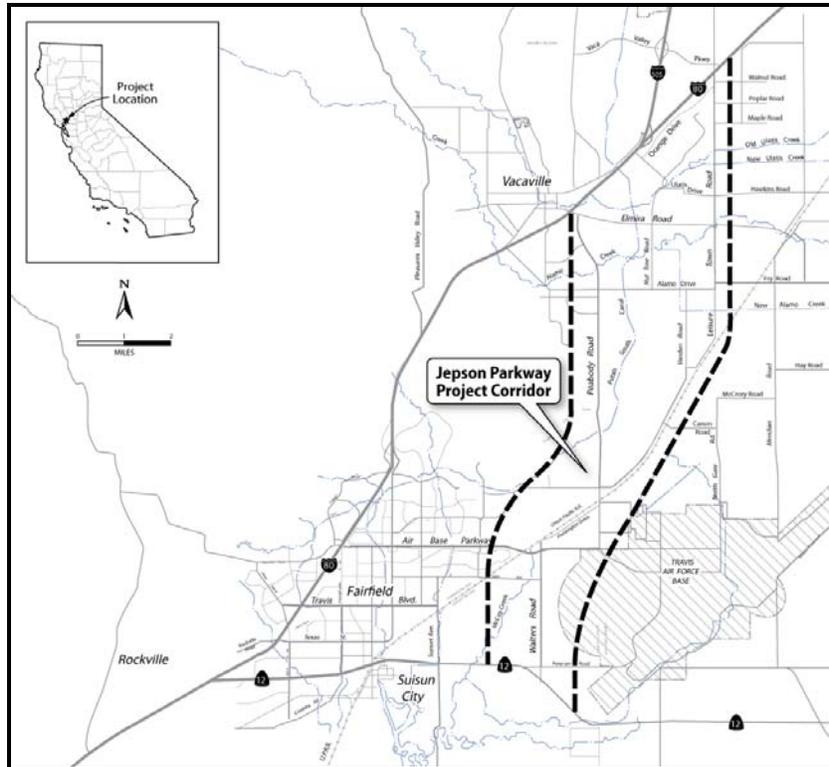


Jepson Parkway Project Final Environmental Impact Statement and Section 4(f) Evaluation

Volume I

Solano County, California / District 4-SOL-O-STA / RPSTPL 6249 (004)



Prepared for:

The State of California Department of Transportation
and the Solano Transportation Authority



May 2011

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327 and 49 U.S.C. 303.

GENERAL INFORMATION ABOUT THIS DOCUMENT

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Final Environmental Impact Statement (Final EIS). This Final EIS examines the potential environmental impacts of the alternatives being considered for the proposed project located in the cities of Vacaville, Fairfield, and Suisun City, and unincorporated portions of Solano County. 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.

The Draft Environmental Impact Report (EIR)/EIS was circulated for public and agency comments for a 60-day review period starting June 6, 2008 and a public hearing was held in Vacaville on June 24, 2008. The Solano Transportation Authority (STA) Board certified the Final EIR, adopting the project with Findings of Fact and a Statement of Overriding Considerations on March 18, 2009. The Final EIR is incorporated by reference and is available for public review. On March 19, 2009, STA filed a Notice of Determination with the State Clearinghouse (Office of Planning and Research) for completion of the California Environmental Quality Act (CEQA) process. The CEQA 30-day statute of limitations on challenges to the Final EIR ended on April 19, 2009.

Pursuant to 40 CFR 1500.4(o) and 1506.4, the existing CEQA/National Environmental Policy Act (NEPA) EIR/EIS is being used as the EIS for completing the NEPA process. Following the circulation of this Final EIS, if the decision is made to approve the project, a Record of Decision will be published for compliance with the National Environmental Policy Act (NEPA). If the project is given environmental approval and funding is appropriated, the Department could design and construct all or part of the project.

Volume I of the Final EIS contains the previously released Draft EIR/EIS with revisions intended to correct, clarify, and amplify the document. These revisions were added in response to comments received on the Draft EIR/EIS. In addition, Volume I identifies Alternative B as the preferred alternative for this project, as discussed in the Summary Section and Section 2, Project Alternatives. The vertical lines in the margins of Volume I of the Final EIS denote changes that have been made since the circulation of the Draft EIR/EIS.

Volume II of the Final EIS includes the comment letters received on the draft from public agencies, organizations, and individuals, along with the transcript from the public hearing. The responses to these comment letters and to concerns raised during the public hearing are also provided in Volume II.

