is included in Appendix A of the NESR.

Caltrans biologists conducted field surveys of the project site between March and August 2006 to assess existing natural resources and potential impacts. Emphasis was placed on the special status species that may occur. The project site was field reviewed to 1) identify habitat types; 2) identify potential wetlands; 3) identify factors indicating the potential for rare species; 4) identify rare species present; and 5) identify potential problems for the study.

Some of the plants which were considered, though not formally listed as rare or endangered under the California Endangered Species Act, meet the definitions of Section 1901, Chapter 10 (Native Plant Protection) of the California Fish and Game Code, and are eligible for State listing. These plant species were given equal consideration during the project assessment as if they were already listed species.

2.15 WETLANDS AND OTHER WATERS

2.15.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and other waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that prohibits discharge of dredged or fill material if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be substantially degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (USEPA).

The Executive Order (EO) for the Protection of Wetlands (11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as FHWA, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

Wetlands and waters are regulated at the state level primarily by the Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish

or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

2.15.2 Affected Environment

Caltrans biologists conducted a delineation of potential wetlands and other waters of the U.S. on June 6 and August 29, 2006. Caltrans sent the delineation to the USACE for verification in December 2006. The delineation, in accordance with the routine on-site methods described in the USACE's Wetland Delineation Manual, uses a three-parameter approach to determine if an area is a jurisdictional wetland. The three parameters are hydric soils, hydric vegetation, and wetland hydrology. For an area to be a wetland subject to USACE jurisdiction, it must contain all three of these parameters.

Other waters of the US were identified by determining the location of the ordinary high water mark on each bank of the stream/channel. The area of stream/canal subject to USACE jurisdiction consisted of the length of channel within the ESL multiplied by the width of the channel at ordinary high water mark (OHWM).

Three wetland features occur within the project ESL: a small depression (referred to as the I-80 Ditch Wetland) located in the eastbound I-80 ditch between West El Camino Avenue and I-5, encompassing approximately 0.001 acres; and a divided swale (separated by a culvert and referred to as the Truxel Road Swales) that is approximately 2,030 feet long and ranging from 8 to 15 feet wide. This swale borders the EB shoulder of I-80 between Truxel Road and Northgate Boulevard and is approximately 0.57 acres in area. The culvert that bisects the swale is approximately 80 feet long.

The I-80 Ditch Wetland is dominated by cattails (*Typha latifolia*). Vegetation in the Truxel Road Swale is dominated by hydrophytic plants, including floating seedbox (*Ludwigia peploides*), tall flatsedge (*Cyperus eragrostis*), barn yard grass (*Echinochloa crusgalli*), broad-leaf cattail (*Typha latifolia*), and alkali-mallow (*Malvella leprosa*). Both wetland features receive water from highway and agricultural runoff.

The total area of wetlands potentially subject to USACE jurisdiction within the ESL is approximately 0.571 acres.

Seven areas of potentially jurisdictional other waters of the U.S. in the proposed project corridor include:

1. The West Drainage Canal (WDC), which conveys agricultural runoff under I-80 via a concrete box culvert. The area of the WDC subject to USACE jurisdiction within the ESL is approximately 0.77 acre, which includes the culvert of the WDC under I-80 and the open channel for a distance of approximately 75 feet above the intake and outfall of the culvert. The open channel within the ESL is contained by earthen levees, and is approximately 125 feet wide. The channel contained by the culvert is approximately 60 feet wide.

2. The Natomas East Main Drainage Canal (NEMDC), which contains a natural stream, Steelhead Creek, conveys water under I-80. The area of the NEMDC within the project ESL that is potentially subject to USACE jurisdiction consists of approximately 2.96 acres. The NEMDC is contained by earthen levees and is approximately 300 feet wide.

3. A small unnamed man-made concrete lined ditch, located at the base of the eastern abutment of the I-80 bridge over the NEMDC. The area that is potentially subject to USACE jurisdiction is approximately 0.22 acres. About 235 feet of this canal occurs within the ESL. This channel is 40 feet wide.

4. Two intermittent roadside ditches (referred to as the West El Camino Ditches) adjacent to the eastbound and westbound shoulders of I-80 between West El Camino Avenue and I-5. The area of these two ditches encompasses approximately 0.31 acres. Each ditch is approximately 3,400 feet long and "V" shaped, with channels 2 feet wide.

5. The I-80/Truxel Road culvert is located adjacent to the EB I-80 shoulder, just east of Truxel Road. The culvert is approximately 80 feet long and 2 feet wide. The area potentially subject to USACE jurisdiction is 0.004 acres.

6. Portions of two agricultural ditches that are perpendicular and that discharge into the EB and WB I-80 roadside ditches between West El Camino Avenue and I-5. The ditch flowing into the WB shoulder ditch is approximately 70 feet long and 5 feet wide and 0.01 acres in area. The agricultural ditch flowing into the EB shoulder ditch is approximately 100 feet long and 10 feet wide, and 0.02 acres in area.

7. The I-80/WDC ditch, a man-made ditch located just northeast of WDC and next to I-80, is approximately 150 long and 2 feet wide, encompassing 0.01 acres.

Steelhead Creek is a natural stream that is contained within the NEMDC levees. Approximately 200 feet of Steelhead Creek is within the ESL. The creek is approximately 35 feet wide within the ESL. The area of Steelhead Creek potentially subject to USACE jurisdiction is approximately 0.16 acres. This area is included within the total acreage of NEMDC (see #2 above).

The total area of other waters of the U.S. potentially subject to USACE jurisdiction within the ESL is approximately 4.875 acres.

2.15.3 Environmental Consequences

Alternative 1 will permanently affect one small wetland located in the roadside ditch bordering the EB shoulder of I-80, encompasses approximately 0.001-acre. The divided Truxel Road swale wetlands will not be directly affected by the project.

Permanent impacts to other waters consists of the installation of 8 new, 5-foot by 3.5-foot, oblong columns within the NEMDC, encompassing approximately 0.003 acres; and, if jurisdictional, the two shoulder ditches between West El Camino Avenue and I-5, which will encompass an area of approximately 0.31 acres.

Work in the NEMDC will avoid placing any temporary or permanent structures in Steelhead Creek, and avoid any temporary discharge of fill into Steelhead Creek. However, the activity may result in temporary impacts to the NEMDC channel, outside Steelhead Creek, which could include soil compaction and disturbance to vegetation associated with equipment access and construction activities to drill and install the 8 columns.

Alternative 2 will not affect wetlands or other waters.

2.15.4 Avoidance, Minimization Measures

Temporary impacts to NEMDC will be minimized by working during the summer months when the NEMDC channel is dry (except for Steelhead Creek), and by using mats to minimize compaction of soil. All appropriate Best Management Practices (BMP's), which will be part of the Storm Water Pollution

Prevention Plan (SWPPP), will be implemented to avoid and minimize impacts to the NEMDC and Steelhead Creek.

The proposed project will avoid the WDC channel entirely.

The construction of auxiliary lanes between West El Camino Avenue and I-5 will require filling the roadside ditches, which includes the one small wetland. The project will require the relocation of the ditches adjacent to the auxiliary lane, regardless if they are subject to USACE jurisdiction. The new ditches will be graded to receive roadway and irrigation runoff as they do now. Hydrophytic vegetation is expected to re-establish itself in the wetland.

Temporary impacts in the NEMDC channel will be reduced by restoring all areas to pre-construction conditions and planting native riparian plants.

The project will not adversely affect the WDC. All appropriate BMP's will be in place to prevent any construction related material or erosion-generated sediments from entering the WDC.

2.16 PLANT SPECIES

2.16.1 Regulatory Setting

The USFWS and CDFG share regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA).

This section discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed CNPS rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code (USC) 16, Section 1531, et. seq. and 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et. seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

On February 3, 1999, President Clinton signed EO 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." FHWA guidance issued August 10, 1999 directs the use of the state’s noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

2.16.2 Riparian Habitat

2.16.2.1 Affected Environment

The WDC within the ESL is a man-made feature that crosses I-80 via a box culvert. The WDC is bounded by earthen levees, with rock riprap on the banks up and down stream of I-80. Vegetation on the levee banks is dominated by non-native grassland vegetation. Open to dense stands of Himalayan blackberry (*Rubus discolor*) occur in the riprap and other portions of the levee banks.

NEMDC is contained by earthen levees and Steelhead Creek, a natural stream, flows within an incised channel contained within the NEMDC. The creek flows a fairly straight course, with few meanders. Dominant forbs in the NEMDC channel include white goosefoot (*Chenopodium album*), Bermuda grass (*Cynodon dactylon*), chufa (*Cyperus esculentus*), perennial ryegrass (*Lolium perrene*), dallisgrass (*Paspalum dilatatum*), lady’s thumb (*Polygonum persicaria*), common purslane (*Portulaca oleracea*), hardstem bulrush (*Scirpus acutus*), and rough cockle-bur (*Xanthium strumarium*). Two Goodding willows (*Salix gooddingii*) and one Oregon ash (*Fraxinus latifolia*) in the NEMDC channel are within the ESL, and could be affected by the proposed work on the overcrossing. Freshwater marsh habitat is present in the NEMDC channel outside the ESL, upstream and downstream of the I-80 overcrossing.

2.16.2.2 Environmental Consequences

The proposed widening of NEMDC will affect approximately 0.003 acres of hydrophytic forbs and grasses from the installation of 8 5 foot by 3.5 foot support columns. Three riparian trees, two Goodding willows and an Oregon ash, may require trimming to accommodate construction equipment underneath the overcrossing structures.

2.16.2.3 Avoidance, Minimization, and/or Mitigation Measures

Temporary impacts to riparian vegetation will be minimized by:

- Placing mats on the ground to reduce compaction
- Confining equipment and personnel access to the minimum area necessary (areas to be avoided will be designated with Environmental Sensitive Area (ESA) fencing)
- Minimizing the number of limbs trimmed from willows and ash (if required)

2.16.3 Special Status Plant Species, Listed

2.16.3.1 Affected Environment

A review of the CNDDB (2006) and species lists maintained by the USFWS identified five plant species listed federally and or by the State as threatened or endangered that have been recorded in the general vicinity of the project ESL. These include:

- Boggs Lake hedge-hyssop (*Gratiola heterosepala*), listed by the State as an endangered species, and a CNPS List 1B species. It has no federal listing status.
- Colusa grass (*Neostapfia colusana*), listed federally and by the State as an endangered species, and is a CNPS List 1B species. Critical habitat has been proposed for this species, and the proposal is still under review by the USFWS.
- Slender Orcutt grass (*Orcuttia tenuis*), listed federally as endangered and by the State as threatened. It is a CNPS List 1B species. Critical habitat has been proposed for this species by the USFWS (CDFG 2006).
- Sacramento Orcutt grass (*Orcuttia viscida*), listed federally and by the State as endangered. It is a CNPS List 1B species. Critical habitat has been designated for this species; however, all lands in Butte, Madera, Merced, Sacramento, and Solano Counties were excluded due to the potential economic effect of critical habitat designation in these areas (CDFG 2006).
- Solano (Crampton's Orcutt, or Crampton's tuctoria) grass (*Tuctoria mucronata*), listed federally and by the State as endangered. It is a CNPS List 1B species.

2.16.3.2 Environmental Consequences

None of these species were determined to have a reasonable likelihood of occurring in the ESL, or being affected by Alternative 1, and none were observed during surveys.

Alternative 2 will not affect listed special status plant species.

2.16.4 Special Status Plant Species, Non-Listed

2.16.4.1 Affected Environment

A review of the CNDDB (2006) and species lists provided by the USFWS identified 12 non-listed plant species as occurring in the general vicinity of the project ESL. Eight of these species, alkali milk-vetch, heartscale, brittlescale, San Joaquin spearscale, hispid bird's-beak, dwarf downingia, legenere and Heckard's peppergrass, are not expected to occur within the project corridor because of the absence of suitable habitat (vernal pools or alkaline soils).

The following four special status plant species were determined to have a reasonable likelihood of occurring in the ESL and being affected by Alternative 1. However, none of these species were observed in or near the project site. None of these plants have federal or state listing status.

- Rose-mallow (*Hibiscus lasiocarpus*) is a CNPS List 1B species. Rose-mallow is a perennial, rhizomatous, aquatic herb that blooms from June through September. It grows in marshes and swamplands, and occurs along the Sacramento River and among the tule islands of the delta

islands (Mason 1969). Most of the known occurrences consist of very small stands (CNPS 2001).

- Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is a CNPS List 1B species. Ahart's dwarf rush is an annual herb that blooms from March through May. This taxon is a recently described subspecies that is known from only six locations. It grows in mesic valley and foothill grasslands, and vernal pool margins (CNPS 2001, Hickman 1993).

- Red Bluff dwarf rush (*Juncus leiospermus* var *leiospermus*) is a CNPS List 1B species. Red Bluff dwarf rush is an annual herb that blooms from March through May. It grows in vernally mesic sites and vernal pools in chaparral, cismontane woodland, meadows and seeps, and valley and foothill grasslands (CNPS 2001).

- Sanford's arrowhead (*Sagittaria sanfordii*) is a CNPS List 1B species. Sanford's arrowhead is a perennial, rhizomatous, emergent, herb that blooms from May through October. This species grows in slow-running and standing water in the Central Valley (Mason 1969, CNPS 2001).

2.16.4.2 Environmental Consequences

The marsh habitat associated with the NEMDC, and Steelhead Creek, could support Rose-mallow. The grassland within the NEMDC could support Ahart's dwarf rush and Red Bluff dwarf rush. The NEMDC and Steelhead Creek provide potentially suitable habitat to Sanford's arrowhead. However, surveys resulted in finding no evidence of the presence of any of these species within or near the ESL. Alternative 1 will not affect these species.

Alternative 2 will not affect non-listed special status plant species.

2.16.5 Invasive Species

Under Alternative 1, the proposed construction activities will occur entirely within existing Caltrans ROW, which is highly disturbed. However, to minimize the potential spread of invasive non-native plant species, Caltrans will implement the following avoidance/minimization measures to comply with EO 13112:

- Caltrans will not allow disposal of soil and plant material from any areas that support invasive plant species onto areas that support stands dominated by native plant species; and,
- Plant species used for erosion control should consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing.

2.17 ANIMAL SPECIES

2.17.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS, the National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the CDFG are responsible for implementing these laws. Federal laws and regulations pertaining to wildlife include the following:

- NEPA
- Federal Endangered Species Act (FESA)
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- CEQA
- California Endangered Species Act (CESA)
- Sections 1602 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

2.17.2 Special Status Animal Species, Listed

2.17.2.1 Affected Environment

A review of the CNDDB and species lists maintained by USFWS identified 6 listed animal species that have a reasonable likelihood of occurring within the ESL: valley elderberry longhorn beetle, green sturgeon, steelhead, Chinook salmon, giant garter snake, and Swainson's hawk. Table 2.17-1 includes the status of listed species and species proposed for listing potentially occurring with the project limits.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) is patchily distributed throughout the Central Valley from Redding to the Bakersfield area. Two species of elderberry, *Sambucus mexicana* and *Sambucus racemoda* var. *microbotrys*, serve as host plants for this beetle.

No elderberry shrubs were observed within or near the project boundaries. Hence, elderberry longhorn beetle is not present

Green Sturgeon

The green sturgeon (*Acipenser medirostris*) is a species that is listed federally as threatened, and is a State species of special concern. In California, the southernmost spawning population is in the Sacramento River, and the Klamath and Trinity Rivers remain as their principal spawning streams (Moyle 2002). Green sturgeon has always been uncommon in the Sacramento River drainage, but spawning times in the Sacramento River are probably similar to those in the Klamath River and Trinity River (Moyle 2002).

Surveys for green sturgeon were not conducted. John Baker, NMFS fisheries biologist, reported that sturgeon do not occur in Steelhead Creek (Baker, pers. comm.).

Steelhead - Central Valley DPS

The Central Valley steelhead (*Oncorhyncus mykiss*) DPS (distinct population segment) is listed federally as threatened. It has no State status. The federal listing includes all runs in the Sacramento and San Joaquin Rivers and their tributaries. NEMDC has been designated as Critical Habitat (CH) for steelhead (Baker, pers. comm.). The Central Valley steelhead DPS start entering fresh water in August, with a peak in late September-October, and hold until winter rains provide large amounts of

cold water for migration and spawning. They typically spawn in tributaries to mainstem rivers. The principal remaining wild populations of this DPS consist of a few hundred fish that spawn annually in Deer and Mill Creeks, Tehama County, and a population in the lower Yuba River. Wild steelhead are found elsewhere in the Sacramento system, mainly in cold tail-waters of dams, but their identity is confused by the presence of hatchery fish (Moyle 2002).

Surveys were not conducted for salmonids. The reach of Steelhead Creek within the ESL is not suitable spawning habitat for steelhead, or chinook. However, these species could occur in Steelhead Creek during migration.

Chinook Salmon – Central Valley Fall/Late Fall-Run ESU

The Central Valley fall/late fall-run Chinook salmon (*Oncorhynchus tshawytscha*) ESU (evolutionary significant unit) is a federal candidate for listing as threatened or endangered, and is a State species of special concern. This Chinook salmon ESU is currently found mainly in the Sacramento River. They spawn and rear in reaches of mainstem rivers (such as the upper Sacramento River) that remain cold and deep enough in summer for rearing of juveniles. Juveniles reach the ocean after 7-13 months in fresh water (Moyle 2002). The NEMDC and Steelhead Creek have been designated as Essential Fish Habitat (EFH) for Chinook salmon (Baker, pers. comm.).

Surveys were not conducted for salmonids. However, fall run Chinook salmon are known to occur in Steelhead Creek (Baker, pers. comm.).

Giant Garter Snake

The giant garter snake (GGS) (*Thamnophis gigas*) is a federal and State threatened species. The GGS is endemic to the valley floors of the Sacramento and San Joaquin Valleys of California. Currently the USFWS recognizes 13 separate populations of GGS, which coincide with historical riverine flood basins and tributary streams, which includes the Sacramento Basin (Miller and Hornaday 1999). Giant garter snakes inhabit agricultural wetlands and other waterways, such as irrigation and drainage canals, rice lands, marshes, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. Essential habitat components consist of: (1) adequate permanent water during the snake's active season (early spring through mid-fall) to maintain dense populations of food organisms (primarily aquatic species such as fish and amphibians); (2) emergent, herbaceous wetland vegetation, such as cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.), for escape cover and foraging habitat during the active season; (3) upland habitat with grassy banks and openings in waterside vegetation for basking; and (4) higher elevation upland habitats for cover and refuge from flood waters during the snake's inactive season in the winter (Miller and Hornaday 1999). Giant garter snakes are absent from larger rivers, and from wetlands with sand, gravel, or rock substrates. Riparian woodlands do not typically provide suitable habitat because of excessive shade, lack of basking sites, and the absence of prey populations (Miller and Hornaday 1999).

The CNDDB has several records of GGS in Sacramento County, including records within one to two miles of both NEMDC and the WDC. The GGS could occur in the ESL based on existing hydrologic connections between known occurrences and Steelhead Creek (confined by the NEMDC), and the WDC. Due to the extent of disturbance to Steelhead Creek and the WDC, and regular flooding in the rainy season along Steelhead Creek, habitat associated with these drainages may be marginal for GGS. However, because there is a potential for GGS to occur, and the difficulty of detecting this species, it is assumed that GGS are present within the ESL. In addition, where suitable upland areas exist within 200 feet of existing potential aquatic habitat, these areas are assumed to provide suitable GGS upland habitat for cover and refuge.

Swainson's Hawk

The Swainson's hawk (SWHA) (*Buteo swainsoni*) is listed by that State as a threatened species. It has no federal listing status. SWHA require large, open grasslands with abundant prey in association with suitable nest trees. SWHA in the Central Valley are foraging opportunists, due mainly to the fluctuating

prey density and availability in agricultural foraging habitats. They are very active foragers, hunting primarily from the wing and almost never from a perch. Foraging behavior of SWHA in the Central Valley has developed as a result of, and response to, the very dynamic agricultural system; i.e., prey density and availability changes with the cycles of crop planting, maturity, and harvesting (Estep 1989). Tomato and beet fields supported relatively high rodent populations, and edges and fallow fields also support relatively high rodent populations, compared to other row and grain crops (Estep 1989).

The majority of SWHA nesting territories in the Central Valley are in riparian systems adjacent to suitable foraging habitats. Swainson's hawks often nest in proximity to riparian systems, as well as utilizing lone trees or groves of trees in agricultural fields (CDFG 2005). SWHA typically return from their winter habitat in South America to their nesting grounds by early March.

Caltrans' biologists observed SWHA during most surveys within and near the project ESL, primarily between the I-80 bridge over the Sacramento River and the I-5 overhead. On May 11, 2006, Caltrans biologists observed an adult SWHA foraging in the area of the I-80 NEMDC overcrossing, east of Northgate Boulevard. This SWHA entered a large willow approximately 100 feet north of the I-80 bridge over the NEMDC, and shortly after, emerged with a bird in its talons.

No raptor nests were observed in trees within or adjacent to the project corridor, but are known to have historically nested within one mile of the western portion of the project corridor.