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans Office of Environmental Planning, 111 Grand Avenue Oakland, CA 94623 Attn: Melanie Brent, Chief, 510-286-5231 or Melanie_Brent@dot.ca.gov or use the California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

04-SOL-O-STA
RPSTPL 6249 (004)

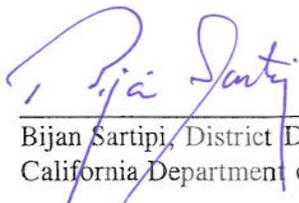
This project proposes to upgrade and link a series of existing local two- and four-lane roadways to provide a four- to six-lane north-south travel route for residents.

**FINAL ENVIRONMENTAL IMPACT STATEMENT
AND SECTION 4(F) EVALUATION FOR THE JEPSON PARKWAY
PROJECT**

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 U.S.C. 4332(2)(C) and 23 U.S.C 327 and 49 U.S.C. 303

THE STATE OF CALIFORNIA
Department of Transportation

5-12-11
Date of Approval


Bijan Sartipi, District Director
California Department of Transportation

The following persons may be contacted for additional information concerning this document:

Melanie Brent, Chief
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510-286-5231

Abstract:

This document has been prepared by the California Department of Transportation, as assigned by FHWA, for the Jepson Parkway Project to comply with the requirements of the National Environmental Policy Act (NEPA). The draft environmental document was a combined California Environmental Quality Act (CEQA)/NEPA document, but the final environmental document is a NEPA EIS that evolved from the Draft EIR/EIS and is being used to conclude the NEPA process. On March 18, 2009 the Solano Transportation Authority (STA) Board certified the final CEQA document and adopted the project with findings of fact and a statement of overriding consideration in compliance with CEQA. STA filed a Notice of Determination with the State Clearinghouse (Office of Planning and Research) for Compliance with CEQA on March 19, 2009, and the 30-day CEQA statute of limitations expired on April 19, 2009 completing the CEQA process. This NEPA document is being used as the Final Environmental Impact Statement (EIS) for completing the NEPA process.

This project is intended to meet the objectives of the Jepson Parkway Concept Plan, including safety improvements at various locations and along various road segments; relief from existing and anticipated traffic congestion on north-south routes in Solano County; improved and new transit, bicycle, and pedestrian facilities; and a crossing of the Union Pacific Railroad tracks. The project limits extend from approximately the intersection of Orange Drive and Leisure Town Road in Vacaville in the north to State Route (SR) 12/Walters Road in Suisun City in the south. The five project alternatives evaluated in this EIR/EIS include the following:

- Alternative A: No Project
- Alternative B: Leisure Town Road–Vanden Road–Cement Hill Road–Walters Road Extension–Walters Road
- Alternative C: Leisure Town Road–Vanden Road–Peabody Road–Air Base Parkway–Walters Road
- Alternative D: Leisure Town Road–Vanden Road–Peabody Road–Huntington Drive–Walters Road
- Alternative E: Peabody Road–Air Base Parkway–Walters Road