Potential foraging habitat in the project area includes the non-native grassland in the shoulder areas and median, and the remaining agricultural fields adjacent to I-80 between Northgate Boulevard and West El Camino Avenue. The larger trees within the ESL could provide potential nesting habitat for SWHA.

2.17.2.2 Environmental Consequences

Steelhead - Central Valley DPS and Chinook Salmon – Central Valley Fall/Late Fall-Run ESU

Permanent impacts to the NEMDC will be limited to the installation of 8 new columns, located between the existing lanes, encompassing approximately 0.003 acres. Temporary impacts to the NEMDC channel include potential compaction of soils and vegetation resulting from heavy equipment access. Steelhead Creek will not be disturbed since all work will be outside the bed and banks of the creek.

On March 7, 2007, National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) sent Caltrans a letter regarding consultation on steelhead. NMFS determined that Alternative 1 was not likely to adversely affect threatened Central Valley steelhead. NMFS also determined that potential effects to habitat from sedimentation and pollutants are expected to be avoided through the application of BPMs, a SWPPP, and spill prevention and control measures (NOAA 2007). A copy of the consultation letter is included in Appendix H.

Giant Garter Snake

Upland Habitat

The proposed project will have permanent and temporary impacts to GGS upland habitat.

Permanent impacts to GGS upland habitat will occur in the NEMDC and the shoulder areas between West El Camino Avenue and I-5. In the NEMDC, the area encompassed by the 8 new columns will be approximately 0.003 acres.

Permanent impacts to potentially suitable GGS upland habitat adjacent to the WDC consists of construction of the EB and WB auxiliary lanes in the shoulder areas and within existing State right of

way, which will encompass approximately 0.45-acre. Construction of the auxiliary lanes will temporary disturb approximately 0.55-acre of potential GGS upland habitat. Because the upland habitat near the WDC to be affected by the project is considered very marginal habitat for GGS, the area of permanent and temporary disturbance to GGS upland habitat will be associated only with the work in the NEMDC. Hence, the total area of permanent impacts to GGS upland habitat is approximately 0.003 acres.

Caltrans biologist met with CDFG in April 2007 to discuss permanent and temporary GGS impacts at the WDC. CDFG agreed that the shoulder areas were probably very marginal GGS upland habitat, but because the population is isolated and unique, any potentially suitable habitat within the Natomas Basin HCP may be considered important for GGS, and as a result, may require mitigation for loss of habitat. A decision regarding this issue was not issued prior to the release for the DEIR/EA, but will be included in the Final EIR/EA.

Temporary impacts to GGS upland habitat in the NEMDC will consist of staging and construction activities in the portion of the canal that is dry during the summer construction season. These activities will temporarily affect a maximum of approximately 3.0 acres of GGS upland habitat.

Besides habitat disturbance, direct effects to GGS also may include harassment and/or harm if snakes are present in the work area when construction begins or if GGS enter the work area during construction.

Swainson's Hawk

Alternative 1 may temporarily disturb Swainson's hawks if they are foraging in the project vicinity during construction activities. Alternative 1 includes auxiliary lanes on the existing shoulders between West El Camino Avenue and I-5, which will eliminate approximately 7.0 acres of potential foraging habitat. However, since the shoulder areas are highly disturbed, the extent of development adjacent to the project, the distance to known active nests, and the presence of suitable foraging habitat in large areas of Yolo County west of the project, the loss of this potential foraging habitat would be minimal.

Alternative 2 would not affect listed special status animal species.

2.17.2.3 Avoidance, Minimization, Measures

Steelhead - Central Valley DPS and Chinook Salmon – Central Valley Fall/Late Fall-Run ESU

1. All work in the NEMDC involving the 8 new columns will be conducted between June 1 and October 1, which is within the seasonal work window suggested by NMFS to minimize effects to migrating salmonids. No work will occur within the bed and banks of Steelhead Creek.

2. All construction within NEMDC will occur during daylight hours.

3. Mats will be placed in NEMDC to minimize potential compaction of soils and to reduce the potential for sediments to enter Steelhead Creek.

4. Measures consistent with the current Caltrans' Construction BMP's Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and WPCP Manuals, at http://www.dot.ca.gov/hq/construc/Construction_Site_BMPs.pdf) will be implemented to minimize effects to migrating salmonids during construction.

5. In the October following each construction season, all areas temporarily disturbed during construction (e.g., equipment storage and access areas) will be reseeded, if necessary, with erosion control seeding consisting of a sterile, non-proliferating grass species, such as cereal barley. The seed mix shall not include any fertilizers or chemicals.

6. Following project completion, all areas temporarily disturbed during construction will be restored following the "*Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat*", outlined below.

7. If necessary, the disturbed area(s) will be re-graded to its pre-existing contour and ripped, if necessary, to de-compact the soil.

8. If appropriate, the areas should be hydroseeded, with a mix containing at least 20 to 40 percent native grass seeds. The seed mix should also contain 2 to 10 percent native forb seeds, and approximately 40 to 68 percent of the seed mix may be non-native, non-aggressive European annual grasses. Aggressive non-native grasses should not be included in the seed mix. Endophyte-infected grasses should not be included in the seed mix.

Giant Garter Snake

Minimization measures will include the following provisions outlined in the federal "*Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat*" (Appendix C of the *Programmatic Biological Opinion on the Effects of Small Highway Projects on the threatened Giant Garter Snake in Butte, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, Yolo, and Yuba Counties, California*) (hereafter, Programmatic BO) (USFWS No. 1-1-03-F-0154, dated January 24, 2005).

1. Avoid construction related activities to the extent feasible within 200 feet from the banks of GGS aquatic habitat, and confine the movement of heavy equipment to existing roadways to the extent feasible, to minimize habitat disturbance. Equipment access will be required in the NEMDC. However, the area of disturbance will be limited the minimum area necessary for pile driving and equipment access. ESA fencing will be installed to prevent access to areas outside the construction site. Except for large equipment, such as cranes, that is difficult to move on a regular basis, no vehicles or equipment will be stored in the NEMDC.

2. Construction activity within habitat should be conducted between May 1 and October 1. This is the activity period for GGS and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the USFWS's Sacramento Office to determine if additional measures are necessary to minimize and avoid take.

3. Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided GGS habitat within or adjacent to the project area ESA's. All construction personnel shall avoid these areas.

4. Construction personnel shall receive Service-approved worker environmental awareness training. This training instructs works to recognize giant garter snakes and their habitats.

5. 24-hours prior to construction activities, the project area shall be surveyed for GGS. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and/or any incidental take to the USFWS immediately.

6. If applicable, any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

7. After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include

such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

8. Follow the measures in the table below to minimize the effects of loss and disturbance of habitat on GGS, as required by USFWS. Replacement ratios are based on the acreage and on the duration of disturbance.

Summary of Giant Garter Snake Minimization Measures

Level	Impacts: Duration	Impacts: Acres*	Conservation Measure: Compensation
Level 1	1 season	Less than 20 acres and temporary	Restoration
Level 2	2 seasons	Less than 20 acres and temporary	Restoration plus 1:1 replacement
Level 3	More than 2 seasons and temporary	Less than 20 acres and temporary	3:1 Replacement (or restoration plus 2:1 replacement)
Level 3	Permanent loss	Less than 3 acres total GGS habitat; AND, less than 1 acre aquatic habitat; OR, less than 218 linear feed bank habitat	3:1 Replacement

*Giant garter snake habitat includes 2.0 acres of surrounding upland habitat for every 1.0 acre of aquatic habitat. The 2.0 acres of upland habitat also may be defined as 218 linear feet of bankside habitat that incorporates adjacent uplands to a width of 200 feet from the edge of each bank. Each acre of created aquatic habitat should be supported by two acres of surrounding upland habitat.

Alternative 1 will result in less than 20 acres of temporary impacts to GGS upland habitat (approximately 3.0 acres), lasting two construction seasons. Alternative 1 will not result in a permanent or temporary loss of GGS aquatic habitat. However, Alternative 1 will permanently affect approximately 0.003-acre of GGS upland habitat, consisting of the 8 new columns in the NEMDC. Due to these factors, the project will likely qualify as Level 2 effects for temporary disturbance of 3.0 acres of GGS upland habitat, and Level 3 effects for the permanent disturbance to 0.003-acre of GGS upland habitat, for mitigation of GGS habitat, per the USFWS Programmatic Biological Opinion (USFWS File No. 1-1-03-F-0154, dated January 24, 2005).

All areas temporarily disturbed during construction will be restored within one year of completion of the project, following the "*Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat*", outlined below:

1. If necessary, the disturbed area will be graded to its preexisting contours and ripped to de-compact the soil.

2. The area should be hydroseeded with a mix containing at least 20-40 percent native grass seeds. Some acceptable native grasses include annual fescue (Vulpia spp.), California brome (Bromus carinatus), blue wildrye (Elymus glaucus), and needle grass (Nassella spp.). The seed mix should also contain native forb seeds.

Replacement of GGS upland habitat temporarily and permanently affected by the project will be satisfied through purchase of mitigation credits at a USFWS approved conservation bank.

In addition to the above, the following avoidance and minimization measures will also be implemented:

1. All construction will be conducted during daylight hours.

2. Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMPs) Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and Water Pollution

Control Program [WPCP] Manuals [at http://www.dot.ca.gov/hq/construc/Construction_Site_BMPs.pdf] will be implemented to minimize effects to GGS (e.g., siltation) during construction.

3. A WPCP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction (on file with the Central Valley RWQCB). The WPCP will contain a Spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials.

Because the GGS is also listed by the State as threatened, CESA consultation with the CDFG will be required to determine if the CDFG concurs with the avoidance and minimization measures provided in the USFWS' Biological Opinion (BO).

Swainson's Hawk

Tree removal will occur during the non-breeding season between September 15 and February 15, to the extent possible, to comply with the Migratory Bird Treaty Act. If trees cannot be removed during this time period, a qualified biologist will conduct a pre-construction survey prior to the start of construction to search for raptor nests. If Swainson's hawks or other raptors are observed nesting, CDFG shall be contacted for their advice on establishing a buffer zone of appropriate length.

If as a result of CDFG consultation Caltrans is directed to replace lost Swainson's hawk foraging habitat, credits will be purchased from the Beach Lake Mitigation Bank or other agency-approved bank.

2.17.3 Special Status Animal Species, Non-Listed

2.17.3.1 Affected Environment

A review of the CNDDB and species lists maintained by the USFWS identified 15 non-listed animal species of special concern that have a reasonable likelihood of occurring within the ESL, or were observed in or near the ESL, and could be affected by the proposed project.

River Lamprey and Pacific Lamprey

The river lamprey (*Lampetra ayresi*) and Pacific Lamprey (*Lampetra tridentate*) are both federal species of concern and State species of special concern. River lampreys are anadromous and occur in large coastal streams from Juneau, Alaska, south to San Francisco Bay. In California, most records of river lamprey are from the lower Sacramento-San Joaquin River system, but they could occur in other stream systems. This species has not been studied in California. Adults migrate back into fresh water in autumn, and spawn during February through May in tributary streams. The transformation of larvae (ammocoetes) to adults takes about 9 to 10 months, with transformation to the adult stage occurring during summer. The larvae remain in silty backwaters and eddies to feed on algae and micro-organisms. Adults feed on a variety of fishes, but mostly herring and salmon (Moyle 2002).

Pacific lampreys are anadromous, found in Pacific coast streams from Japan, through Alaska, and south to Baja California. The oceanic phase lasts up to four years. Adults move up into spawning streams between early March and late June. They usually spawn in rocky riffles in fairly fast streams, and have been observed spawning in the lower American River (Moyle 2002). Larvae take 5 to 7 years to mature and remain in stream reaches with soft mud or sand, where they forage on organic matter and algae (Moyle 2002).

Surveys for Lamprey were not conducted. The reach of Steelhead Creek within the ESL does not provide suitable spawning habitat. However, migrating adult and larvae lamprey could occur in Steelhead Creek.

Sacramento Splittail

Sacramento splittail (*Pogonichthys macrolepidotus*) is a State special-status species. It was formerly listed federally as a threatened species in 1999, but was subsequently delisted (Federal Register 2003). This species is endemic to California, mainly to sloughs, backwaters, lakes and rivers of the Central Valley. In the Sacramento Valley, they were found historically as far up the Sacramento River as Redding; the Feather River up to Oroville; and the American River up to Folsom. They are now largely absent from the upper reaches of these rivers. The Sutter and Yuba Bypasses, along with the Sacramento River, are apparently important spawning areas today. Splittail are adapted for living in estuarine waters with fluctuating conditions, as well as in severe conditions that once occurred in alkaline lakes and sloughs on the floor of the Central Valley during droughts. They move gradually upstream during the winter and spring months to forage and spawn in flooded areas where vegetation is present, that provides cover for larvae and young. Spawning can take place from late February to early July (Moyle 2002).

Splittail surveys were not conducted. However, splittail are known to occur in Steelhead Creek south of the project area in Discovery Park (Baxter 1999). This species could spawn in Steelhead Creek and may occur within the ESL.

Western Pond Turtle

The western pond turtle (*Emmys* [=*Clemmys*] *marmorata*) is a federal species of concern and a State special-status species. Western pond turtles occur in permanent or nearly permanent bodies of water in a variety of habitats including ponds, rivers, and irrigation ditches. They usually leave aquatic sites to reproduce, to aestivate, and to over winter. Overwintering may occur on land or in water. Females may move to upland sites more than 1,300 feet from water to construct nests. Eggs are usually deposited during May and June. Young may hatch and overwinter in the nest (Jennings and Hayes 1994).

Western pond turtles were not observed in the ESL during field surveys. The closest recorded incident of pond turtle in the CNDDB is at the former McClellan Air Force Base, approximately 3.5 miles east of Steelhead Creek. Although not observed, Steelhead Creek and the WDC could support western pond turtles.

Cooper's Hawk

The Cooper's hawk (COHA) is a State special-status species. It has no federal status. In California, most COHA nests are in closed-canopy stands of six or more trees (rarely in isolated trees) with a sub-canopy of vertical tree trunks and large branches with few small branches, with sparse ground cover (Shuford 1993). Cooper's hawks in California breed primarily in live oak woodlands (mixed evergreen forests), but also nest in riparian woodland habitats and coniferous forest (Shuford 1993). Cooper's hawks forage in a variety of cover types, and feed primarily on medium-sized birds (Shuford 1993).

One COHA was observed in the project vicinity, near Longview Drive, in April 2006. No raptor nests were within or adjacent to the project ESL.

Tricolored Blackbird

The tricolored blackbird (TRBL) is a highly colonial species largely endemic to California, occurring mostly in the Central Valley and vicinity. They have three basic requirements for breeding colony sites: (1) open accessible water; (2) protected nesting substrate, typically flooded or thorny/spiny vegetation; and (3) a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony, such as pastures, dry seasonal pools, agricultural fields, feedlots, and dairies (Beedy and Hamilton III, 1997). Establishment of breeding colonies are highly synchronized, which may be an adaptation to exploit a rapidly changing environment that is likely to change from year to year. Most breeding colonies occur in freshwater marshes dominated by tules (*Scirpus* sp.) and cattails (*Typha* sp.), but colonies will occur in stands of willows (*Salix* spp.), blackberries (*Rubus* sp.), thistle (*Cirsium* spp. and *Centaurea* spp.), or nettles (*Urtica* sp.). Colonies may form at any time during the April – July breeding season (Beedy and Hamilton III, 1997).

Tricolored blackbirds were not observed within or adjacent to the project ESL during field surveys. There is no potential nesting habitat within the project ESL. However, potential nesting habitat occur in the stands of tule and cattail marsh located in the NEMDC, upstream and downstream of the overcrossing, outside the ESL.

Egrets and Herons

Great blue heron (*Ardea herodias*), great Egret (*Ardea alba*), snowy egret (*Egreta thula*) and black-crowned night heron (*Nycticorax nycticorax*) are all colonial nesters, nesting in a variety of trees, and occasionally in tules and cattails. Black-crowned night herons are primarily nocturnal or crepuscular foragers. All forage in a variety of shallow freshwater, brackish and saltwater habitats, and will forage in moist pastures and fields (Shuford 1993).

All four species were observed foraging within the NEMDC during surveys in March, April, May, and June 2006, primarily in Steelhead Creek. No heron or egret nests were observed within or near the ESL.

Short-eared Owl

The short-eared owl (*Asio flammeus*) (SEOW) is a federal species of concern and a State special-status species. In California, SEOWs occur as winter visitors and resident breeders. Breeding populations have declined because of the loss of marsh and grassland habitats. They breed in fresh, brackish, and salt marshes, in lowland meadows and moist grasslands, in irrigated fields, and in fallow or stubble fields. The main requirements for breeding are low nesting and resting cover and open foraging grounds supporting an abundance of small mammals, particularly voles (*Microtus* spp.). This species is nomadic, and occurs, sometimes in large numbers, in areas where high vole populations occur, and they defend breeding territories that vary inversely in size with prey abundance (Shuford 1993).

Short-eared owls were not observed during field surveys.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugaea*) is a federal species of concern and a State special-status species. Burrowing owls (BUOW) are ground dwelling owls that inhabit relatively dry, flat, very open grasslands and disturbed areas with very short vegetation. The main requirements are adequate nest sites, productive open foraging grounds, and perching sites, such as raised rodent mounds, dikes or levees, fences, or utility poles and lines. Burrowing owls usually nest inside the earthen burrows of mammals, or other animals, and occasionally beneath rock faces, natural rock cavities, or drainpipes. In Northern California, they rely mostly on the excavations of California ground squirrel (*Spermophilus [=Citellus] beecheyi*). The major factor controlling BUOW numbers appears to be the availability of suitable burrows (Shuford 1993).

Burrowing owls were not observed within the project ESL during field surveys. Several California ground squirrel (*Spermophilus beecheyi*) burrows were found within the State right of way in the shoulder areas between West El Camino Boulevard and the I-5 intersection. However, no evidence of the presence of burrowing owl (i.e., feathers, scat, or pellets [regurgitated prey remains]) was observed at these burrows.

Oak Titmouse

The oak (=plain) titmouse (*Baeolophus inornatus*) has no federal or state listing status, but is a federal species of local concern. Oak titmice occur primarily in open broadleaved evergreen woodlands that are dominated by oaks, and riparian woodlands. They nest in tree cavities, old woodpecker holes, and nest boxes.

This species was not observed within the project ESL during field surveys.

White-tailed Kite
The white-tailed kite (*Elanus leucurus*) (WTKI) has no federal or state listing status. It is, however, a state fully protected species. White-tailed kites occur in open habitats, including moist meadows, grasslands, low marsh vegetation, riparian edges, irrigated pastures, and cultivated fields. In California, WTKI preys almost exclusively on small mammals, with meadow vole (*Microtus californicus*) dominating their diet (Shuford 1993). Nest sites are located where prey is more abundant. They often build nests in isolated trees or clumps of trees of moderate height, and occasionally tall bushes. The occurrence of WTKI is closely tied to the presence, or absence, of voles and mice, and the number of kites expands or contracts accordingly. Hence, nesting activity is sporadic and unpredictable, and they could be absent during some years (Roberson and Tenney 1993).

White-tailed kites were not observed during surveys of the project corridor. However, surveys conducted in 2003 for the Main Avenue Bridge replacement project, just upstream of the Highway 80 NEMDC overcrossing (Caltrans 2004), found WTKI's foraging in and adjacent to the NEMDC. The non-native grassland present within the existing right of way, including the area within the median, provides potential foraging habitat for kites. The large willows in the NEMDC could provide potential nesting habitat for kites. It is unlikely that kites would nest within project ESL because of the projects location in an urban area and the level of disturbance. However, nesting in the future is possible.

Loggerhead Shrike
The loggerhead shrike (*Lanius ludovicianus*) is a federal and State species of concern. Shrikes feed primarily on insects, but will prey on small reptiles, birds, and mammals. They prefer short vegetation for easy detection of prey. They require trees and shrubs with thick foliage for nest sites (Roberson and Tenney 1993). In addition, shrikes are primarily sit-and-wait predators, and an essential component to shrike habitat consists of suitable hunting perches (Yosef and Grubb, Jr. 1994).

No loggerhead shrikes were observed during biological surveys of the project corridor, but the project corridor contains potential nesting and foraging habitat for this species. However, there may be a low potential for this species to occur within the project boundaries because they avoid urbanized areas, and the majority of the project corridor is surrounded by urban development.

Nuttall's Woodpecker
The Nuttall's woodpecker (*Picoides nuttallii*) is a federal species of local concern. It has no State status. Nuttalls woodpeckers occur primarily in oak dominated woodlands and riparian woodlands. They nest in cavities, which they excavate in soft wooded trees (Shuford 1993).

Nuttall's woodpeckers were not observed during surveys of the project ESL.

Purple Martin
The purple martin (*Progne subis*) is a large swallow that is a State special status species. Purple martins formerly nested in tree cavities and buildings throughout California's Central Valley, but following the arrival of the European starling (*Sturnus vulgaris*), purple martins have virtually disappeared from the region except for a small population that has persisted in Sacramento. Martins have nested in weep holes in freeway and street overpasses in Sacramento since the mid-1960s. As of 2003, 10 breeding colonies were known in overpasses in the Sacramento area (Leeman, Airola and Kopp 2003).