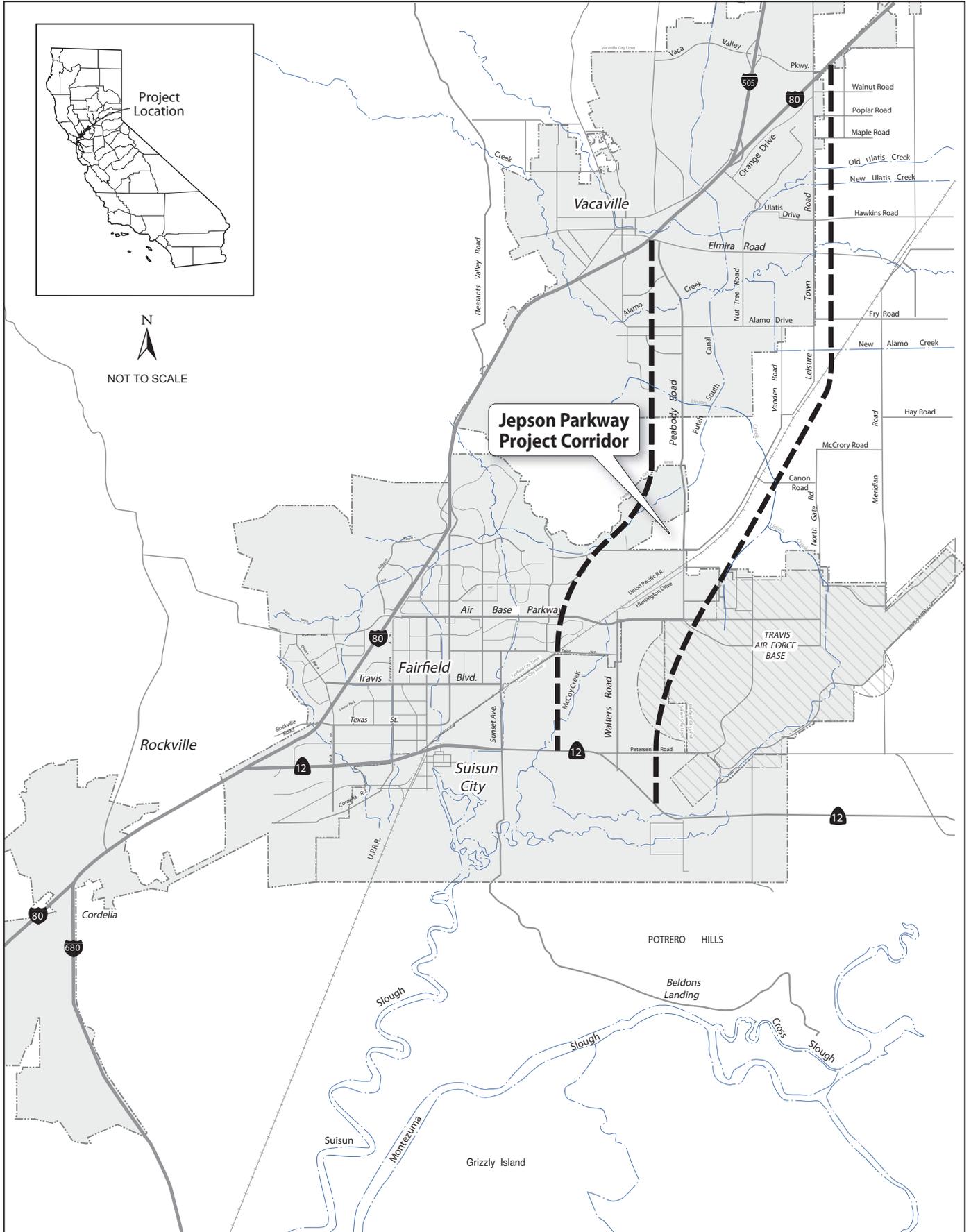
Summary

This federal Environmental Impact Statement (EIS) has been prepared to comply with the requirements of the National Environmental Policy Act (NEPA). Caltrans is the federal lead agency under NEPA pursuant to 23 USC 327. This EIS has been prepared based on the President's Council on Environmental Quality's (CEQ's) NEPA regulations (40 Code of Federal Regulations [CFR] 1500 to 1508); 49 U.S.C 303; and U.S. Department of Transportation's Environmental Impact and Related Procedures (23 CFR 771). The intent of the preparers of this document is to provide the reader with a clear description of the environmental analysis conducted for the project within the framework of applicable regulations.

S.1 Overview of Project Area

The Solano Transportation Authority (STA), in conjunction with the Cities of Fairfield, Suisun City, and Vacaville; and Solano County; has proposed roadway improvements in mid-Solano County between Interstate 80 (I-80) in Vacaville in the north and State Route (SR) 12 in Suisun City in the south. The approximately 12-mile corridor, referred to as the Jepson Corridor, is located within the jurisdictions of the Cities of Suisun City, Fairfield, and Vacaville, and unincorporated portions of central Solano County (Figure S-1). The proposed action, known as the Jepson Parkway Project (project), envisions a safe, convenient route for local traffic in this portion of the County, while providing opportunities for multimodal use and unifying landscape and design features to enhance the aesthetics and character of the adjoining communities.

The Jepson Parkway Project would upgrade and link a series of existing local two- and four-lane roadways (as well as construct an extension of an existing roadway under one alternative) to provide a four- to six-lane north-south travel route for residents who face increasing congestion when traveling between jurisdictions in central Solano County. Roadways proposed for improvements in the corridor could include Peabody Road, Leisure Town Road, Vanden Road, Cement Hill Road, Huntington Drive, Air Base Parkway, and/or Walters Road, including a possible extension of Walters Road north of its existing terminus. The project also includes safety improvements such as the provision of roadway medians, traffic signals, shoulders, separate turn lanes, railroad grade separations, and separate bike lanes.



**Figure S-1
Jepson Parkway Regional Location**

This EIS is a public document that assesses the environmental effects of the proposed action. Importantly, this EIS serves as an informational document to be used in the local planning and decision-making process, and does not recommend approval or denial of the action. The EIS is also prepared to comply with federal and State laws.

A Notice of Intent (NOI) for the project was published in the summer of 2000. Publication of this notice established the baseline against which the project's environmental impacts are measured. Since 2000, the conditions in the corridor have continually evolved, and the EIS and supporting technical reports have been updated to reflect current conditions. Additional field reviews and/or research were conducted for biological resources, visual resources, land use, traffic, and hydrology/water quality.

Within Solano County, the project crosses through Vacaville, Fairfield, and Suisun City. Solano County contains both highly urbanized lands and rural lands. Most of the County's urban land is concentrated along the I-80 corridor and near the I-680/I-780 interchange. Elsewhere in the County, land primarily supports rural residential, agricultural, and open space uses. Major land uses within the corridor are varied and include concentrations of residential, commercial, industrial, and agricultural uses.

The NEPA evaluation for this document is contained in Chapter 3. This document is organized into the chapters described below:

- The Summary provides a brief description of the proposed action and actions in the same geographic area, the alternatives considered, areas of known controversy, major environmental impacts, unresolved issues, benefits of the project, and other authorizations and approvals that may be required.
- Chapter 1, Purpose of and Need for Project, presents an overview of the proposed action and a description of the project location, purpose and need, and background.
- Chapter 2, Project Alternatives, presents a description of the alternative development process, including alternatives that were considered and withdrawn, and the alternatives that are evaluated in this document.
- Chapter 3, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures, constitutes the NEPA evaluation for this proposed action. It covers the following environmental resources and issues. These resources and issues are discussed in Sections 3.1 to 3.16 of Chapter 3, respectively.
 - Land Use
 - Growth
 - Farmlands/Agricultural Lands
 - Community Impacts
 - Utilities/Emergency Services
 - Traffic and Transportation/Pedestrian and Bicycle Facilities
 - Visual/Aesthetics

- Cultural Resources
- Hydrology and Floodplains
- Water Quality and Stormwater Runoff
- Geology, Soils, Seismicity, and Paleontology
- Hazardous Waste and Materials
- Air Quality
- Noise
- Biological Environment
- Energy

Each section describes the affected environment for that resource or area, environmental consequences associated with the proposed action and the no-action alternative, and mitigation measures to avoid or reduce the environmental consequences of the project. Cumulative impacts are analyzed within each section of Chapter 3.

- Chapter 4, Summary of Public/Agency Involvement Process/Tribal Coordination, highlights the public involvement process undertaken for this project.
- Chapter 5, List of Preparers, identifies the technical specialists who prepared this document and technical studies.
- Chapter 6, Distribution List, contains a list of agencies, organizations, and individuals that received the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS).
- Appendix A contains the Section 4(f) Evaluation, which considers potential effects to publicly-owned parks and historical resources.
- Appendix B is the Agency Consultation Letters.
- Appendix C is the Title VI Policy Statement.
- Appendix D contains the Glossary of Technical and Abbreviated Terms.
- Appendix E U.S. Fish and Wildlife Service (USFWS) Species List For Jepson Parkway EIS
- Appendix F contains the Farmland Conversion Impact Rating
- Appendix G contains the list of technical reports
- Appendix H Mitigation Monitoring and Reporting Record
- Appendix I Wetlands Only Practicable Alternative Finding
- Appendix J USFWS Biological Opinion
- Appendix K Federal Highway Administration (FHWA) Air Quality Conformity Concurrence Letters

S.2 Purpose and Need

The purpose of the proposed action is to provide roadway improvements that create a safe, environmentally-conscious route for local traffic through central Solano County. The Jepson Parkway Project is within the jurisdictions of the City of Suisun City, City of Fairfield, City of Vacaville, and unincorporated portions of Solano County. The project is designed to meet objectives of the *Jepson Parkway Concept Plan* (Concept Plan), prepared by STA. As envisioned by the Concept Plan, the Jepson Parkway would improve safety at various locations and along various road segments; offer relief from existing and anticipated traffic congestion on north-south routes in Solano County; provide improved and new transit, bicycle, and pedestrian facilities; and include a crossing of the Union Pacific Railroad (UPRR) tracks. The Concept Plan also proposes advisory design guidelines that would promote visual continuity along the roadway through the consistent use of design elements such as landscaping and signage.

Implementation of the project to meet the objectives of the Concept Plan would assist the STA in meeting the following specific purposes:

- Provide an integrated and continuous route for local north-south trips between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County as an alternative to using I-80.
- Provide local traffic a safe, convenient route between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County using existing roadways when feasible.
- Enhance multimodal transportation options for local trips in central Solano County, by providing a safe, convenient bicycle and pedestrian path and a continuous north-south route for transit use in the area.