Purple martins were found nesting at the I-80 and Light Rail access ramp at Roseville Road and at the I-80 westbound lane over the Light Rail parking lot, between Roseville Road and Longview Drive. Purple martins were not observed at any of the other overcrossings within the proposed project corridor. Leeman, Airola, and Kopp (2003) determined that the overcrossings at Northgate Boulevard, Natomas East Main Drainage Canal (NEMDC) and San Juan Road were of low suitability nesting

habitat for purple martin; and the West El Camino Avenue, Truxel Road, Norwood Avenue, Rio Linda Avenue, Raley Boulevard, and Winter Street overcrossings may also be low suitability nesting habitat.

Swallows and Swifts

Cliff swallow (*Petrochelidon pyrrhonota*), Northern rough-winged swallow (*Stelgidopteryx serripennis*), barn swallows (*Hirundo rustica*), and white-throated swift (*Aeronautes saxatalis*) were observed nesting on I-80 overcrossings within the proposed project corridor. All are protected under the Migratory Bird Treaty Act. Cliff swallows were observed nesting on piers on the east side of the NEMDC overcrossing and in the WDC culvert; Northern rough-wing swallows were observed nesting in weep holes on the I-80 overcrossing between Roseville Road and Longview Drive; barn swallows were observed nesting in the WDC culvert, and observed foraging in the area of the NEMDC Bridge; and white-throated swifts were observed nesting in weep holes in the West El Camino, NEMDC, and Roseville/Longview overcrossings.

Bats

Five bat species occur in the general vicinity of the proposed project that could establish colonies in the overcrossing structures: Pacific western big-eared bat (*Corynorhinus townsendii townsen*dii), western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), long-legged myotis (*Myotis volans*) and Yuma myotis (*Myotis yumanensis*). The Pacific western big-eared bat is a federal and State species of concern, and the four mytois species are all federal species of concern only. All of these bat species could establish winter and/or summer night and day roosts, or maternity colonies, in the expansion joints in the overcrossings.

Surveys conducted in June 2006 of all the overcrossings found no evidence (i.e., urine stains and/or bat droppings) of the presence of bats within the proposed project corridor.

2.17.3.2 Environmental Consequences

River Lamprey, Pacific Lamprey, and Sacramento Splittail

Permanent impacts to the NEMDC will be limited to the installation of 8 new columns, located between the existing lanes, encompassing approximately 0.003 acres. Temporary impacts to the NEMDC channel include potential compaction of soils and vegetation resulting from heavy equipment access. Steelhead Creek will not be disturbed since all work will be outside the bed and banks of the creek. Potential impact to these species is expected to be minimal.

Western Pond Turtle

Alternative 1 will avoid direct impacts to Steelhead Creek and the WDC. Construction activities associated with the installation of additional 8 columns in the NEMDC may result in temporary impacts to western pond turtles during construction, if they are present within the ESL. Impacts are expected to be minimal.

Cooper's Hawk

Because of the level of disturbance within the project corridor, and the small number of large trees present within the existing State right of way, it is not likely that COHA would nest within the project corridor. Impacts are expected to be minimal.

Tricolored Blackbird

Because there is no potential nesting habitat within the ESL, impacts to potential TRBL nesting habitat will be minimal. Because TRBL are opportunistic in selecting nesting colonies in any given year, preconstruction surveys will be conducted to determine the nesting status of TRBL in potential nesting habitat in the NEMDC adjacent to the ESL.

Egrets and Herons

Alternative 1 could result in temporary disturbance to foraging egrets and herons in the NEMDC during construction of the expanded overcrossing. Alternative 1 will not affect any heron/egret nesting colonies.

Short-eared Owl
Short-eared owls are not likely to nest within the ESL. However, the grassland habitat along the highway, and the marsh and grassland habitats within the NEMDC, could provide marginal foraging habitat for SEOW. If wintering or migrant SEOWs should occur during construction, these activities could temporarily disturb SEOW. Because of the small areas of grassland and marsh temporarily and permanently affected, impacts to SEOW are expected to be minimal.

Western Burrowing Owl
Burrowing owls were not observed, and no evidence of the presence of burrowing owls were observed. Potential impacts to burrowing owl is expected to be minimal.

Oak Titmouse
The trees and shrubs directly affected by the project are small, and do not provide nesting habitat for this species. Impacts to oak titmouse are expected to be minimal.

White-tailed Kite
Alternative 1 could temporarily disturb kites if they are foraging in the area during construction. The proposed loss of existing disturbed grassland within the highway median and outside edge of the highways could result in permanent loss of 30 acres of potential foraging habitat for kites.

Loggerhead Shrike
Because the project is confined to the existing State right of way, and is surrounded by urban development, Alternative 1 may temporarily disturb shrikes, if present, during the construction.

Nuttall's Woodpecker
The removal of trees within the project corridor could result in the removal of foraging, and possibly nesting habitat, for Nuttall's woodpeckers that could occur in the project area.

Purple Martin
Alternative 1 is expected to result in temporary impacts to martins during the construction period. The martins will likely resume nesting in the weep holes following completion of the overcrossing expansion.

Swallows and Swifts
Alternative 1 will not result in permanent impacts to swallows/swifts nesting habitat on and in the existing overcrossings, but will temporarily effect nesting swallows and swifts during the construction period. Exclusion devises may be necessary on the expanded portions of the overcrossings to prevent nesting on these structures during the construction phase of the project.

Bats
Alternative 1 will not result in permanent loss of potential bat roosting habitat. Because no bats were observed in any of the overcrossings, Alternative 1 will not result in impacts to bats.

Alternative 2 would not affect non-listed special status animal species.

2.17.3.3 Avoidance, Minimization Measures

River Lamprey, Pacific Lamprey, and Sacramento Splittail

1. Steelhead Creek will not be directly affected by Alternative 1, and thus potential direct impacts to lampreys will be avoided.

2. All work in the NEMDC will be conducted between June 1 and October 1, which is within the seasonal work window recommended by NMFS to minimize impacts to salmonids, and to these species.

3. Alternative 1 will implement necessary BMP's provided in the SWPPP to minimize potential impacts to these species.

Western Pond Turtle

Construction activities in the NEMDC will occur during the summer months to minimize potential impacts to steelhead and giant garter snake, and only during the daylight hours. Western pond turtles are most active during this time period as well; as a result, it is expected that turtles would move upstream or downstream of the temporary construction activities.

Cooper's Hawk

Trees that will be directly affected by Alternative 1 will be removed during the non-breeding season (between September 1 and February 1) to the extent possible, complying with the Migratory Bird Treaty Act. Preconstruction surveys will be conducted in spring immediately prior to initiation of construction activities to determine if any raptors are nesting near the project corridor. If no nests are found, avoidance and minimization measures will not be required. If a nest is found, an appropriate buffer zone will be established around the nest, with CDFG consultation, until the young have fledged.

Tricolored Blackbird

If TRBLs are found nesting within the NEMDC near the project site, CDFG will be consulted for their advice on the establishment of appropriate buffers. If nests area not found, no avoidance and minimization measures are proposed.

Western Burrowing Owl

A qualified biologist will survey the ESL for BUOW no more than 30 days prior to the start of construction. If BUOW or sign is identified, CDFG will be consulted.

White-tailed Kite

1. Pre-construction surveys will be conducted by a qualified biologist familiar with this species in the spring, prior to the start of construction. If kites or other raptors are observed nesting, CDFG will be contacted and a suitable buffer zone will be established.

2. Any trees that require removal should be removed outside the nesting season, after September 1st and before February 1st., if feasible, to conform to the MBTA.

3. All construction will be conducted during daylight hours.

Loggerhead Shrike

Pre-construction surveys will be conducted by a qualified biologist, in the spring prior to construction, to determine the nesting status of loggerhead shrike. If a found nesting, the CDFG will be notified and an

appropriate buffer will be established around the nest until the young have fledged. If no nests are found, then avoidance or minimization measures will not be required.

Nuttall's Woodpecker

Alternative 1 will comply with the Migratory Bird Treaty Act regulations to minimize potential impacts to Nuttall's woodpecker and other migratory birds. Tree removal will occur between September 1 and February 1.

Purple Martin

1. Surveys will be conducted each season prior to construction to document the status of the Roseville Road colony and identify new colonies that may become established at other overcrossings.

2. Weep holes will be plugged during the non-breeding season (September 1 – March 1) of the year of project construction, to conform with the MBTA. Exclusion devices will be left in place until August 31 or until all work is completed. The CDFG will be consulted regarding the exclusion of martins on any structures within the project area.

Swallows and Swifts

Because work will occur during the swallow/swift nesting season (March 1 – August 31) swallows will be excluded, if necessary, by a qualified company during the non-breeding season immediately prior to start of construction. Exclusion structures (e.g., netting and weep hole plugs) will be left in place and maintained through August 31 of each breeding season, or until the work is complete.

Table 2.17-1: Status of Listed Species and Species Proposed for Listing Potentially Occurring in Project Area.

Common Name	Scientific Name	Status	General Habitat Description	Habitat present Yes/No/U	Rationale
Plants					
Boggs Lake Hedge-hyssop	*Gratiola heterosepala*	SE/1B	Marshes and swamps, vernal pools	Yes	Species not observed marsh habitat in NEMDC.
Colusa Grass	*Neostapfia colusana*	FT,CH SE,1B	Vernal pools	No	No vernal pools in project ESL.
Slender Orcutt Grass	*Orcuttia tenuis*	FT,CH SE,1B	Vernal pools	No	No vernal pools in project ESL.
Sacramento Orcutt Grass	*Orcuttia viscida*	FE,CH SE,1B	Vernal pools	No	No vernal pools in project ESL.
Solano Grass	*Tuctoria mucronata*	FE,CH SE,1B	Mesic grasslands, Vernal pools	No	No mesic grasslands or vernal pools in ESL.
Animals					
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	FT/--	Vernal pools and swales	No	No vernal pools in project ESL.
Valley Elderberry Longhorn Beetle	*Desmocerus Californicus dimorphus*	FT/--	Host plant Blue Elderberry	No	No elderberry shrubs present.
Vernal Pool Tadpole Shrimp	*Lepidurus packardi*	FE/--	Vernal pools and swales	No	No vernal pools in project ESL.
Green Sturgeon	*Acipenser medirotris*	FT/ CSC	Cold, clean rivers with cobble/sandy beds. Sacramento and Klamath Rivers only	U	Steelhead Creek could provide suitable habitat.
Delta Smelt	*Hypomesus trans-pacificus*	FT/ST	Spawn in sloughs and channels of Delta	No	Project not within range of species.
Steelhead – Central Valley DPS	*Oncorhynchus mykiss*	FT/CH	Winter run, in cool, fast-flowing permanent streams	Yes	Potential habitat present in Steelhead Creek.
Chinook Salmon – Central Valley Spring-run DPS	*Oncorhynchus tshawytscha*	FT/ST CH	Mainstream rivers in spring, in deep cold pools	No	Habitat not present.
Chinook Salmon – Winter-run DPS	*Oncorhynchus tshawytscha*	FE/SE CH	Sacramento River Drainage, in upper river basin, in spring-fed rivers.	No	No habitat present.
Chinook salmon – Central Valley fall/late fall- run DPS	*O. tshawytscha*	FC/CSC	Mainly in Sacramento River; spawning/rearing in mainstream reaches that are cold and deep during summer.	Yes	Known to be present (Baker pers. comm.)
California Tiger Salamander	*Ambystoma californiense*	FT/ CSC	Seasonal ponds and vernal pools in low elevation grassland; dry season refuge in rodent burrows.	No	No habitat present.
California Red-legged Frog	*Rana aurora draytonii*	FT/ CSC	Breeds in still or slow moving creeks and stock ponds, with dense riparian vegetation.	No	No habitat present; site not within current range of species.
Giant Garter Snake	*Thamnophis gigis*	FT/ST	Freshwater marsh and low gradient streams, including irrigation ditches and drainage canals. Adjacent upland for cover and refuge during winter.	Yes	No observed; Known from project area; could occur in NEMDC and WDC.

Common Name	Scientific Name	Status	General Habitat Description	Habitat present Yes/No/U	Rationale
Aleutian Cackling Goose (Winter)	*Branta hutchinsii leucopareia*	FD	Forages in pasture and grain fields; rests on lakes and open water.	No	No habitat present.
Swainson's Hawk (nesting)	*Buteo swainsoni*	--/ST	Large areas of open grassland with suitable nesting trees. Foraging habitat includes grassland, pastures, alfalfa and other hay crops.	Yes	Species observed. Foraging and nesting habitat present primarily southwest of Northgate Blvd.
Western Yellow-billed cuckoo (nesting)	*Coccyzus amerianus occidentalis*	--/SE	Nests in mature deciduous riparian woodland dominated by large cottonwood and willows	No	No habitat present.
Little Willow Flycatcher (nesting)	*Empidonax trailii brewsteri*	--/SE	Nests in willow thickets from 0.1 to 2 acres, along streams. No longer nest in Central Valley.	No	Habitat not present.
American Peregrine Falcon (nesting)	*Falco peregrinus anatum*	FD/SE, SFP	Nests on ledges on cliff faces or tall buildings	No	Habitat not present.
Greater Sandhill Crane (nesting and wintering)	*Grus canadensis tabida*	--/ST	Nests in wetland habitats in Northeastern California; winters in Central Valley, foraging primarily in grain fields.	No	Habitat not present.
Bald Eagle (nesting and wintering)	*Haliaeetus leucocephalus*	FT,FPD/ SE,SFP	Nests in tall snags, usually within 1 mile of open water; winters along rivers, lakes, reservoirs that support fish populations.	No	Habitat not present.
Bank Swallow (nesting)	*Riparia riparia*	--/ST	Colonial: nest in vertical bluffs or stream banks with soft soils.	No	Habitat not present

Habitat: Absent (No); Present (Yes); Uncertain if habitat is present (U).
Federal Status: Endangered (FE); Threatened (FT); Proposed for listing (FPE, FPT); Candidate becoming proposed for listing (FC); Proposed for delisting (FPD); De-listed (FD); Critical Habitat (CH) (project footprint located within designated critical habitat unit, but does not necessarily mean that appropriate habitat is present); No status (--). DPS = Distinct Population Segment.
State Status: Endangered (SE); Threatened (ST); State Rare (SR); Fully Protected (SFP); No status (--).
California Native Plant Society (CNPS) Status: List 1B species, one that is rare or endangered in California and elsewhere.

2.18 CUMULATIVE IMPACTS

2.18.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

2.18.2 Cumulative Impacts Area

For the proposed project, the area for evaluation of cumulative impacts related to transportation projects includes the study area corridor around I-80 along the project limits and “related project” areas determined from the recent past or foreseeable future that have been constructed or programmed. This includes the bus/carpool lane projects that have been constructed in Sacramento and Placer County on I-80, and the proposed I-5 and US 50 bus/carpool lane projects, as well as other enhancements and improvements listed on Table 2.18-1.

“Related project” activity also includes private planned and occurring development in the greater project area, specifically the North Natomas area, a 9,000-acre mixed-use development involving approximately 33,000 units (recently constructed or planned or under construction). A larger area encompassing urban Sacramento and West Sacramento was also used for evaluating the cumulative impacts of other transportation projects (Table 2.18-1). These areas were selected because they would be most influenced by projects on I-80 and would rely on I-80 as a major transportation link.

2.18.3 Potential Cumulative Impacts

For a cumulative impacts analysis to be valuable, it must be limited to the effects that can be evaluated meaningfully. While there is no universally accepted approach to preparing a cumulative impacts analysis, Caltrans guidelines state that a cumulative impact analysis should focus only on 1) those resources substantially impacted by the project, and 2) those resources in poor or declining health or at risk, even if project impacts are relatively small (Caltrans 2006b).

Quantifiable impacts are generally not available for the proposed projects listed in Table 2.18-1, primarily because these projects are still in the planning phase or have not yet been fully constructed. However, a qualitative cumulative impacts assessment can be completed based on anticipated and known impacts from other, similar transportation and development projects that have been completed.

Hydrology/ Water Quality

The projects listed in Table 2.18-1 would not lead to cumulative impacts related to hydrology and water quality. While there would be an increase in overall paved area as a result of any of the projects, the

measures described in Caltrans Statewide NPDES permit (Caltrans Order No. 99-06-DWQ, NPDES No. CAS00003) and Storm Water Pollution Prevention Plan (SWPPP) would be implemented. The transportation and development projects listed in Table 2.18-1 could lead to an increase in polluted storm water discharge to the American River. The increase in pollutants would come from sources such as household pesticides, increased vehicle traffic, and increased impervious cover. However, these projects would be subject to NPDES permit conditions and other regulatory controls to minimize and eliminate storm water pollution during construction and afterwards.

Hazardous Waste

This project may encounter soil impacted with aerially deposited lead from vehicle emissions, asbestos and lead-based paint on bridge structures, soil and groundwater contamination due to nearby leaking underground storage tanks, railroad operations, and abandoned or existing service stations. However, laws for the management of hazardous materials are designed to protect human health and the environment. Each project is required to remove exposed hazardous waste and follow disposal regulations. No cumulative impacts to hazardous waste are anticipated.

Air Quality

Transportation projects, such as the I-80 bus/carpool project, are determined to meet transportation air quality conformity requirements if they have been included in the regional air quality analysis conducted by SACOG for Metropolitan Transportation Plan (MTP) and Metropolitan Transportation Improvement Plan (MTIP), which conform to the State Implementation Plan (SIP). Before adopting the MTP and MTIP, SACOG performed a quantitative analysis to determine if implementation of the set of projects included in these documents would result in violations of the ozone and PM_{10} air quality standard. Based on this analysis, SACOG has concluded that the set of projects included in the MTP and MTIP would not result in a violation of the ozone standard and would result in reduction of PM_{10} emission.

As the SACOG analysis considered all planned and programmed transportation projects included in the MTP and MTIP, the transportation projects listed in Table 2.18-1 have been analyzed and found not to contribute to a cumulatively considerable impact to air quality.

Natural Resources

Projects listed in Table 2.18-1 would result in temporary and permanent loss of roadside vegetation (such as oaks, landscape plantings, and shrubs), wetlands, and wildlife habitat. However, avoidance, minimization and mitigation policies (such as habitat replacement and replacement of landscaping), construction BMPs, and requirements of federal, state, and local natural resource agencies such as the California Department of Fish and Game are expected to minimize and/or eliminate any adverse impacts to natural resources. In addition, environmental reviews, comprehensive plans, and other public processes are in place to ensure that the impacts of new development to natural resources would be minimized.

Circulation and Access

The project would provide greater connectivity and accessibility to the existing and planned bus/carpool lane systems. The project would directly connect to an existing bus/carpool lane on I-80 from Longview Drive to east of the Sacramento-Placer County line. Overall, the cumulative impact of this project as well as the development and transportation projects listed in Table 2.18-1 would be beneficial to circulation and access. There are several projects that would lead to greater connectivity of the road and highway network and increase road capacity. These projects would reduce congestion and decrease travel times for vehicular traffic and emergency services.

Land Use

The transportation projects listed in Table 2.18-1 are included in the regional Metropolitan Transportation Plan. The development projects listed in this table would be evaluated under CEQA for their consistency with the applicable city and county general plans. The proposed project is included in

SACOG's 2050 Regional Blueprint, a plan designed to conserve open space in the region and promote a more compact land use pattern.

Visual

Construction of the projects listed on Table 2.18-1 would change the visual character of the I-80 corridor. Measures can be incorporated into each project that would reduce visual impacts. For example, for the proposed project, incorporating aesthetic treatments into new median barriers, planting vines in front of proposed sound walls, replanting removed trees and shrubs, and installing new landscaping along the propose auxiliary lanes will reduce impacts. The addition of aesthetic measures such as these would minimize any cumulative impact.

Noise

The noise environment within the corridor is dominated by traffic traversing I-80. Sound levels adjacent major highways typically exceed 69 decibels (dba). Alternative 1 would result in a maximum noise increase of less than 3 dba, an increase barely perceptible to the human ear. Sound walls are proposed in areas where a noise impact occurs and is deemed reasonable and feasible. Noise abatement in the form of sound walls, insulated walls and windows, or structures are usually required for new housing next to the freeways. Cumulative noise effects from this project with existing noise sources and near term future projects are not anticipated.

Cultural Resources

This project would not have any adverse impacts to cultural resources. While cultural resources may be present at the sites of the transportation and development projects listed in Table 2.18-1, effective avoidance, minimization and mitigation measures are available if any are discovered. As a result, no cumulative impacts to cultural resources are expected.