In accomplishing the above objectives, the Jepson Parkway Project would overcome a number of shortcomings and deficiencies in the existing patchwork of road segments. Specifically, the project would:

- Address existing and future traffic congestion for north-south mobility in central Solano County.
- Improve existing and future roadway safety along the corridor.
- Accommodate traffic associated with future planned growth, as identified in the following adopted local plans:
 - Regional Transportation Plan for the San Francisco Bay Area (RTP);
 - City of Vacaville General Plan;
 - City of Fairfield General Plan;
 - City of Suisun City General Plan; and
 - Solano County General Plan.
- Relieve existing and future (2030) traffic congestion on I-80.
- Support future multimodal transit options and bicycle and pedestrian use.

S.3 Proposed Action

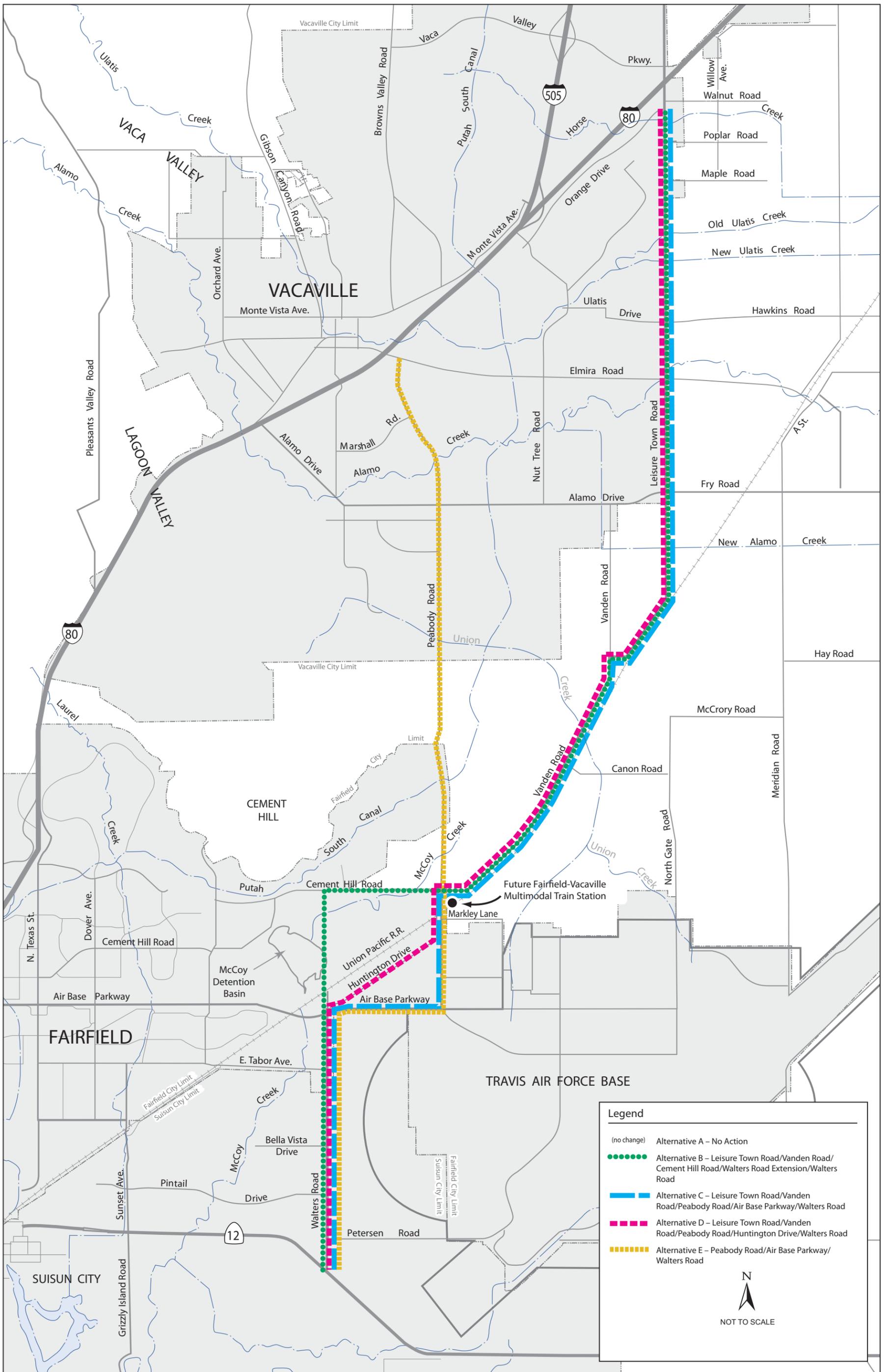
In order to fulfill the objectives outlined in the Concept Plan, STA, in collaboration with a diverse group of public agencies and the public, has formulated several different packages of improvements. These different packages are referred to as the “build alternatives.” In addition to exploring various ways to satisfy the project purpose, NEPA requires the consideration of a “no-build” alternative, the purpose of which is to disclose the effects of doing nothing. In other words, none of the improvements that are described in the build alternatives would be constructed; the only projects that would move forward would be those other improvements that are already programmed and funded.