Cumulative Influences to Growth

This project seeks to reduce congestion, improve circulation, and encourage alternative means of commuting through the addition of a bus/carpool lane to I-80. The project would provide greater connectivity within the bus/carpool lane system in the Sacramento region, which consists of existing and planned bus/carpool lanes on US 50, I-80, I-5, and SR 99. These improvements are being proposed because of demands put on the region's transportation system due to the existing rapid rates of growth in the area. The projects are also part of a long term Caltrans effort to encourage the use of transit and multi-passenger occupied vehicles. The proposed bus/carpool project is one of the transportation improvements included in the Preferred Scenario of SACOG's Regional Blueprint plan, which is intended to guide regional development through 2050

Private development in the North Natomas Area is planned and would likely occur prior to construction of the proposed project. Current and future development in North Natomas as well as along the I-80 corridor within the project limits has been approved by City of Sacramento and Sacramento County general planning documents (see Table 2.18-1 for a list of approved major development projects). Development will continue whether or not the proposed project or "related project" activity occurred. Restrictions to development in this rapid growth area include the existence of wetlands, other environmental regulations, an extensive drainage canal system, agricultural zoning, and City and County planning.

Without substantial capacity increasing projects suggested by current SACOG planning documents (i.e.: extensive expansion of light rail, new connecting routes, freeway expansion, re-decking of the local interstate and State Route system, more commute busing through the addition of bus/carpool lanes) current future projected levels of traffic will not be accommodated and congestion will continue to worsen unless planned growth is curtailed.

Further, most of the transportation projects listed in Table 2.18-1, including the project, would only reduce existing traffic congestion. The Sacramento region has grown so rapidly in the past 20 years

that the degree of capacity improvement proposed by the related projects would be less than needed to meet current demands for adequate levels of service on the impacted routes.

None of the related projects listed are expected to allow access to new areas that are presently restricted.

No cumulative substantial adverse impacts are expected because of implementation of the related transportation projects. If the related transportation projects are not constructed there could be a constraint put upon current planned levels of growth (private development) in the greater project area.

2.18.4 Construction Related Impacts

While project construction is not anticipated to have any impacts to traffic, it is scheduled at the same time as several other road and highway improvement projects. The projects included in Table 2.18-1 are those within the vicinity of the study area for which a schedule was available; there are several other road projects, both within the study area and throughout the Sacramento region, that are planned for the same time period. Many of the development projects listed in Table 2.18-1 will also be under construction during this period as well.

There are number of major projects scheduled to take place simultaneously on I-80, SR 99, I-5, and US 50. There are also several extension and widening projects that are anticipated for the major roads that are within or intersect the study area, including a series of downtown road network improvements to improve access to Sacramento's central business district.

Cumulative impacts related to the construction of these projects could include temporary road and lane closures, which could lead to traffic delays and impaired access to local businesses, commercial and tourist destinations, public recreational areas, and private residences. Impacts may occur throughout the I-5/I-80 U.S. 50/SR 99-highway network, as well as in downtown Sacramento and throughout the cumulative study area.

An interregional Transportation Management Plan (TMP) should be developed to address the cumulative impacts from the multiple transportation projects listed in the SACOG MTP and other plans. Caltrans requires TMPs for all construction activities on the state highway system. However, where several consecutive or linked projects within a region create a cumulative need for a TMP, Caltrans coordinates individual TMPs or develops a single interregional TMP. An interregional TMP would result in minimized project related traffic delay and accidents by the effective combination of public and motorist information, demand management, incident management, system management, alternate route strategies, construction strategies, and other strategies. For example, a construction season map could be published each year to inform the public, local businesses, and local agencies of project locations and activities.

TMPs are designed to reduce the amount of considerable delay time due to lane closures and construction related activity. Considerable delay time is 30 minutes above normal recurring traffic delay on the existing facility or the delay threshold set by the District Traffic Manager, whichever is less. Traffic Management may determine that a cumulative delay time of less than 30 minutes per TMP guidelines is necessary for the I-5 corridor. Traffic Management for the project will determine thresholds for delays during the development of an interregional TMP before special provisions in the contract are finalized.

Caltrans recommends developing an interregional TMP because of the large scope of proposed concurrent related project activity in the greater project area. An interregional TMP would be expected to more directly promote interagency coordination and planning between other lead agencies that are scheduled to conduct construction during the same time frame as the proposed Caltrans projects, such as the City of Sacramento.

Table 2.18-1. Cumulative Impacts Project List: Transportation and Development Projects 2006-2015

Transportation Projects

Project	*Jurisdiction*	*Route*
Interstate 5 Projects		
I-5 Interchange Enhancements	Sacramento	I-5
I-5 Road Widening	Sacramento	I-5
I-5 Bus/Carpool Lanes (1)	Sacramento County	I-5
I-5 Rehabilitation	Sacramento County	I-5
I-5/SR 99/U.S. 50 Connector	Sacramento County, Rancho Cordova, Folsom	I-5
SR 99-I-5 Intersection	Sacramento County	I-5
Interstate 80 Projects		
I-80 Bus/Carpool Lanes (2)	Placer County	I-80
I-80 Interchange Enhancements	Sacramento	I-80
I-80 Bus/Carpool Lanes (1)	Sacramento County	I-80
State Route 99 Projects		
SR 99-Sheldon Road Interchange	Elk Grove	SR 99
I-5/SR 99/U.S. 50 Connector	Sacramento County, Rancho Cordova, Folsom	SR 99
U.S. 50 Projects		
I-5/SR 99/U.S. 50 Connector	Sacramento County, Rancho Cordova, Folsom	U.S. 50
U.S. 50 Bus/Carpool Lanes (1)	El Dorado County	U.S. 50
U.S. 50 Interchanges	El Dorado County	U.S. 50
U.S. 50 Interchanges	Folsom	U.S. 50
U.S. 50-Mather Field Rd Interchange	Rancho Cordova	U.S. 50
U.S. 50 Bus/Carpool Lanes (2)—the Project	Sacramento County	U.S. 50
U.S. 50 Connection	Sacramento County	U.S. 50
U.S. 50-Watt Ave Interchange	Sacramento County	U.S. 50
U.S. 50 Rehabilitation	Sacramento, Yolo County	U.S. 50
U.S. 50-Jefferson Blvd Interchange	West Sacramento	U.S. 50
U.S. 50-Harbor Blvd Interchange	Yolo County	U.S. 50
Other Road and Highway Projects		
District 3 Traffic Operations System Projects	Caltrans District 3	
Zinfandel Drive to Douglas Road Extension	Rancho Cordova	
65th Street Improvements	Sacramento	
Consumes River Blvd Extension	Sacramento	
Intermodal Transportation Facility	Sacramento	
North Downtown Access	Sacramento	
Power Inn Road Widening	Sacramento	
Ramona Avenue	Sacramento	
Extend International Drive to Sunrise Blvd	Sacramento County	
Folsom Blvd and Watt Ave	Sacramento County	
Hazel Ave Widening	Sacramento County	
Watt Ave/S. Watt Ave Enhancements	Sacramento County	
Bradshaw Road Enhancements	Sacramento County, City of Elk Grove	
Sunrise Blvd Enhancements	Sacramento County, Rancho Cordova	
Folsom Blvd Widening and Enhancements	Sacramento County, Sacramento, Rancho Cordova	

Development Projects

Project	*Approved or In Progress*	*Jurisdiction of Proposed Projects*	*Description*
City of Sacramento			
North Natomas		Sacramento (City and County)	9,000-acre mixed-use development; approximately 33,000 units.
The Railyards		Sacramento	238-acre urban infill mixed use development; between 7,500 and 11,800 units
Downtown Residential Development	X	Sacramento	Several projects totaling 1,650 units approved but unbuilt and several projects totaling 5,153 units proposed, including a 2,723 unit development at N 7th Street and Richards Ave
Totals for City of Sacramento			**9,238 acres / up to 51,600 units**
Sacramento County			
Elverta		Sacramento County	1,820-acre mixed use development directly north of Sacramento at the Placer County line; 4,500 units
East Antelope	X	Sacramento County	673-acre development northwest of Sacramento west of Citrus Heights at the Placer County line; remaining capacity of 382 units
Totals for Sacramento County			**2,493 acres / 4,880 units**
Grand total for development			**11,731 acres / up to 56,480 units**

Sources: County of Sacramento, City of Sacramento, SACOG, and Sacramento Transportation Authority