It should be noted that FHWA/Caltrans have received concurrence from other federal agencies that the range of build alternatives is appropriate. Specifically, the United States Army Corps of Engineers (Corps), USFWS, National Marine Fisheries Service (NMFS), and the Environmental Protection Agency (EPA) have been consulted to ensure that they accept the purpose and need for the project and the following alternatives:

- Alternative A: No Build (No Action)
- Alternative B: Leisure Town Road–Vanden Road–Cement Hill Road–Walters Road Extension–Walters Road
- Alternative C: Leisure Town Road–Vanden Road–Peabody Road–Air Base Parkway–Walters Road
- Alternative D: Leisure Town Road–Vanden Road–Peabody Road–Huntington Drive–Walters Road
- Alternative E: Peabody Road–Air Base Parkway–Walters Road

Funding is currently being provided by segment with funds programmed to complete improvements of the narrow rural segments connecting Vacaville and Fairfield first, followed immediately by upgrading urban segments in each City. The project would be constructed by segment until completion beginning in 2013. Assuming availability of funding, project construction would last 12 to 24 months on each segment, over a total duration of approximately 48 to 60 months.

Each of these alternatives is briefly described below. All four of the build alternatives are depicted on Figure S-2.



**Figure S-2
Jepson Parkway Project Location**

S.3.1 Alternative A: No Build

Alternative A is the no-build alternative. Under Alternative A, none of the proposed roadway improvements would be constructed. However, ongoing maintenance of existing roads and facilities would continue.

S.3.2 Alternative B: Leisure Town Road–Vanden Road–Cement Hill Road–Walters Road Extension–Walters Road

Alternative B would provide a four-lane divided arterial for the entire length of the corridor and includes improvements (from north to south) to Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road. The project components for Alternative B include the widening of existing roadways on various segments; construction of a northern extension of Walters Road between Cement Hill Road and Air Base Parkway; a grade separation (overpass) of the UPRR mainline tracks as part of the Walters Road Extension; improvements (such as bridge widening or culvert extensions) at the Leisure Town Road crossings of Alamo Creek and New Alamo Creek; a new crossing of McCoy Creek and McCoy detention basin; bicycle and pedestrian paths; landscaping; and utilities relocation.

The alignment for Alternative B begins in the north in Vacaville on Leisure Town Road at Orange Drive. It extends south along Leisure Town Road to the intersection of Leisure Town Road and Vanden Road in unincorporated Solano County. It then extends southwest along Vanden Road to the intersection of Cement Hill Road/Vanden Road and Peabody Road in Fairfield. From here, the alignment continues west along Cement Hill Road to the intersection of Cement Hill Road and north end of the Walters Road Extension, extends south along the proposed Walters Road Extension to the intersection of Walters Road and Air Base Parkway, and then continues south along Walters Road in Fairfield and Suisun City to the Walters Road/SR 12 intersection.

The anticipated cost of Alternative B is \$155,478,200 and includes utility and right-of-way costs.

S.3.3 Alternative C: Leisure Town Road–Vanden Road–Peabody Road–Air Base Parkway–Walters Road

Alternative C would provide a four- to six-lane divided arterial for the entire length of the roadway. The project components for Alternative C include roadway widening, improvements (such as bridge widening or culvert extensions) at the crossings of Alamo Creek and New Alamo Creek, a grade separation (overpass) of the UPRR mainline tracks at Peabody Road, a flyover ramp at the Airbase Parkway/Peabody Road intersection, bicycle and pedestrian paths, landscaping, and utilities relocation. The Alternative C alignment begins in the north on Leisure Town Road at Orange Drive and is identical to Alternative B until it reaches the intersection of Cement Hill Road/Vanden Road and Peabody Road. Unlike Alternative B, Alternative C does not include improvements to Cement Hill Road or the construction of a northern extension of Walters Road. Instead, Alternative C continues south on Peabody Road from the Cement Hill Road/Vanden Road intersection to the intersection with Air Base Parkway. Alternative C continues west along Air Base Parkway to Walters Road. From the

intersection of Air Base Parkway and Walters Road, Alternative C would continue south on Walters Road to SR 12, following the same alignment as Alternative B.

The anticipated cost of Alternative C is \$150,825,000 and includes utility and right-of-way costs.

S.3.4 Alternative D: Leisure Town Road–Vanden Road–Peabody Road–Huntington Drive–Walters Road

Alternative D would provide a four- to six-lane divided arterial in the corridor. Alternative D is identical to Alternative B, except that it does not include Cement Hill Road, improvements to Air Base Parkway, or the construction of a northern extension of Walters Road. The Alternative D alignment continues south on Peabody Road from the intersection of Cement Hill Road/Vanden Road and Peabody Road to the intersection of Huntington Drive and Peabody Road. As with Alternative C, this alternative would require construction of an overcrossing at the UPRR tracks just south of the intersection of Cement Hill Road/Vanden Road and Peabody Road and the realignment of Markley Lane. Alternative D also includes an overcrossing of the UPRR spur along Huntington Drive.

The anticipated cost of Alternative D is \$165,463,300 and includes utility and right-of-way costs.

S.3.5 Alternative E: Peabody Road–Air Base Parkway–Walters Road

Alternative E would provide a four- to six-lane divided arterial. Two lanes would be added to the existing two- to four-lane facility. The alignment differs from Alternatives B, C, and D in the northern portion, between I-80 and Vanden Road in Vacaville. Instead of starting at the I-80/Leisure Town Road interchange, this alternative alignment begins at the intersection of Peabody Road and Elmira Road in Vacaville and travels south along Peabody Road until it meets the Alternative C alignment at the intersection of Peabody Road and Cement Hill Road/Vanden Road. As described for Alternative C, the alignment then continues south on Peabody Road to Air Base Parkway; west on Air Base Parkway to Walters Road; and then south on Walters Road to SR 12.

The anticipated cost of Alternative E is \$158,917,000 and includes utility and right-of-way costs.

S.3.6 Summary of Project Features by Alternative

Table S-1 identifies both the common and unique design features of the four build alternatives. All of the build alternatives involve widening Walters Road, a UPRR grade crossing, bicycle/pedestrian facilities, landscaping, and utility improvements. Alternatives B, C, and D have similar alignments and improvements in the northern and southern portions of the corridor. The primary differences among these alternatives occur in the central portion. As noted above, Alternative E is different in the northern portion.

**Table S-1
Summary of Features of the Build Alternatives**

Feature	Alternative B	Alternative C	Alternative D	Alternative E
Roadway Widening				
Leisure Town Road	Yes	Yes	Yes	No
Vanden Road	Yes	Yes	Yes	No
Cement Hill Road	Yes	No	No	No
Huntington Drive	No	No	Yes	No
Peabody Road	No	Yes	Yes	Yes
Air Base Parkway	No	Yes	No	Yes
Walters Road	Yes	Yes	Yes	Yes
Number of Lanes	4	4-6	4-6	4-6
Roadway Extension on New Alignment				
Walters Road	Yes	No	No	No
UPRR Tracks Crossing				
Grade-Separated	Walters Road	Peabody Road	Peabody Road and Huntington Drive	Peabody Road
Partial Interchange				
Air Base Parkway and Peabody Road	No	Yes	No	Yes
Drainage Crossing Improvements				
Alamo Creek	Yes	Yes	Yes	No
New Alamo Creek	Yes	Yes	Yes	No
McCoy Creek	Yes	No	No	No
Putah South Canal	No	No	No	Yes
Union Creek	Yes	Yes	Yes	Yes
Bicycle/Pedestrian Trail	Yes	Yes	Yes	Yes
Landscaping	Yes	Yes	Yes	Yes
Utility Improvements				
Irrigation	Yes	Yes	Yes	Yes
Water, Sewer, Storm Drain Infrastructure	Yes	Yes	Yes	Yes
Electrical, Cable, Telephone Line Relocation	Yes	Yes	Yes	Yes

S.4 Identification of a Preferred Alternative

The various build alternatives have potential impacts in different environmental categories and different amounts of impact where they had impacts in the same environmental categories. Therefore, the identification of the preferred alternative was derived on the basis of a process of elimination that considered each of the related environmental laws. The following is a summary of the reasoning behind identifying Alternative B, as the Preferred Alternative:

Alternative D would displace industrial and commercial properties in the Tolenas Industrial Park along Huntington Drive in the City of Fairfield and would result in the loss of some 224 local jobs. The severe economic hardship to these employees and the City of Fairfield is not acceptable to the local community. There is no way to construct Alternative D to avoid these impacts; therefore, Alternative D was not considered practicable as the preferred alternative.

While Alternative E appears to have the least overall impacts to natural resources among the build alternatives, Alternative E would result in permanent use of 1.7 acres of land from Al Patch Park and 1.2 acres of land from Will C. Wood High School. Both of these properties are protected by Section 4(f) of the Department of Transportation Act. Section 4(f) prohibits the Secretary of Transportation from approving a project that uses Section 4(f)-protected property if there is a feasible and prudent alternative to that use. Under Section 4(f) regulations, Alternative E cannot be selected as the preferred alternative unless all of the other build alternatives can be shown not to be prudent and feasible. Alternative E also would result in the acquisition of 26 single-family and 10 multi-family residential units along Peabody Road in the City of Vacaville.