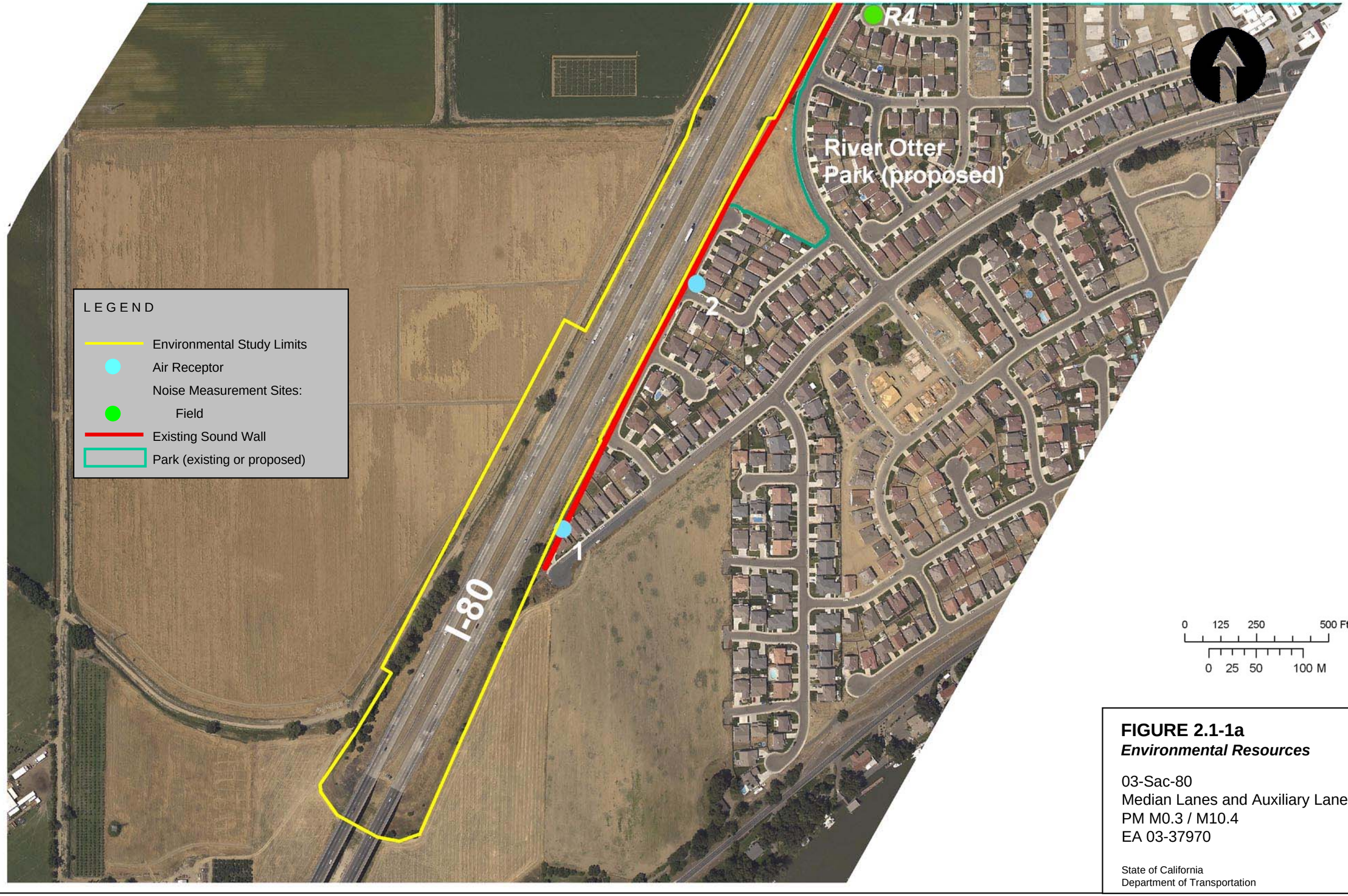


FIGURE 2.1-1a
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

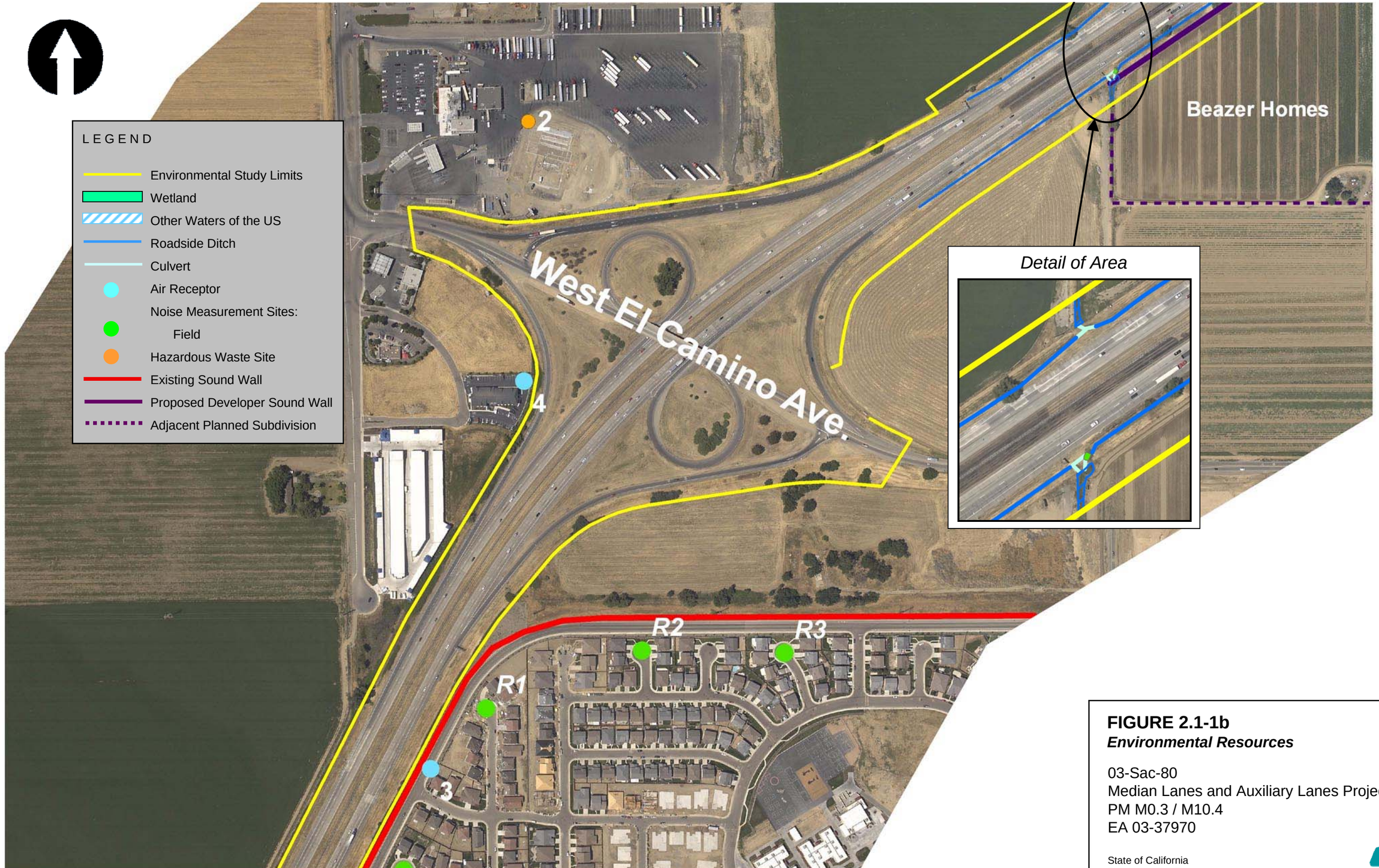


FIGURE 2.1-1b
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

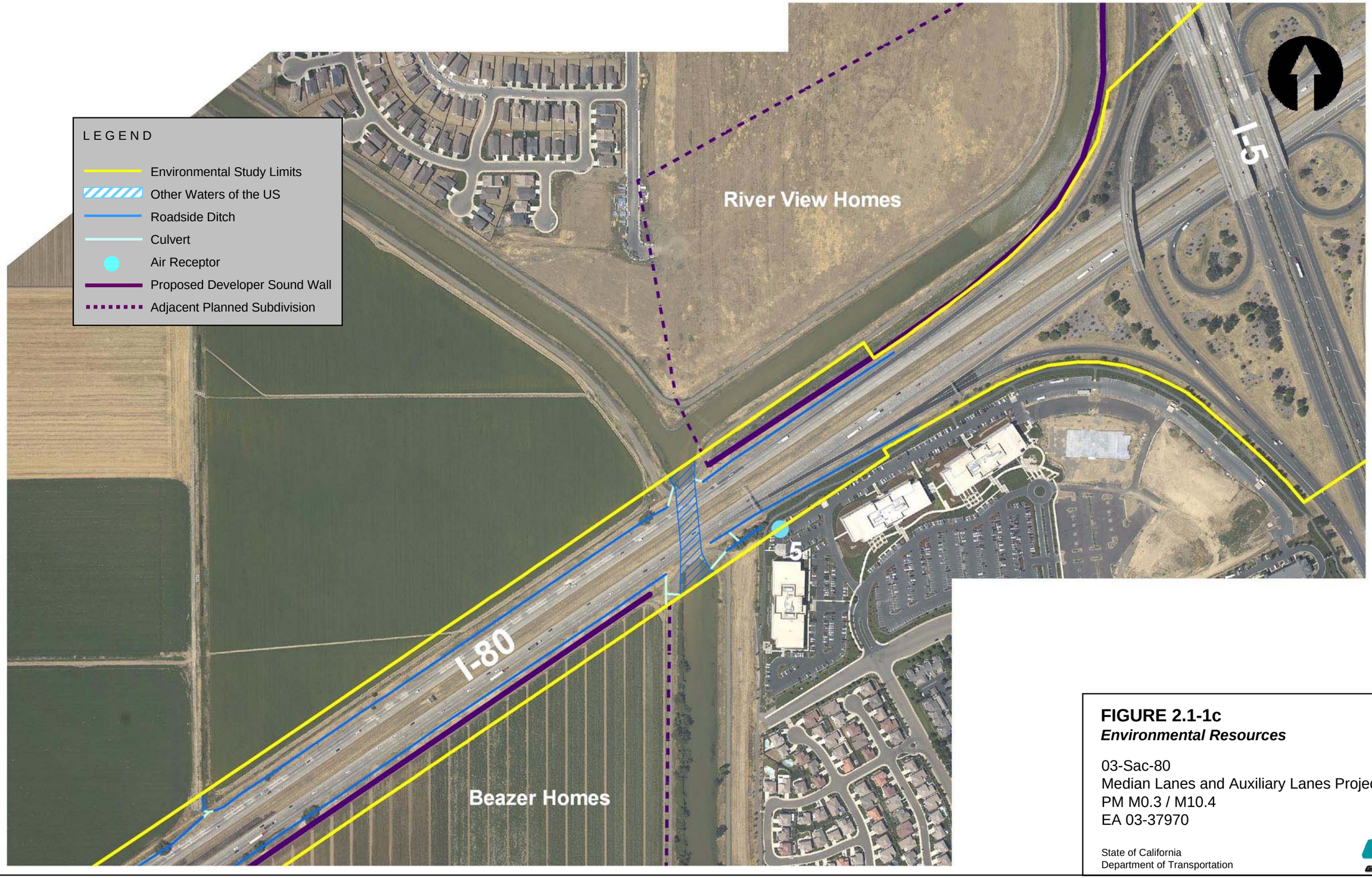


FIGURE 2.1-1c
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

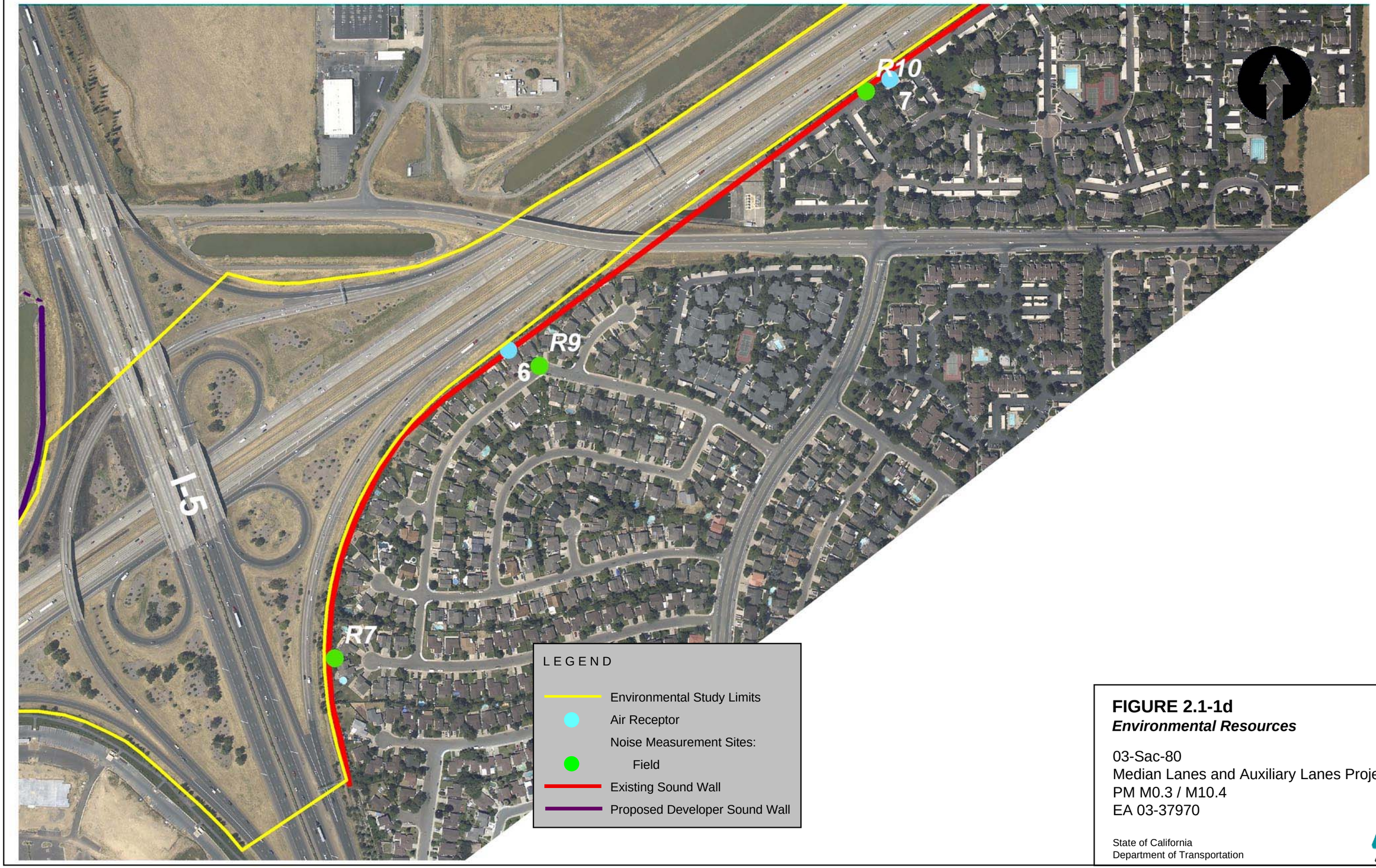


FIGURE 2.1-1d
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

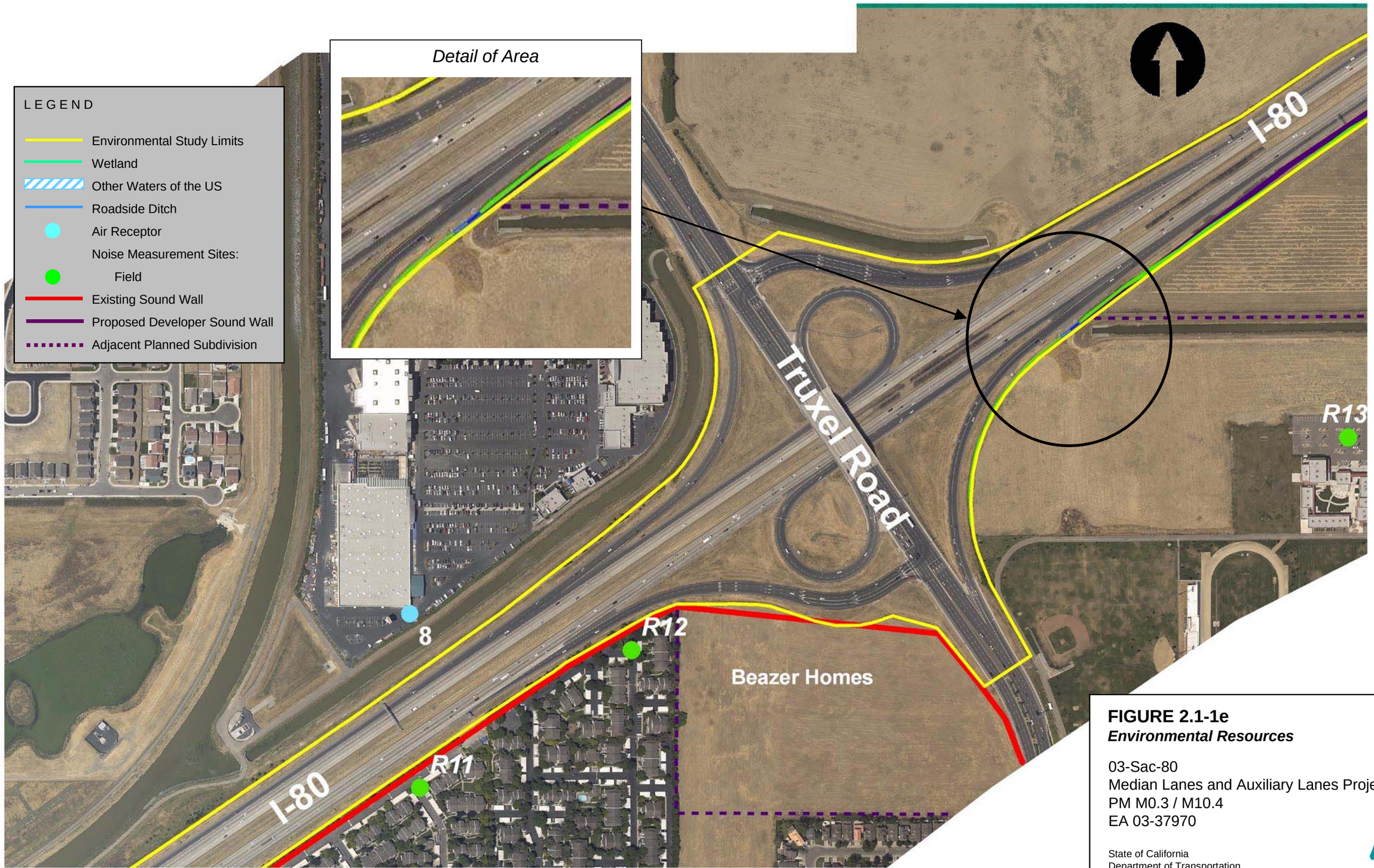


FIGURE 2.1-1e
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EA 03-37970

State of California
Department of Transportation

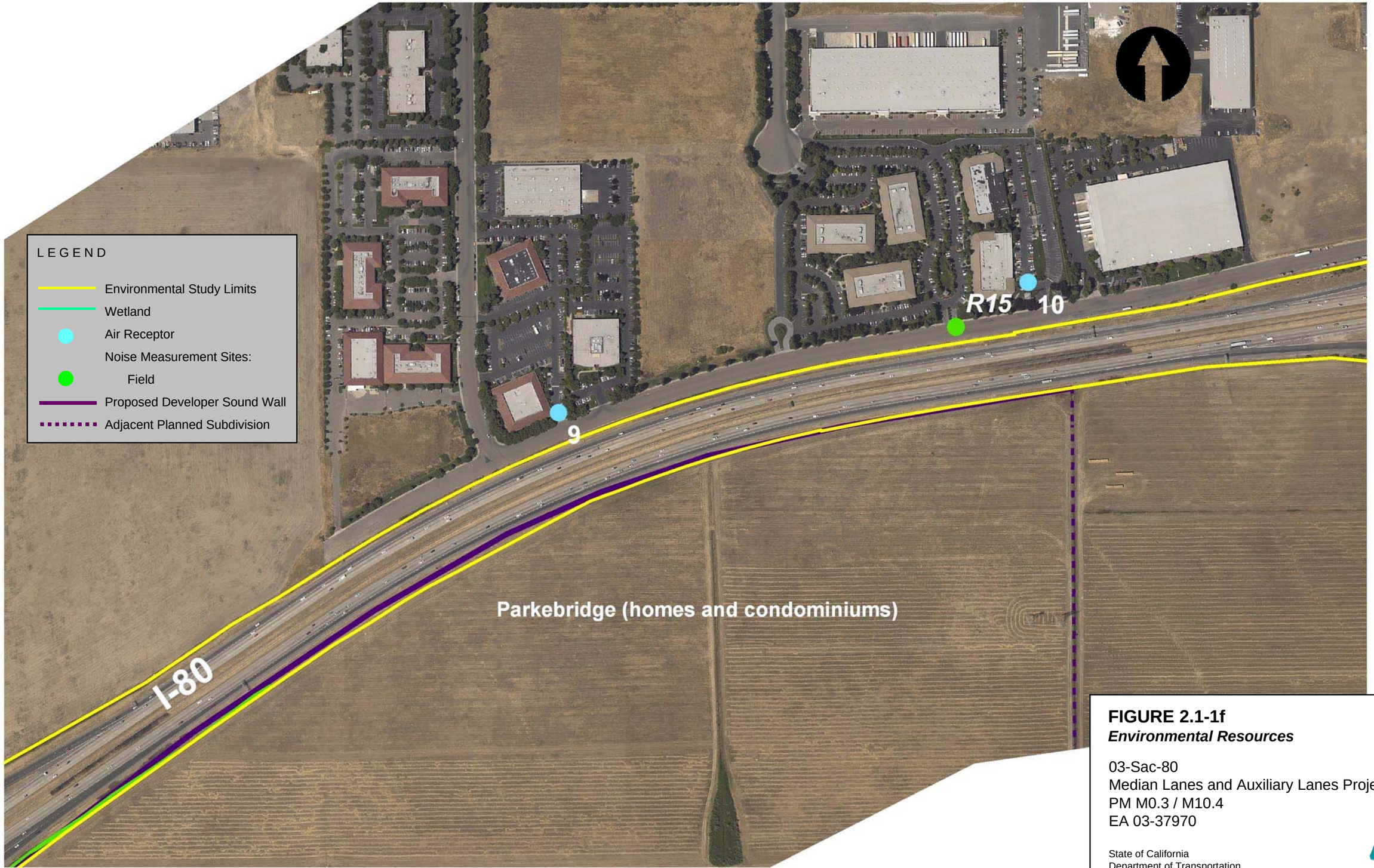

FIGURE 2.1-1f
Environmental Resources

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EA 03-37970

State of California
Department of Transportation

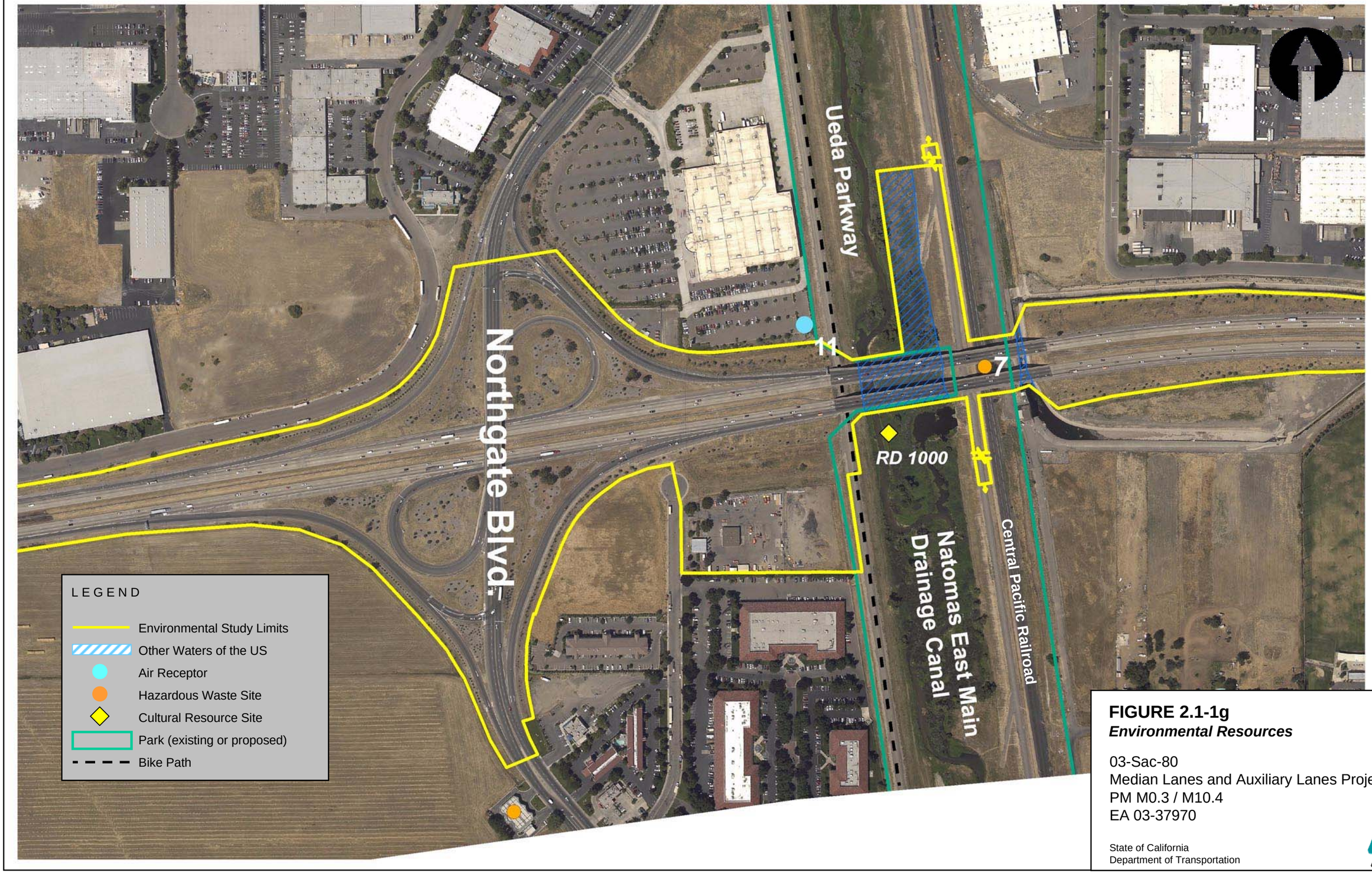

FIGURE 2.1-1g
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

FIGURE 2.1-1h
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

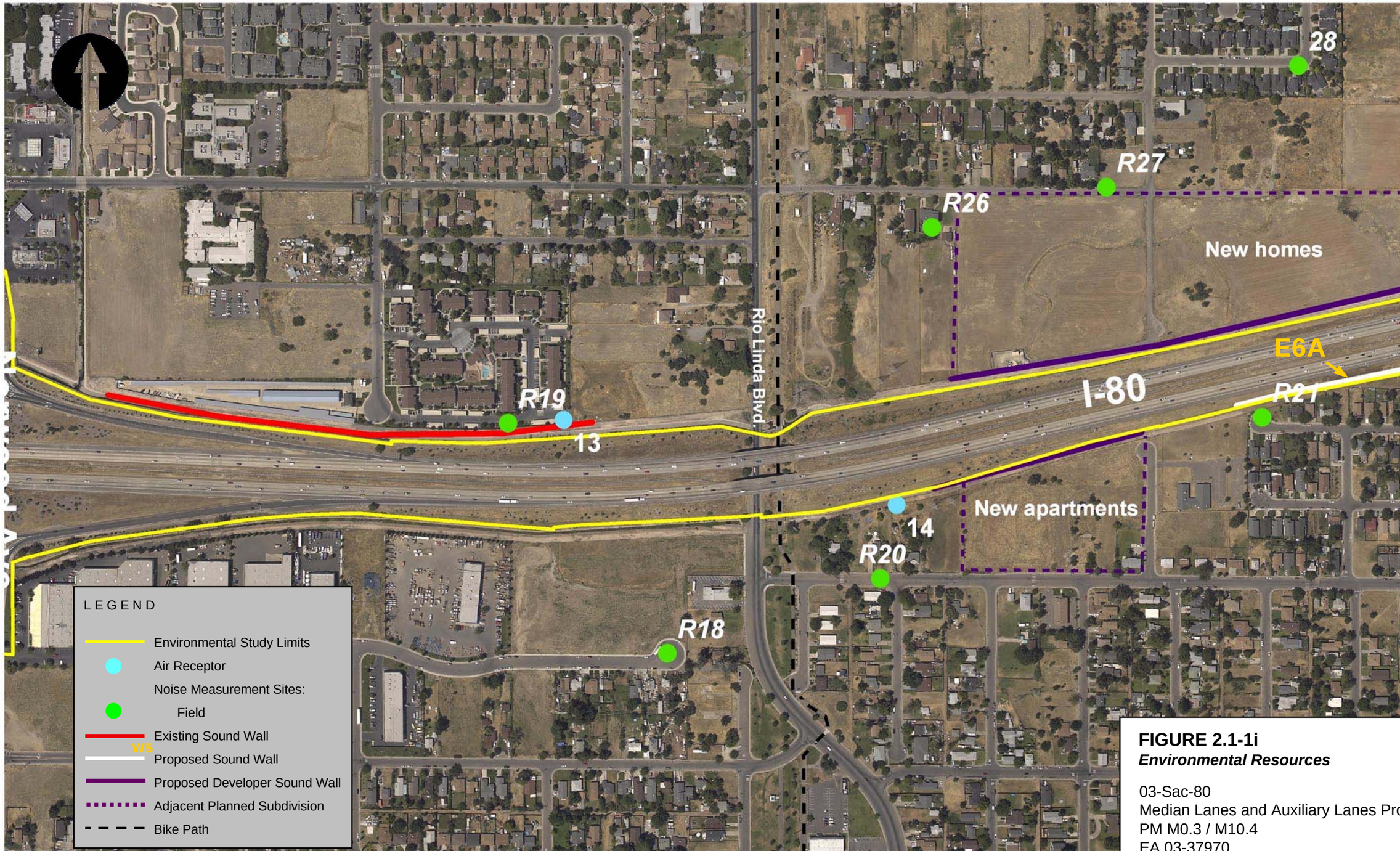

FIGURE 2.1-1i
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

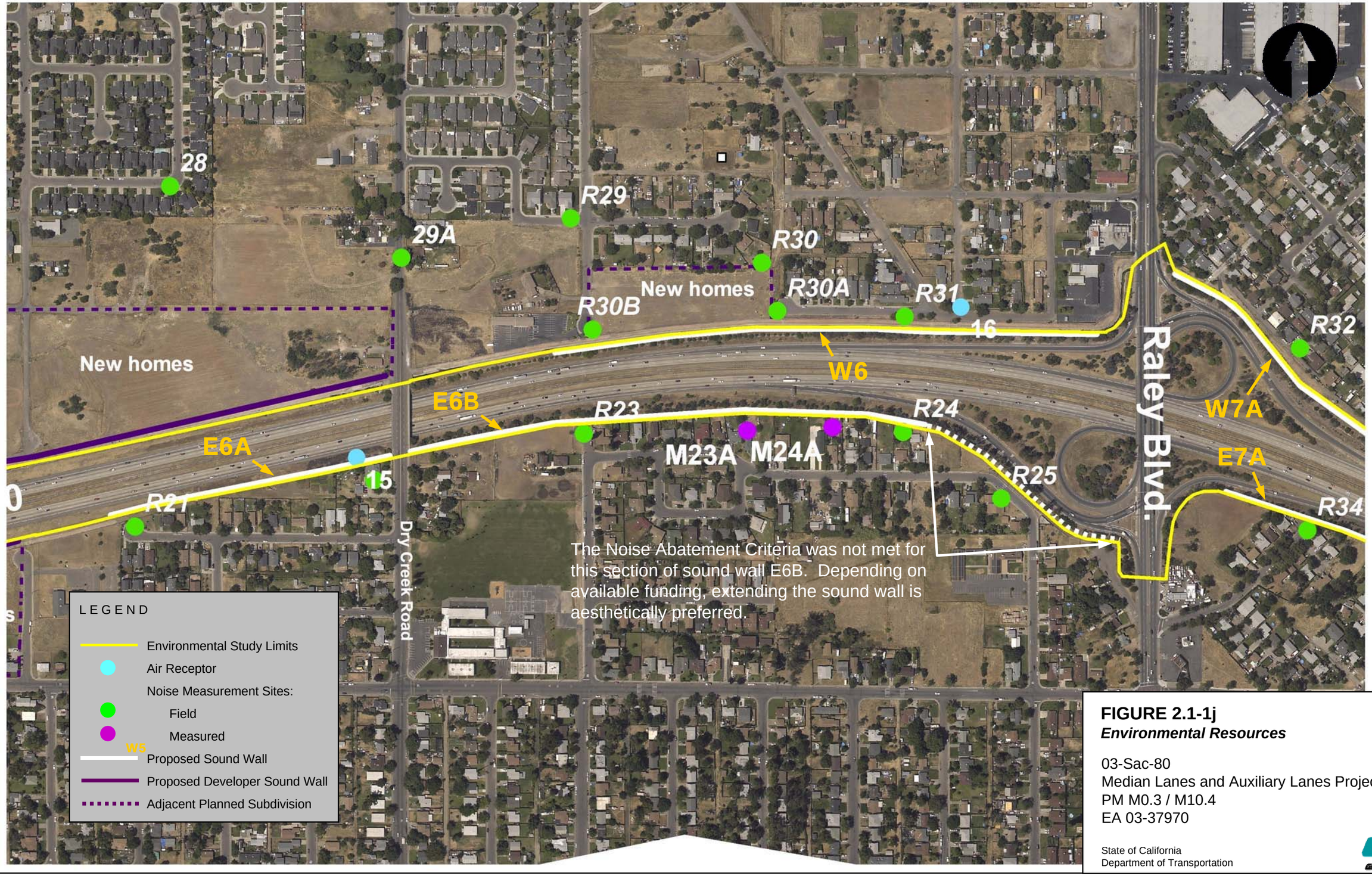

FIGURE 2.1-1j
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

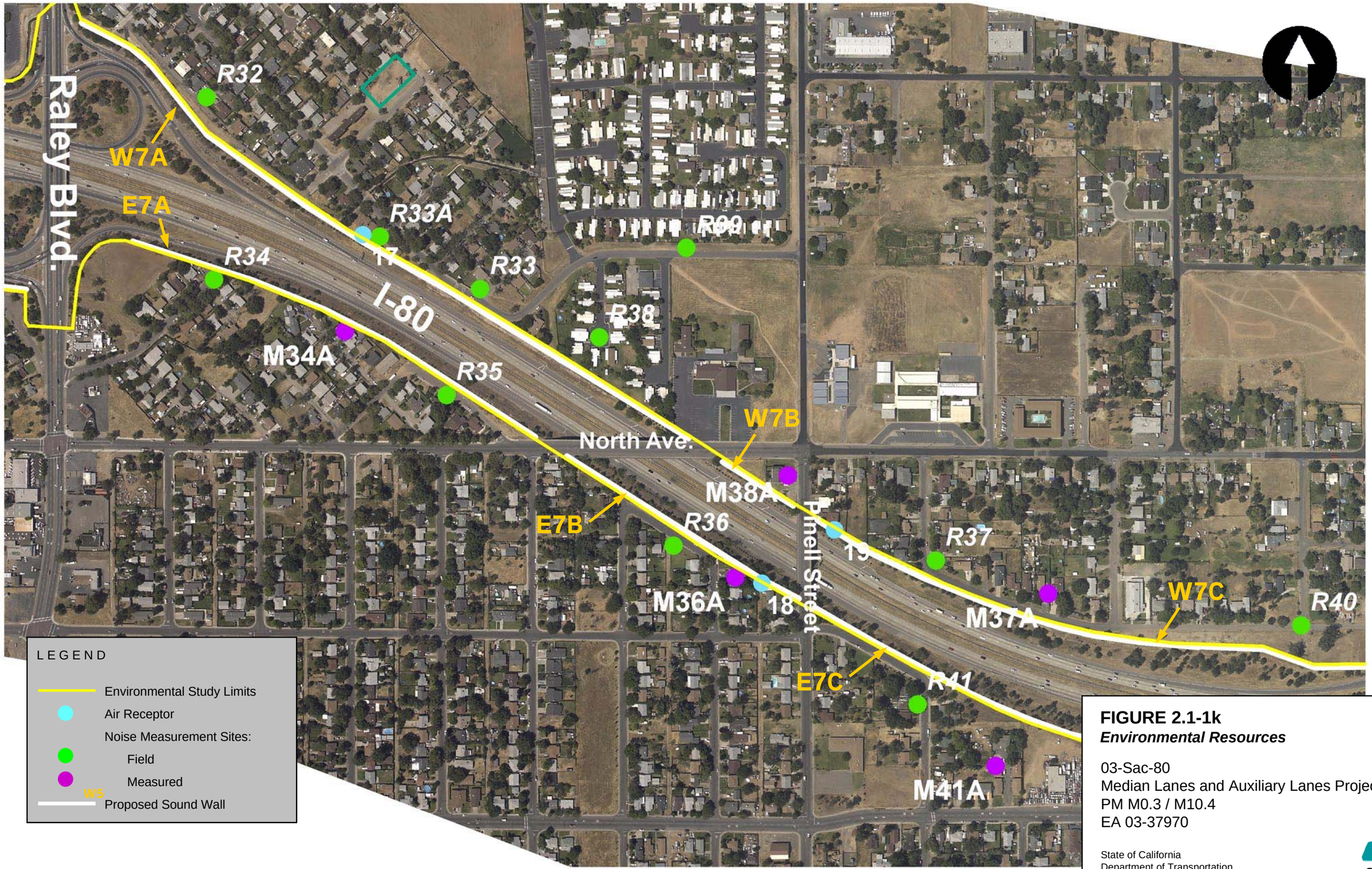

FIGURE 2.1-1k
Environmental Resources

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Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

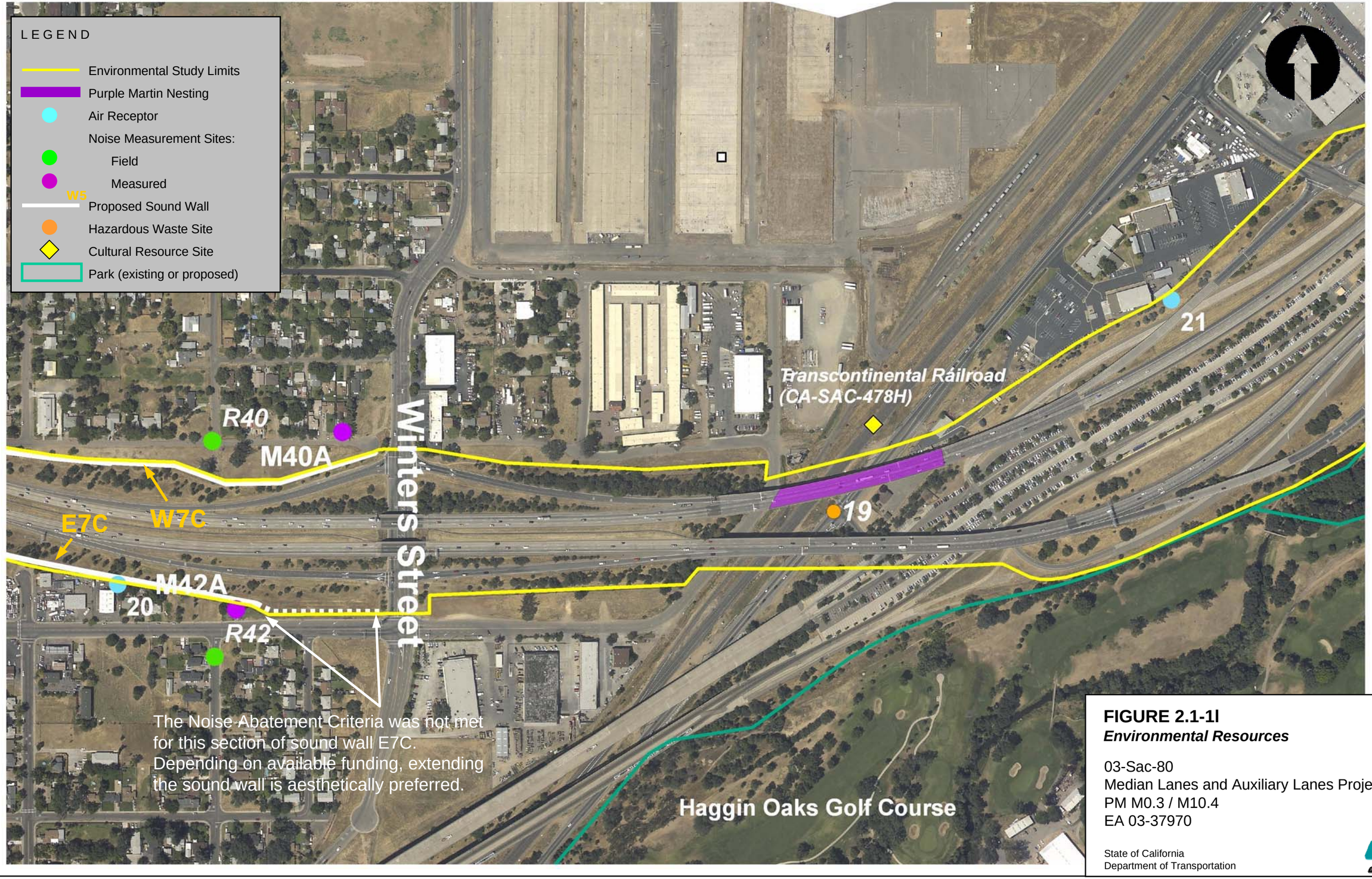

FIGURE 2.1-1l
Environmental Resources

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PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

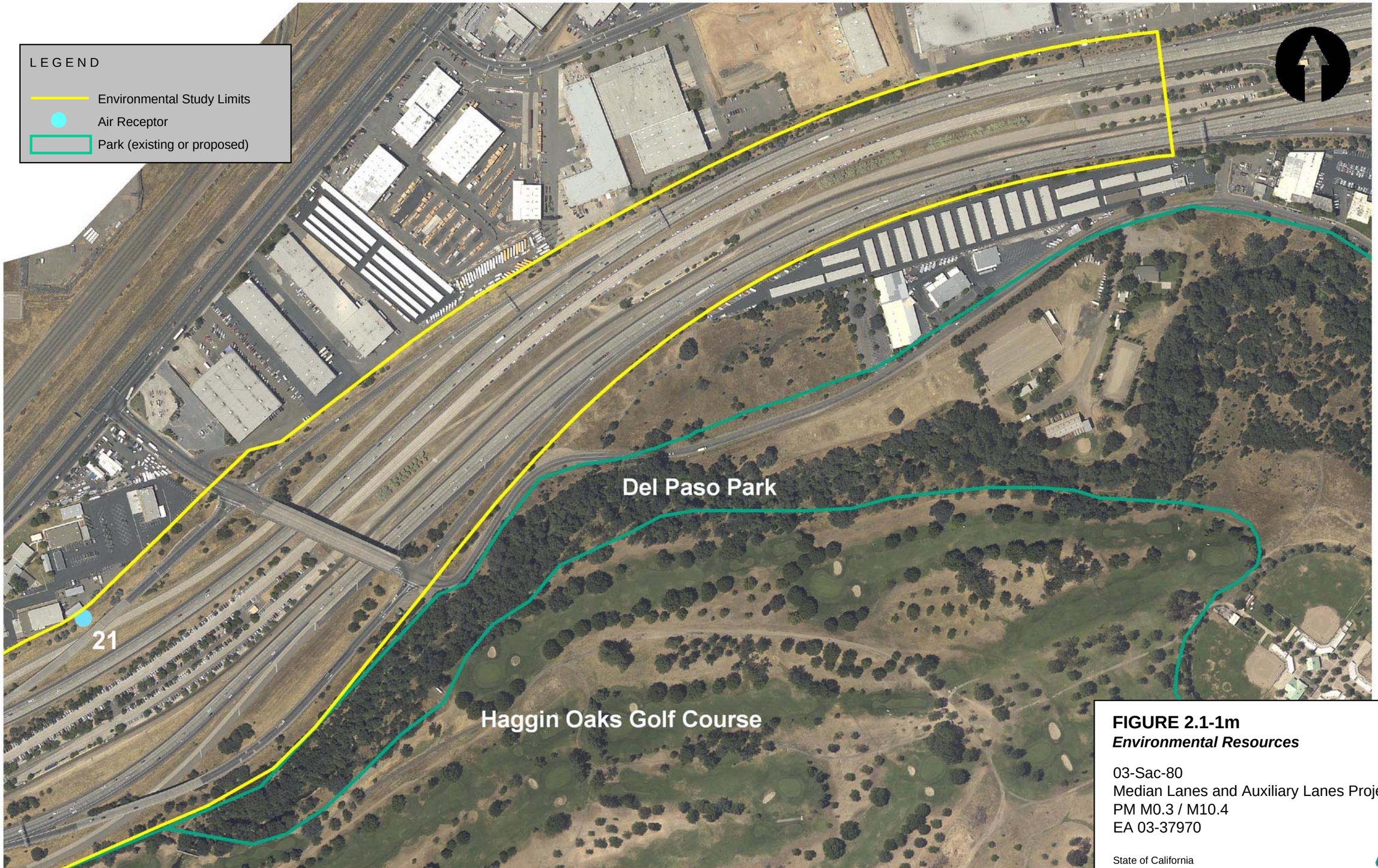

FIGURE 2.1-1m
Environmental Resources

03-Sac-80
Median Lanes and Auxiliary Lanes Project
PM M0.3 / M10.4
EA 03-37970

State of California
Department of Transportation

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CHAPTER 3 – CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION

3.1 Determining Significance Under CEQA

The proposed project is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. Caltrans is the lead agency under CEQA and the FHWA is lead agency under NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents. CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines Appendix G list a number of mandatory findings of significance, which also require the preparation of an EIR. For the purpose of this document pertinent criteria from the CEQA Guidelines Appendix G were used to establish significance criteria for each of the alternatives. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

3.2 Discussion of Significant Impacts

The CEQA checklist (Appendix A of this document) identifies physical, biological, social, and economic factors that might be affected by the proposed project. The CEQA impact levels include potentially significant impact, less than significant impact with mitigation, less than significant impact, and no impact. Please refer to Title 14, Chapter 3, California Code of Regulations, Sections 15000 et seq for detailed discussions regarding impacts. CEQA requires that environmental documents determine significant or potentially significant impacts. In many cases, background studies performed in connection with the project indicate no impacts. A "no impact" reflects this determination. Any needed discussion to address resource specific impacts is in the corresponding Chapter 2 section of this EIR/EA. The analysis for the draft EIR that you are reading, for the proposed bus/carpool lanes project, supports the conclusion that the project would not have unavoidable significant environmental impacts.

3.3 Mitigation Measures for Potential Significant Impacts Under CEQA

Biological Resources

<u>Giant Garter Snake</u>

Alternative 1 will result in less than 20 acres of temporary impacts to GGS upland habitat (approximately 3.0 acres), lasting two construction seasons. The project will likely qualify as Level 2 effects for temporary disturbance of 3.0 acres of GGS upland habitat, with restoration plus 1:1 replacement as compensation, per the USFWS Programmatic Biological Opinion (USFWS File No. 1-1-03-F-0154, dated January 24, 2005).

All areas temporarily disturbed during construction will be restored within one year of completion of the project, following the "*Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat*", outlined below:

3. If necessary, the disturbed area will be graded to its preexisting contours and ripped to de-compact the soil.

4. The area should be hydroseeded with a mix containing at least 20-40 percent native grass seeds. Some acceptable native grasses include annual fescue (Vulpia spp.), California brome (Bromus carinatus), blue wildrye (Elymus glaucus), and needle grass (Nassella spp.). The seed mix should also contain native forb seeds.

Replacement of GGS upland habitat temporarily affected by the project will be satisfied through purchase of mitigation credits at a USFWS approved conservation bank.

CHAPTER 4 – SUMMARY OF PUBLIC INVOLVEMENT AND TRIBAL COORDINATION

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including: project development team meetings, interagency coordination meetings and a public open house/workshop. This chapter summarizes the results of the Caltrans' efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

4.1 PUBLIC INVOLVEMENT

4.1.1 Notice of Preparation

Caltrans published and distributed a Notice of Preparation (NOP) in September 2006 regarding the preparation of the DEIR. Approximately 29 agencies were sent copies of the NOP. A further 25 agencies and organizations were sent a notice regarding the availability of the NOP, along with approximately 17,000 adjacent residents.

4.1.2 Notice of Preparation Open House/Scoping Meeting

Besides the notice sent to agencies and adjacent residents, a notice of a public open house/scoping meeting appeared in two local Sacramento Bee Neighbors sections (Antelope/North Sacramento/Natomas Region and Arden/Carmichael Region). The open house/scoping meeting was held at the Robertson Community Center (3525 Norwood Avenue) on September 27, 2006.

Approximately 32 individuals attended this open house/scoping meeting. Eleven comment sheets were left in the comment box. Concerns expressed at the open house included drainage overtopping from a county drainage canal and noise issues at the east end of the project.

4.2 TRIBAL COORDINATION

The following agencies, tribes, groups, and individuals were contacted for this project:

Agencies:

- California Office of Historic Preservation
- Native American Heritage Commission
- Sacramento Historical Society

Tribes:

- Shingle Springs Band of Miwok Indians
- United Auburn Indian Community of the Auburn Rancheria

Individuals:

- Rose Enos
- Jeff Murray, Cultural Resources Manager, Shingle Springs Band of Miwok Indians
- Nicholas Fonseca, Chairperson, Shingle Springs Band of Miwok Indians
- Jessica Tavares, Chairperson, United Auburn Indian Community of the Auburn Rancheria

CHAPTER 5 - LIST OF PREPARERS

The following Caltrans staff and consultants contributed to the preparation of this DEIR/EA:

5.1 CALTRANS STAFF

Jeremy Ketchum, Senior Environmental Planner; BS Environmental Policy Analysis and Planning, University of California at Davis; MS Transportation Management, San Jose State University; 7 years experience performing environmental studies and document preparation. Environmental document oversight.

Ken Lastufka, Associate Environmental Planner; BA Environmental Studies, California State University, Sacramento (CSUS); MA Urban Studies, CSUS, Sacramento; 21 years experience performing environmental studies and document preparation. Environmental document preparation.

Andy Agustinovich, Transportation Planner, BA Sociology, MA Public Administration, CSU Hayward. Thirteen years professional experience. Community Impact Assessment.

Jim Calkins, PE; Senior Transportation Engineer, BSCE Civil Engineering, University of Colorado; BS Recreation/Resource Management, Northern Arizona University; 20 years experience in Transportation Engineering.

Rajive Chadha, Environmental Engineer, B.A.Sc. Civil Engineering, University of Ottawa, 15 years of experience performing hazardous waste studies/investigations. Initial Site Investigation.

Dordaneh Eslamian, NPDES Coordinator; BS Chemical Engineering, Istanbul Poly Technics; MS Environmental and Water Resources Engineering, California State University Sacramento; 12 years engineering experience. Water Quality Assessment.

Andrew Hope, Associate Environmental Planner (Architectural History); BS Architecture, University of Michigan; MA Architecture, University of Wisconsin - Milwaukee; 18 years experience in historic preservation and historic architecture surveys. Historic Resource Evaluation Report and Finding of No Adverse Effect Report.

Judy McCullough, Hydraulic Engineer, MS Civil Engineering, California State University, San Jose CA, USA: 5 years experience performing hydraulic engineering. Floodplain study.

Aaron McKeon, Associate Environmental Planner; MS Regional Planning, Cornell University; 5 years experience in preparing community impact assessments. Community Impact Analysis.

Richard Olson, Associate Environmental Planner, Archaeologist; BA History/American Studies, California State University, Chico; 26 years experience in archaeology/cultural resource management. Mr. Olson is a Professionally Qualified Staff (PQS) certified by Caltrans as a Co-Principal Investigator in Prehistoric and Historical Archaeology. Historic Property Survey Report.

Barbara Procissi, Associate Landscape Architect; BS Landscape Architecture, UC Davis: Certificate Land Use & Environmental Planning, 30 years Licensed Landscape Contractor, 24 years Licensed Landscape Architect. Experience in mined land reclamation, recreational boating facilities, state park recreation system, urban design, and highway landscape systems. Visual Impact Assessment.

Schmoldt, Don, Associate Environmental Planner/Wildlife Biologist. BS Wildlife Management, Humboldt State University, Arcata. MA Natural Sciences, San Jose State University, San Jose. 14 years experience with a private environmental consulting firm in Central California, and 7 years experience with Caltrans with environmental resources analysis and permitting issues.

Sharon Tang, Transportation Engineer Technician (Air/Noise); AA Business/Engineering, Sacramento City College; 4 years experience. Air Quality Report.

Saied Zandian, Transportation Engineer; BS Civil Engineering, California State University, Sacramento; 8 years experience with Caltrans, 1 year experience performing noise studies. Noise Study.

5.2 GEOCON CONSULTANTS, INC.

Rebecca L. Silva, Senior Project Scientist; BS Soil and Water Science, University of California at Davis, 14 years experience performing environmental assessments.

5.3 FEHR & PEERS.

David Stanek, Senior Transportation Engineer; Licensed Civil Engineer (C60390); Licensed Traffic Engineer (TR 2302); BS and MS Civil and Environmental Engineering, University of California at Davis; 10 years experience in traffic engineering. Traffic operations analysis.

CHAPTER 6 - DISTRIBUTION LIST

Federal Agencies

FHWA
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

US Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, California 95825

NOAA Fisheries
National Marine Fisheries Service
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814-4708

US Army Corps of Engineers
1325 J Street
Sacramento, CA 95814

State Agencies

Office of Historic Preservation
California Dept. of Parks and Recreation
1416 9th Street, Room 1442-7
Sacramento, CA 95814

Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296

California Highway Patrol
P. O. Box 942898
Sacramento, California 94298-0001

Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

California Transportation Commission
1120 N Street
Room 2221 (MS-52)
Sacramento, CA 95814

Local Agencies

City of Sacramento
City Clerk
915 I Street, 1st Floor
Sacramento, CA 95814-2604

Sacramento County
Clerk/Recorder
P.O. Box 839
Sacramento, CA 95812-0839

Sacramento County
Clerk of the Board
700 H Street, Suite 2450
Sacramento, CA 95814

Yolo County
Clerk/Recorder
P.O. Box 1130
Woodland, CA 95776

Sacramento Air Quality Management District
777 12th Street, 3rd Floor
Sacramento, CA 95814

Sacramento Regional Transit
P.O. Box 2110
Sacramento, CA 95812-2110

Sacramento Transportation Authority
901 F Street, Suite 210
Sacramento, CA 95814-0730

Yolo County Transportation District
350 Industrial Way
Woodland CA 95776

Placer County Transit
11432 F Ave.
Auburn, CA 95603

Paratransit
2501 Florin Road
Sacramento, CA 95822

SACOG
1415 L Street, Suite 300
Sacramento, CA 95814

Sacramento Housing and Redevelopment Agency
630 I Street
Sacramento, CA 95814

Sacramento Metropolitan Chamber of Commerce
917 Seventh Street
Sacramento, CA 95814

Los Rios Community College District
1919 Spanos Ct.
Sacramento, CA 95825

Grant Joint Union High School District
1333 Grand Avenue
Sacramento, CA 95838

Natomas Sacramento City Unified School District
Serna Center
5735 47th Avenue
Sacramento, CA 95824

San Juan Unified School District
3738 Walnut Ave.
Carmichael, CA 95608

Natomas Unified School District School District
1901 Arena Blvd
Sacramento, CA 95834

Del Paso Heights School District
1281 North Ave
Sacramento, CA 95838

North Sacramento School District
670 Dixieanne Avenue
Sacramento, CA 95815

Rio Linda Union School District
627 L St.
Rio Linda, CA 95673

Sacramento Sheriff's Department
711 G Street
Sacramento, CA 95814

Sacramento City Police Department
5770 Freeport Blvd, Ste 100
Sacramento, CA 95822

Sacramento City Fire Department
5770 Freeport Blvd., Suite 200
Sacramento, CA 95822

Sacramento Metro Fire District
2101 Hurley Way
Sacramento, CA 95825

Sacramento Area Flood Control Agency
1007 7th Street, 7th Floor
Sacramento, CA 95814

Reclamation District 1000
1633 Garden Highway
Sacramento, CA 95833-9706

Sacramento Municipal Utility District
P.O. Box 15830
Sacramento 95852-1830

Pacific Gas and Electric
77 Beale St.
San Francisco, CA 94105

Federal Elected Officials

House of Representatives

Doris Matsui
12-600 Federal Courthouse
501 I Street
Sacramento, CA 95814

Dan Lungren
11246 Gold Express Drive, Suite 101
Gold River, CA 95670

Senate

Barbara Boxer
501 I Street, Suite 7-600
Sacramento, CA 95814

Diane Feinstein
One Post Street, Suite 2450
San Francisco, CA 94104

State Elected Officials

State Assembly

Assembly Member Roger Niello (District 5)
State Capitol
Room 6027
Sacramento, CA 94249-0001

Assembly Member Dave Jones (District 9)
State Capitol
Room 3146
Sacramento, CA 94249-0001

State Senate

Senate Member Darrell Steinberg (District 6)
State Capitol
Room 4035
Sacramento, CA 94249-0001

Local Elected Officials

Mayor Heather Fargo
Councilmember Raymond L. Tretheway (District 1)
Councilmember Sandy Sheedy (District 2)
Sacramento City Council
City Hall
730 I Street, Suite 321
Sacramento, CA 95814

Roger Dickinson (District 1)
Susan Peters (District 3)
Sacramento County Board of Supervisors
700 H Street, Suite 2450
Sacramento, CA 95814

Libraries

Central Library
828 I Street
Sacramento, CA 95814

South Natomas Library
2901 Truxel Road,
Sacramento, CA 95833

Del Paso Heights Library
920 Grand Avenue
Sacramento, CA 95838

Arcade Learning Library
2443 Marconi Avenue
Sacramento, CA 95821

Community/Neighborhood Groups

Sacramento County Alliance of Neighborhoods
P.O. Box 22598
Sacramento, CA, 95822

Environmental Council of Sacramento
909 12th Street, Suite 100
Sacramento, CA 95820

Del Paso Heights Improvement Association
P.O. Box 38685
Sacramento, CA 95838

Gardenland/Northgate Neighborhood Association
c/o Stanford Settlement, 450 West El Camino Ave.
Sacramento, CA 95833

Heights Residents Working Together (HRWT)
P.O. Box 38684
Sacramento, CA 95838

Natomas Community Association
3291 Truxel Road, Suite 26
Sacramento, CA 95833

North Natomas Alliance
2411 North Park Drive
Sacramento, CA 95835

North Natomas Community Association.
5010 Sorento Road
Sacramento, CA 95835

Oak Knoll & Johnson Heights Neighborhood Group
149 Fairbanks Avenue
Sacramento, CA 95838

Parker Homes Neighborhood Association
P.O. Box 38826
Sacramento, CA 95838

River Oaks Community Association
16 Riverscape Court
Sacramento, CA 95833

Robla Park Community Association
P.O. Box 340232
Sacramento, CA 95834-0232

West Natomas Community Association
3706 Far Niente Way
Sacramento, CA 95834

Operating Engineers Local Union No. 3
4044 North Freeway Blvd. #200
Sacramento, CA 95834

Sacramento Area Bicycle Advocates
11916 Silver Cliff Way
Gold River, CA 95670

CHAPTER 7 - REFERENCES

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APPENDICES

Appendix A: CEQA Checklist
Appendix B: Title VI Policy Statement
Appendix C: Resources Evaluated Relative to the Requirements of Section 4(f) and De Minimis Finding
Appendix D: Glossary of Technical Terms
Appendix E: Mitigation and Minimization/Avoidance Summary
Appendix F: List of Acronyms
Appendix G: List of Technical Studies
Appendix H: Consultation Letters

Appendix A: CEQA Checklist

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts.

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this Environmental Impact Report/Environmental Assessment. Discussion of all impacts, avoidance, minimization, and/or mitigation measures is under the appropriate topic headings in Chapter 2.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			X	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Create objectionable odors affecting a substantial number of people?			X	
IV. BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?		X		
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?			X	

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?				X
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
VII. HAZARDS AND HAZARDOUS MATERIALS –				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
VIII. HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?			X	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
f) Otherwise substantially degrade water quality?			X	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?			X	
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X
IX. LAND USE AND PLANNING - Would the project:				
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X	
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
XI. NOISE –				
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
XII. POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
XIII. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?				X
Police protection?				X
Schools?				X
Parks?				X
Other public facilities?				X
XIV. RECREATION –				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				X
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?				X
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X
XVI. UTILITIES AND SERVICE SYSTEMS –				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X
XVII. MANDATORY FINDINGS OF SIGNIFICANCE –				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

Appendix B: Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY (916) 653-4086

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January 14, 2005

TITLE VI
POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

WILL KEMPTON
Director

Appendix C: RESOURCES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(F) AND DE MINIMIS FINDING

Section 4(f) of the U.S. Department of Transportation Act of 1966, codified in Federal law at 49 USC 303, declares that "[i]t is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that "[t]he Secretary [of Transportation] may approve a transportation program or project ... requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of a historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:

1. there is no feasible and prudent alternative to using that land; and
2. the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

Section 4(f) further requires consultation with the Department of the Interior, and as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs which use lands protected by section 4(f). In general, a section 4(f) "use" occurs with a project or program, approved by the Department of Transportation, (1) when section 4(f) land is permanently incorporated into a transportation facility; (2) when there is a temporary occupancy of section 4(f) land that is adverse, in terms of the section 4(f) preservationist purposes as determined by specific criteria (23 CFR 771.135 [p] [7]); and (3) when section 4(f) land is not incorporated into the transportation project, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under section 4(f) are substantially impaired (constructive use) (23 CFR 771.135 [p] [1] and [2]).

Proposed Action

The project proposes the addition of bus/carpool lanes in the existing median of Interstate 80 (I-80) from west of West El Camino to Longview Drive. One build alternative and the No-Build alternative are evaluated in the Environmental Impact Report / Environmental Assessment prepared for this project.

The project is being proposed to reduce congestion, increase capacity, improve safety, promote ride sharing, and provide greater conductivity with the existing and proposed bus/carpool network in the Sacramento region.

Potential Impacts on Section 4(f) Properties

<u>Recreation Areas in the City of Sacramento</u>

The proposed project would not require the acquisition of land from any parks in the City of Sacramento. The proposed project would require temporary occupancy of Ueda Parkway for the construction activities related to the widening of the freeway bridge that crosses over the parkway.

According to 23 CFR 771, a Section 4(f) evaluation must be prepared when a project will require the use of land from a publicly owned recreational facility (among other categories of land). This

use may include temporary occupancy. However, Section 4(f) does not apply to temporary occupancy when the following conditions are met:

a. duration (of the occupancy) must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
b. scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the 4(f) resource are minimal;
c. there are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
d. the land being used must be fully restored, i.e., the resource must be returned to a condition which is at least as good as that which existed prior to the project; and
e. there must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions.

In the case of the proposed project, impacts to Ueda Parkway would be temporary and would not interfere with ongoing recreational activities. Construction work at the bridge will be conducted during the day and at night. The bike path will remain open to the public during the hours in which the parkway is open (sunrise to sunset). No construction equipment will be left on the bike path, blocking access. The staging area will be south of the bridge, either in or adjacent to the Caltrans maintenance yard.

The City of Sacramento t has verified, by way of a June 14, 2006 letter, that the proposed project complies with CFR 771.135 regarding temporary construction use and does not require a Section 4(f) evaluation (see attached).

<u>Two Historic Properties</u>
There are two historic resources within the project limits: Reclamation District 1000 (RD 1000) and the Transcontinental Railroad.

RD 1000, organized in 1911, consists of 55,000 acres of land as well as a network of levees, canals, and local roads. It was evaluated for the Army Corps of Engineers and determined eligible for National Register listing as a rural historic landscape in 1994, under criterion A, with a period of importance extending from 1911 to 1939.

Two canals that are contributing features of the RD 1000 historic landscape cross under I-80:

- The Natomas Main Drainage Canal is an unlined canal that crosses under I-80 through a concrete culvert, just west of the I-80/I-5 interchange. The culvert (Bridge 24-0332, built in 1970) is a non-contributing component of the historic landscape.
- The Natomas East Main Drainage Canal is a wide, unlined canal that crosses under I-80 just east of the Northgate Blvd. interchange. Two bridges (24-0218L and 24-0218R, both built in 1970) carry I-80 over the canal. The canal is a contributing feature of the historic landscape where it crosses under I-80, while the freeway and its bridges are not contributors. The canal is bordered by levees on the east and west. The east levee has been recorded as CA-SAC-463H (P-34-000490). Both levees are part of the canal construction and are contributors to the historic landscape.

The railroad segment, now part of Union Pacific Railroad, was determined to be a contributor to the transcontinental railroad, eligible for National Register listing under criterion A for its importance in American history. A longer portion of the railroad that includes this segment was

previously recorded as CA-SAC-478H (P-34-505). It is also California Hisotrical Landmark 780-8. The railroad segment passes under Interstate 80 at the eastern end of the project area, with bridges 24-0193L and 24-0193R carrying the freeway over the railroad. The two bridges were both constructed in 1970 and are not contributors to the historic railroad.

The project will have an effect on [RD 1000], due to the additional shading and the construction of additional columns in the contributing Natomas East Main Drainage Canal. However, the change to the historic property at this location is minor and incidental. The RD 1000 historic landscape is eligible for National Register listing under criterion A, for its association with reclamation and agricultural settlement, rather than for the engineering or construction qualities of its various components. The project will not have an adverse effect on the RD 1000 historic landscape, as it will not alter the qualities that make the property eligible for National Register listing.

Interstate 80 crosses over the Union Pacific Railroad on two separate bridges. These two bridge structures will be widened in the median area between them, with additional columns in the line of the existing columns. (Unlike the proposed widening of the bridges over the Natomas East Main Drainage Canal, the median area will not be entirely filled in; the bridges over the railroad will remain as separate structures.) The tracks of the historic railroad beneath the bridges will not be altered. Widening of the freeway bridges will slightly increase the area of the railroad that is shaded by the bridges and will slightly alter the railroad's setting at this location. These changes are so minor that they will not have an adverse effect on the historic railroad or diminish the qualities that make it eligible for National Register listing.

A Finding of Effect (FOE) was complete in January 2007 and sent to SHPO in March 2007. Caltrans determined that the project would not have an adverse effect on these historic properties. Caltrans expects SHPO concurrence on the FOE by May 2007. The results of SHPO consultation will be included in the Final EIR/EA.

De Minimis Finding

In April or May 2007, FHWA will send a letter to Mr. Milford Wayne Donaldson, State Historic Preservation Officer (SHPO), seeking his office's concurrence of a finding of "no adverse effect" pursuant to revised regulations issued by the Advisory Council on Historic Preservation (ACHP) (36 CFR Part 800). This letter will be included in Appendix C in the Final EIR/EA.

The letter also advised the SHPO that his office's concurrence in FHWA's determination of no adverse effect could serve as the basis of a finding of "de minimis" impact under Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. 303. Under the 40-year-old provisions of Section 4(f), the Secretary of Transportation may not use land from a property on or eligible for the National Register of Historic Places unless there is 1) no prudent and feasible alternative to the use of that land and 2) the Secretary has undertaken all possible planning to minimize harm to the historic property. Under a recently enacted amendment to Section 4(f), however, that statute will be considered satisfied if the project would result in a de minimis impact on the protected property. For historic sites, the new law states that the Secretary may find such a de minimis impact if consultation with the SHPO results in a determination that a transportation project will have "no adverse effect" on the historic site or that there will be "no historic properties affected" by the proposed project. With regard to the RD 1000 historic landscape and the Union Pacific Railroad (transcontinental railroad), the SHPO has concurred in the FHWA's determination of "no adverse effect" as the result of Alternatives 1. Accordingly, the provisions of Section 4(f) would be considered satisfied should this alternative be selected.

Measures to Minimize Harm
No measures to minimize harm are required.

Potential Constructive Use of Section 4(f) Properties
Access: The proposed project would not limit access to or through any of the publicly owned recreational areas in the project area.

Conclusion

Ueda Parkway: The proposed project's build alternative would not have a constructive use of any of the Section 4(f) properties within the project area. Based on the above analysis and the City of Sacramento's concurrence, temporary construction occupancy of these parks would not qualify as a use of this resource under Section 4(f). On August 8, 2006, FHWA concurred in an email that this project does not require a Section 4(f) evaluation regarding Ueda Parkway.

RD 1000 and Transcontinental Railroad: Caltrans anticipates SHPO concurrence with the FOE determination of no adverse affect on these historic properties.

SECTION 4(F) CONCURRENCE LETTER FROM THE CITY OF SACRAMENTO

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 3, SACRAMENTO OFFICE, MS 15
2389 GATEWAY OAKS DRIVE, SUITE 100
SACRAMENTO, CA 95833
PHONE (916) 274-0586
FAX (916) 274-0602
TTY (530) 741-4509

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RECEIVED
Landscape Architecture

June 6, 2006

Ms. Teresa Haenggi
Parks and Recreation Planner
Department of Parks and Recreation
915 I Street, 5th Floor
Sacramento, CA 95814

Dear Teresa:

Caltrans is proposing to construct eastbound and westbound high occupancy vehicle (HOV) lanes on Interstate 80 from Longview Drive to West El Camino. One feature of the project is to widen the bridge over the Natomas East Main Drainage Canal.

Section 4(f) of the Department of Transportation Act (49 U.S.C. 303 and 23 U.S.C. 138) specifies the land from a publicly owned park, recreation area, wildlife or waterfowl refuge, or historic site may be used for Federal Aid highways if:

1. There is no feasible or prudent alternative to the use of such land, and
2. The proposal includes all possible planning to minimize harm to the Section 4(f) land resulting from such use.

According to 23 CFR 771, a Section 4(f) evaluation must be prepared when a project will require the use of land from one of the aforementioned categories. This use may include temporary occupancy.

However, Section 4(f) will not apply to temporary occupancy when the following conditions are met:

- Duration of occupancy must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
- Scope of the work must be minor, i.e., both the nature and magnitude of the changes to the 4(f) resource must be minimal;
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purposes of the resource, on either a temporary or permanent basis;
- The land being used must be fully restored, i.e., the resource must be returned to a condition which is at least as good as that which existed prior to the project, and
- There must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions.

Construction work at the bridge will be conducted during the day and at night. The bike path will remain open to the public during the hours in which the parkway is open (sunrise to sunset). No construction equipment will be left on the bike path, blocking access. The staging area will be south of the bridge, either in or adjacent to the Caltrans maintenance yard.

The proposed project complies with the temporary occupancy criteria detailed above. As such, Caltrans requests the City of Sacramento Department of Parks and Recreation provide its concurrence that the proposed HOV lane project constitutes a temporary occupancy and does not require a Section 4(f) evaluation. Please sign below and send the original to the following address:

State of California, Department of Transportation
ATTN: Ken Lastufka
District 3, Sacramento Area Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, CA 95833

If you would like to discuss this matter further, please feel free to call Ken Lastufka at (916) 274-0586 or myself at (916) 274-0621.

Sincerely,

JEREMY KETCHUM
Senior Environmental Planner

The City of Sacramento Department of Parks and recreation concurs with the State of California, Department of Transportation that the proposed project to add a high occupancy vehicle lane on I-80 (EA 37970) complies with CFR 771-135 regarding temporary construction use and does not require a Section 4(f) evaluation.

Teresa Haenggi
Parks and Recreation Planner
Department of Parks and Recreation

June 14, 2006
Date

Appendix D: Glossary of Technical Terms

Accident Rate - number of accidents per million vehicle miles traveled.

Alluvial Fan - the soil deposits of a stream where it exits from a gorge upon a plain, or the deposits of a tributary stream at its junction with the main stream.

Alluvium - clay, sand, silt, gravel, or similar detrital material deposited by running water.
Best Management Practices - any program, technology, process, operating method, measure, or device that controls, prevents, removes, or reduces pollution.

Capacity - the maximum amount of traffic that can be accommodated by a uniform segment of freeway under prevailing conditions.

Central Valley Regional Water Quality Control Board (CVRWQCB) – Regulatory Agency which oversees groundwater contamination cases.

Erosion - the wearing away of land surface by running water, wind, ice, or other geological agents.

Federal Register - a Federal publication that provides official notice of Federal administrative hearings and issuance of proposed and final Federal administrative rules and regulations.
Holocene - the second epoch of the Quarternary Period characterized by man and modern animals.

Illuvial - accumulation of dissolved or suspended soil materials on one area of horizon as a result of eluviation from another.

Initial Site Assessment (ISA) – This is a term for an ASTM “phase 1” study to determine hazardous waste issues on a project.

Lane numbering – On a multi-lane roadway, that traffic lanes traveling in the same direction are numbered from the left to the right, starting with #1. The leftmost lane is the #1 lane, and is usually referred to by the public as the fast lane.

Level of Service - a measurement of roadway operational performance.

Median - a paved or planted strip dividing a freeway into lanes according to direction of travel.

Mixed Flow Lane - traffic lane for all types of vehicles, including single-occupant cars, carpools, vans, buses, and trucks.

Non-Attainment - a defined geographic area that does not meet one or more Federal ambient air quality standards for pollutants.

Notice of Preparation - part of the CEQA process; a notice sent to responsible agencies to advise that an environmental impact report will be prepared for a project.

Pleistocene - the first epoch of the Quarternary Period characterized by the first indications of social life in man.

Pliocene - the fifth epoch of the Tertiary Period characterized by the transition from hominids to early humans.

Quarternary Period - a geologic period, which includes both the Pleistocene and Holocene Periods, comprising the second portion of the Cenozoic era; characterized by the rise of man and modern animals.

Recurrent congestion - when speeds drop below 35 mph for over 15 minutes.

Staging - a period or step in a progress, activity, or development project.

Throughput - The number of vehicles passing a given point during a given period of time.

Tract - a standard geographical unit of measurement defined by the U.S. Census Bureau.

Underground Storage Tanks (USTs) – These tanks typically contain motor vehicle fuel and are placed approximately three feet below the ground surface.

Appendix E: Mitigation and Minimization/Avoidance Summary

MITIGATION MEASURES

Giant Garter Snake Upland Habitat

- Alternative 1 will result in less than 20 acres of temporary impacts to GGS upland habitat (approximately 3.0 acres), lasting two construction seasons. The project will likely qualify as Level 2 effects for temporary disturbance of GGS upland habitat, with restoration plus 1:1 replacement as compensation, per the USFWS Programmatic Biological Opinion (USFWS File No. 1-1-03-F-0154, dated January 24, 2005).
- All areas temporarily disturbed during construction will be restored within one year of completion of the project, following the "Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat", outlined below:
    1. If necessary, the disturbed area will be graded to its preexisting contours and ripped to de-compact the soil.
    2. The area should be hydroseeded with a mix containing at least 20-40 percent native grass seeds. Some acceptable native grasses include annual fescue (Vulpia spp.), California brome (Bromus carinatus), blue wildrye (Elymus glaucus), and needle grass (Nassella spp.). The seed mix should also contain native forb seeds.

Replacement of GGS upland habitat temporarily affected by the project will be satisfied through purchase of mitigation credits at a USFWS approved conservation bank.

MINIMIZATION / AVOIDANCE MEASURES

Air Quality

- In order to minimize the temporary construction-related emission impacts, the contractor will be required to use Best Management Practices and comply with Caltrans Standard Specifications, Section 7-1.01F, "Air Pollution Control" and Section 10, "Dust Control." The contractor is also required to comply with all pertinent and legally enforceable rules, regulations, ordinances, and statutes of the local air district.
- Address greenhouse gas emission reductions through the following strategies in the Climate Action Program:

    - Improve Transportation Energy Efficiency

      Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools and information that advance cleaner transportation and reduce climate change emissions.

    - Smart Land Use and Intelligent Transportation Systems (ITS)

      Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. Governor Schwarzenegger is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a

prosperous economy, social equity, and a quality environment. Smart land use, demand management, ITS, and value pricing are critical elements in this plan for improving mobility and transportation efficiency. Specific strategies include: promoting jobs/housing proximity and transit-oriented development; encouraging high density residential/commercial development along transit/rail corridors; valuing and congestion pricing; implementing intelligent transportation systems, traveler information/traffic control, incident management; accelerating the development of broadband infrastructure; and comprehensive, integrated, multimodal/intermodal transportation planning.

Animal Species

Steelhead and Chinook Salmon

- No work will occur within the bed and banks of Steelhead Creek.
- All construction within NEMDC will occur during daylight hours.
- Mats will be placed in NEMDC to minimize potential compaction of soils and to reduce the potential for sediments to enter Steelhead Creek.
- Measures consistent with the current Caltrans' Construction BMP's Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and WPCP Manuals will be implemented to minimize effects to migrating salmonids during construction.
- In the October following each construction season, all areas temporarily disturbed during construction (e.g., equipment storage and access areas) will be reseeded with erosion control seeding consisting of a sterile, non-proliferating grass species, such as cereal barley. The seed mix shall not include any fertilizers or chemicals.
- Following project completion, all areas temporarily disturbed during construction will be restored following the "*Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat*", outlined below.
- The disturbed area(s) will be re-graded to its pre-existing contour and ripped, if necessary, to de-compact the soil.
- If appropriate, the areas should be hydroseeded, with a mix containing at least 20 to 40 percent native grass seeds. The seed mix should also contain 2 to 10 percent native forb seeds, and approximately 40 to 68 percent of the seed mix may be non-native, non-aggressive European annual grass. Aggressive non-native grasses should not be included in the seed mix. Endophyte-infected grasses should not be included in the seed mix.

Giant Garter Snake

- Avoid construction related activities to the extent feasible within 200 feet from the banks of GGS aquatic habitat, and confine the movement of heavy equipment to existing roadways to the extent feasible, to minimize habitat disturbance. ESA fencing will be installed to prevent access to areas outside the construction site. No vehicles or equipment will be stored in the NEMDC.
- Construction activity within habitat should be conducted between May 1 and October 1. Between October 2 and April 30 contact the Service's Sacramento Fish and Wildlife Office to determine if additional measures are necessary to minimize and avoid take.
- Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided GGS habitat within or adjacent to the project area ESA's. All construction personnel shall avoid these areas.
- Construction personnel shall receive Service-approved worker environmental awareness training.
- Twenty-four hours prior to construction activities, the project area shall be surveyed for GGS. If a snake is encountered during construction, activities shall cease until appropriate

corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and/or any incidental take to the US Fish and Wildlife Service immediately.

- If applicable, any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions.
- The area should be hydroseeded with a mix containing at least 20-40 percent native grass seeds. Some acceptable native grasses include annual fescue (Vulpia spp.), California brome (Bromus carinatus), blue wildrye (Elymus glaucus), and needle grass (Nassella spp.). The seed mix should also contain native forb seeds.
- All construction within NEMDC will be conducted during daylight hours.
- Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMPs) Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and Water Pollution Control Program [WPCP] Manuals will be implemented to minimize effects to GGS (e.g., siltation) during construction.
- A WPCP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction (on file with the Central Valley RWQCB). The WPCP will contain a Spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials.

<u>Swainson's Hawk</u>

- Tree removal will occur during the non-breeding season between September 15 and February 15, to the extent possible, to comply with the Migratory Bird Treaty Act. If trees cannot be removed during this time period, a qualified biologist will conduct a pre-construction survey prior to the start of construction to search for raptor nests. If Swainson's hawks or other raptors are observed nesting, California Dept. of Fish and Game shall be contacted for their advice on establishing a buffer zone of appropriate length.

<u>Western Pond Turtle</u>

- Construction activities in the NEMDC will occur during the summer months to minimize potential impacts to steelhead and giant garter snake, and only during the daylight hours. Western pond turtles are most active during this time period as well; as a result, it is expected that turtles would move upstream or downstream of the temporary construction activities.

<u>Western Burrowing Owl (BUOW)</u>

- A qualified biologist will survey the ESL for BUOW no more than 30 days prior to the start of construction. If BUOW or sign is identified, CDFG will be consulted.

<u>White-tailed Kite</u>

- A qualified biologist will conduct pre-construction surveys in the spring, prior to the start of construction. If kites or other raptors are observed nesting, CDFG will be contacted and a suitable buffer zone will be established.
- Any trees that require removal should be removed outside the nesting season, after September 1st and before February 1st., if feasible, to conform to the MBTA.
- All construction within NEMDC will be conducted during daylight hours.

Loggerhead Shrike

- A qualified biologist will conduct pre-construction surveys in the spring prior to construction, to determine the nesting status of loggerhead shrike. If a found nesting, the CDFG will be notified and an appropriate buffer will be established around the nest until the young have fledged. If no nests are found, then avoidance or minimization measures will not be required.

Nuttall's Woodpecker

- The project will comply with the Migratory Bird Treaty Act regulations to minimize potential impacts to Nuttall's woodpecker and other migratory birds. Tree removal will occur between September 1 and February 1.

Purple Martin

- Surveys will be conducted each season prior to construction to document the status of the Roseville Road colony and identify new colonies that may become established at other overcrossings.
- Weep holes will be plugged during the non-breeding season (September 1 – March 1) of the year of project construction, to conform with the MBTA. Exclusion devices will be left in place until August 31 or until all work is completed. The CDFG will be consulted regarding the exclusion of martins on any structures within the project area.

Swallows and Swifts

Because work will occur during the swallow/swift nesting season (March 1 – August 31) swallows will be excluded, if necessary, by a qualified company during the non-breeding season immediately prior to start of construction. Exclusion structures (e.g., netting and weep hole plugs) will be left in place and maintained through August 31 of each breeding season, or until the work is complete.

Community Facilities

- Complete a Regional Transportation Management Plan that will help organize the construction phasing fro planned transportation projects in the region.
- Develop a detour plan.

Hazardous Materials

- Prepare health and safety plans to address potential effects of the various chemical compounds that could be encountered.
- It is Caltrans policy to avoid hazardous waste, whenever possible. If involvement becomes necessary prior to, during and/or after construction, protection for employees, workers and the community would be implemented. Confirmation and documentation of suspected hazardous waste issues will be performed, and an attempt will be made to have responsible parties perform the cleanup activities.
- For affected soil encountered beneath the project, possible cleanup methods include excavation and disposal of the affected soil at appropriately permitted landfills, aeration of soil in situ or aboveground, and bioremediation.
- For affected groundwater encountered beneath the project, possible cleanup methods include removal of affected water, with subsequent disposal or treatment.
- Caltrans will perform site investigations for all identified properties to confirm or dismiss potential hazardous waste issues. Upon confirmation of hazardous waste issues, responsible parties will be sought for appropriate cleanup.

Hydrology, Water Quality, Storm Water

- The project shall adhere to the conditions of the Caltrans Statewide NPDES Permit CAS # 000003, (Order # 99-06-DWQ), issued by the State Water Resources Control Board.
- Construction projects with a disturbed area of more than 1 acre or by request of a Regional Water Quality Control Board require a Caltrans approved Storm Water Pollution Prevention Plan (SWPPP) containing project specific effective erosion and sediment control measures. These measures must address soil stabilization practices, sediment control practices, tracking control practices, and wind erosion control practices. In addition, the project plan must include non-storm water controls, waste management and material pollution controls.
- The disturbed soil area appears to exceed 1 acre and it is anticipated that a SWPPP level of temporary pollution controls will be specified for the project; Standard Special Provision 07-345 therefore shall be included in the Plans, Specifications, and Estimates to address these temporary construction water pollution control measures.
- An evaluation of the project using the most recent approved evaluation guide is essential in determining if the incorporation of permanent storm water runoff treatment measures shall be considered for this project.
- If a SWPPP is specified, then a Notification of Construction shall be submitted to the Central Valley Regional Water Quality Control Board at least 30 days prior to the start of construction.
- Incorporate design pollution prevention Best Management Practices (BMPs), including:
    - Downstream Effects / Potentially Increased Flow
    - Slope/Surface Protection Systems
    - Concentrated Flow Conveyance Systems
    - Preservation of Existing Vegetation
- The contractor will be required to prepare a SWPPP which will include, as a minimum, the use of fiber rolls, check dams, two stabilized construction entrances, and a concrete washout area as temporary construction site BMP's.

Invasive Species

- Caltrans will not allow disposal of soil and plant material from any areas that support invasive plant species onto areas that support stands dominated by native plant species.
- Plant species used for erosion control should consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing.

Noise

- If feasible, Caltrans intends to incorporate noise abatement measures in the form of barriers (sound walls) at the following 10 locations: WB5, WB6, WB7A, WB7B, WB7C, EB6A, EB6B, EB7A, EB7B, and EB7C (see Table 2.13-5 and Figure 2.1-1a – 1m)

Paleontology

- Monitor where excavation or road cuts could disturb fossil-bearing sedimentary strata.
- Contractor undertaking monitoring will adhere to the paleontological plan.

Pedestrian and Bicycle Facilities

- Bike routes and bike paths will remain open during construction.

Visual Resources

- All grade changes should be landscaped/irrigated with drought tolerant trees, shrubs, and groundcovers. Landscaping provides permanent pollution prevention and Best Management

Practice in storm water management. In addition, slopes under the bridge should be paved full length to minimize maintenance and potential for erosion.

- New concrete safety barriers should have an aesthetic treatment to compensate for the additional height and visual impact.
- Install new landscaping along proposed auxiliary lanes.
- Include aesthetic treatments and plant vines in front of new sound walls to reduce potential graffiti and sound wall maintenance.
- Replant removed trees and shrubs.
- Replace removed irrigation, and install new irrigation where needed.

Best Management Practices (BMPs):

- Where possible, cut and fill slopes should be contour graded and rounded so as to reflect the contours of adjacent, undisturbed topography to the extent feasible. To the extent feasible, grading operations should not result in angular landforms.
- During clearing and grubbing, stockpiling of existing surface soils and duff from the construction site should occur as part of the excavation work. All new cut/fill slopes with stockpiled material to enhance re-vegetation efforts should be resurfaced.
- When re-vegetation is being required, plant low maintenance plants, such as drought-tolerant groundcover or native trees with mulch.
- Erosion Control will be applied to all disturbed areas.

Wetlands

- Temporary impacts to NEMDC will be minimized by working during the summer months when the NEMDC channel is dry (except for Steelhead Creek), and by using mats to minimize compaction of soil. All appropriate Best Management Practices (BMP's), which will be part of the Storm Water Pollution Prevention Plan (SWPPP), will be implemented to avoid and minimize impacts to the NEMDC and Steelhead Creek.
- The construction of auxiliary lanes between West El Camino Avenue and I-5 will require filling the roadside ditches, which includes the one small wetland. The project will require the relocation of the ditches adjacent to the auxiliary lane, regardless if they are subject to USACE jurisdiction. The new ditches will be graded to receive roadway and irrigation runoff as they do now. Hydrophytic vegetation is expected to re-establish itself in the wetland.
- Temporary impacts in the NEMDC channel will be reduced by restoring all areas to pre-construction conditions and planting native riparian plants.
- All appropriate BMP's will be in place to prevent any construction related material or erosion-generated sediments from entering the WDC.

Appendix F: List of Acronyms

APE	Area of Potential Effects
BMP	Best Management Practices
BO	Biological opinion
BUOW	Burrowing owl
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CAPM	Capital Preventative Maintenance
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
CESA	California Endangered Species Act
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CH	Critical Habitat
CHRIS	California Historical Resource Information System
CIA	Community impact assessment
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon monoxide
COHA	Cooper's hawk
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
EA	Environmental Assessment
EB	East-bound
EFH	Essential Fish Habitat
EJ	Environmental justice
EIR	Environmental Impact Report
EO	Executive Order
ESA	Environmentally Sensitive Area
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FOE	Finding of Effect
ft	Feet
GGS	Giant garter snake
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
HPSR	Historic Properties Survey Report
HAS	Hydrologic Sub Areas
IC	Interchange
in	Inch(es)
I-80	Interstate 80
ISA	Initial Site Assessment
L_{dn}	Day-night average sound level.
L_{eq}	Equivalent sound level
LOS	Level of service
MLD	Most Likely Descendent
MLS	Multiple listing statistics
mi	Miles
MSAT	Mobile source air toxics
MTIP	Metropolitan Transportation Improvement Program
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards

NAC	Noise abatement criteria
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEMDC	Natomas East Main Drain Canal
NEPA	National Environmental Policy Act
NESR	Natural Environment Study Report
NHPA	National Historic Preservation Act
NO_2	Nitrogen dioxide
NOA	Naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO_x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
OGAC	Open-graded asphalt concrete
OH	Over-head
OHWM	Ordinary high water mark
OSHA	Occupational Safety and Health Act
PA	Programmatic Agreement
Pb	Lead
PCC	Portland concrete cement
PG&E	Pacific Gas & Electric
PM	Post mile
PM_{10}	Particulate matter 10 microns or less
$PM_{2.5}$	Fine particulate matter
ppm	Parts per million
PQS	Professionally qualified staff
RCRA	Resource Conservation & Recovery Act
RD 1000	Reclamation District 1000
ROG	Reactive organic gases
RT	Regional Transit
RTMP	Regional Transportation Management Plan
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SACMET	Sacramento Metropolitan Area Planning Model
SACOG	Sacramento Area Council of Governments
SAFECA	Sacramento Area Flood Control Agency
SCSD	Sacramento County Sheriff's Department
SCHMD	Sacramento County Hazardous Materials Division
SEOW	Short-eared owl
SFD	Sacramento Fire Department
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SO_2	Sulfur dioxide
SPD	Sacramento Police Department
SRCSD	Sacramento Regional County Sanitation District
STA	Sacramento Transportation Authority
SWHA	Swainson's hawk
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TASAS	Traffic Accident Surveillance and Analysis System
TMP	Transportation Management Plan
TRBL	Tricolored blackbird
USACE	U.S. Army Corps of Engineers

USC	United States Code
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VELB	Valley elderberry longhorn beetle
UCMP	University of California Museum of Paleontology
UST	Underground storage tank
VIA	Visual Impact Assessment
VMT	Vehicle miles of travel
vph	Vehicles per hour
WB	West-bound
WDC	West Drainage Canal
WMRD	Waste Management and Recycling Division
WPCP	Water Pollution Control Plan
WTKI	White-tailed kite

Appendix G: List of Technical Studies

A number of technical studies were used to analyze the impacts of the proposed project. These include:

- Air Quality and Energy Evaluation, November 2006
- Community Impact Assessment, April 2007
- Floodplain Hydraulic Study, September 2006
- Historic Property Survey Report, March 2007
- Initial Site Assessment, October 2006
- Natural Environment Study Report, January 2007
- Noise Evaluation, April 2007
- Paleontological Evaluation Report, June 2006
- Traffic Report, December 2006
- Visual Impact Assessment, February 2007
- Water Quality Study, September 2006

Copies of the technical studies are available for viewing, along with copies of the Draft EIR/EA, at:

Caltrans
District 3 Sacramento Office
Office of Environmental Management
2389 Gateway Oaks Drive, Suite 100
Sacramento, CA 95833
ATTN: Ken Lastufka
(916) 274-0586
ken_lastufka@dot.ca.gov

Appendix H: Consultation Letters

1. National Marine Fisheries Service, March 9, 2007

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

March 09, 2007 In response refer to:
2007/01083

Jeremy Ketchum
Chief, Office of Environmental Management
California Department of Transportation
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

Thank you for your letter of January 2, 2007, requesting initiation of consultation with the NOAA's National Marine Fisheries Service (NMFS) for the Interstate 80 (I-80) Median and Auxiliary Lanes project. Your letter indicates the California Department of Transportation (CALTRANS) believes the proposed project may affect threatened Central Valley steelhead *(Oncorhynchus mykiss)* under the Endangered Species Act, as amended (ESA).

CALTRANS proposes to construct additional lanes in the median of I-80 eastward from just east of the Sacramento River to Watt Avenue in Sacramento County, California. The proposed project also includes the construction of auxiliary lanes in the east and west bound lanes of I-80 between El Camino Avenue and Interstate 5 (I-5) and within the existing roadway between Northgate Boulevard and Norwood Avenue. Retaining walls and sound walls are proposed at various locations along the project corridor. Except for vehicle and equipment access, all proposed construction activities will occur within the existing right-of-way.

The proposed project will require the placement of eight new 5-foot by 3.5-foot oblong columns within the Natomas East Main Drainage Canal (NEMDC). All work within the NEMDC will occur within the footprint of the existing overcrossing. Access will be via existing levee and maintenance roads.

Prior to construction of the project, subsurface soil tests will be required in and adjacent to the NEMDC. The tests will consist of drilling two to three 4-inch diameter vertical mud rotary borings within the NEMDC (all east of Steelhead Creek) and three similar borings on existing roads adjacent the NEMDC. Drilling activities will require approximately two weeks to complete and will occur between July 1 and October 1, 2007, when the NEMDC is dry. Construction of the proposed lanes over the NEMDC is scheduled to begin in 2009 and is expected to continue for two construction seasons.

Avoidance and minimization measures will include limiting any ground disturbing activities within the NEMDC to June 1 through October 1 when listed species are not likely to be present. Additionally, best management practices, a stormwater pollution prevention plan, and a water pollution control program will be implemented.

The following Federally listed and proposed species (Evolutionarily Significant Units or Distinct Population Segments (DPS)) and designated critical habitat occur in the action area and may be affected by proposed project:

Central Valley steelhead DPS
(*Oncorhynchus mykiss*) threatened (January 5, 2006, 71 FR 834)

Central Valley steelhead designated critical habitat
(September 2, 2005, 70 FR 52488)

The Pacific Fisheries Management Council has identified Essential Fish Habitat (EFH) for the Pacific salmon fishery in Amendment 14 to the Pacific Coast Salmon Fishery Management Plan. This EFH designation includes habitat found in Steelhead Creek.

Central Valley steelhead occur seasonally within the proposed project area. These species depend upon Steelhead Creek in the project area as a migratory corridor.

NMFS has received the information necessary to initiate consultation on Federally listed salmonids within the proposed action area. Based on our review of the material provided with your request, a site visit by NMFS representatives, and the best scientific and commercial information currently available, NMFS has determined that the proposed I-80 Median and Auxiliary Lanes project is not likely to adversely affect threatened Central Valley steelhead. This determination is based on our expectation that Central Valley steelhead will not be present in the action area. Available information shows steelhead are present within the project action area seasonally, but because of generally poor habitat conditions and elevated water temperatures, steelhead are not likely to be present in the project areas during the proposed construction period of June 1 to October 1. Given the limited availability of summer rearing habitat, juvenile steelhead are likely to be found in upstream areas where stream temperatures would be more favorable. Additionally, migration of adult and juvenile steelhead would occur outside the duration of the construction period.

Potential effects to habitat from sedimentation and pollutants are expected to be avoided through the application of best management practices, a storm water pollution prevention plan, and spill prevention and control measures.

This determination may be reconsidered and further consultation may be necessary if one of the following occurs: (1) new information suggests the proposed project may affect listed species or designated critical habitats in a manner or to an extent not considered in this review; (2) new species critical habitat are designated that may be affected by the proposed action; or (3) the project description is changed. This concludes ESA section 7 consultation for the proposed project.

Essential Fish Habitat

The Corps has determined that the proposed project may adversely affect EFH for Pacific Salmon pursuant to the Magnuson-Stevens Fishery Conservation and Management Act. We have reviewed this project for impacts to EFH for Pacific Salmon and under section 305(b)(2) of the MSA and find that EFH for Pacific Salmon in the action area will not be adversely affected, therefore, no conservation recommendations are provided. This determination is based on our expectation that potential effects to EFH from sedimentation and pollutants are expected to be avoided through the application of best management practices, a storm water pollution prevention plan, and spill prevention and control measures.

Please contact John Baker at (916) 930-3616, or via e-mail at john.baker@noaa.gov if you have any questions about this project or need more information.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Copy to file – ARN 151422SWR2007SA00088
NMFS-PRD, Long Beach, CA