A “flyover” ramp proposed to be constructed at the intersection of Peabody Road and Air Base Parkway with either Alternative C or Alternative E would provide high-elevation visual access to Travis Air Base facilities, including the Aero Club landing strip and the David Grant Hospital. David Grant Hospital serves sensitive Defense Department missions and is designed to provide emergency functions. This visual access—particularly on a roadway that offers quick access and retreat—poses a concern for homeland defense. Travis Air Force Base officials raised this concern in their comments on the Draft EIR/EIS; see Volume II, Letter 2. In light of its potential homeland defense, residential impacts, and Section 4(f) impacts, Alternative E was not considered practicable as the preferred alternative.

Alternative C, because it would also require the flyover ramp at Peabody Road and Air Base Parkway, would have an impact on homeland defense. Also, as described in the Travis Air Force Base letter referenced above, Alternative C has the potential to affect an area of high habitat value, consisting of a combination of natural and created vernal pools and seasonal wetlands with good populations of Contra Costa goldfields, and a contiguous property that is being developed as a mitigation bank. This site includes mitigation area for vernal pools where efforts are currently underway to propagate and preserve goldfields and other listed and special status plant species. Travis officials have agreed to maintain the portion on the Air Base for preservation of vernal pools, wetlands and these plant species. Using these lands for Alternative C would violate this agreement. Because of the homeland defense issue and the potential impacts to dedicated wetland and plant preservation areas, Alternative C was not considered practicable as the preferred alternative.

By this process of elimination, Alternative B is the remaining practicable alternative. Similar to other build alternatives, Alternative B would affect vernal pools and other seasonal wetlands as well as other waters of the U.S. along the proposed Walters Road extension and Cement Hill Road. These waters provide high quality habitat for wetland vegetation and wildlife. But in informal consultation with the USFWS and the NEPA-404 Memorandum of Understanding (MOU) signatories, avoidance, minimization and mitigation measures have been identified that would achieve the appropriate balancing of resource protection, project construction, and mitigation costs to address these impact issues.

Alternative B was selected as the Preferred Alternative by the Department. The identification of Alternative B as preferred has been confirmed pursuant to avoidance and minimization measures stipulated in the USFWS's no-jeopardy Biological Opinion following completion of formal Section 7 consultation (see Appendix J and mitigation measures BR-7, BR-8, and BR-9).

S.5 NEPA Document – Local Assistance Projects

The project is subject to federal, as well as State and STA environmental review requirements because the STA proposes the use of federal funds from FHWA and/or the project requires a FHWA approval action. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and NEPA. The STA is the project proponent and the lead agency under CEQA. FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to Section 6005 of SAFETEA-LU codified at 23 USC 327(a)(2)(A) and 49 USC 303. Effective July 1, 2007, FHWA has assigned, and the Department has assumed, all the USDOT Secretary's responsibilities under NEPA and Section 4(f). The assignment applies to all projects on the State Highway System (SHS) and all Local Assistance Projects off the SHS within the State of California, with the exception of the responsibilities concerning certain categorical exclusions, which were assigned to the Department under the June 7, 2007 MOU, projects excluded by definition and specific project exclusions. Refer to Chapter 38 of the SER for more information.

A Draft EIR/EIS was circulated for public and agency comments for a 60-day review period starting June 6, 2008 and a public hearing was held in Vacaville on June 24, 2008. The STA Board certified the Final EIR and adopted the project on March 18, 2009. The CEQA statute of limitations expired on April 19, 2009. This Final EIS represents the final NEPA decision document for this project and is supported by the previously circulated Draft EIR/EIS. Where appropriate, changes have been made to the Draft EIR/EIS to reflect comments received from the public and reviewing agencies. This Final EIS includes responses to comments received on the Draft EIR/EIS. Following distribution of the Final EIS, if the decision is made to approve the project, a Record of Decision will be published for compliance with NEPA.

S.6 Summary Comparison of Major Environmental Impacts by Alternative

Table S-2 summarizes the environmental impacts associated with the build alternatives.

Since Alternative A would not involve new construction or result in any of the improvements proposed under the build alternatives, it would not result in direct modifications to the environment. However, Alternative A would be inconsistent with the adopted local and regional plans in that it would not provide road and other transportation improvements needed to support proposed land uses. In addition, without the project, the need to reduce existing and future traffic congestion, improve roadway safety, accommodate planned growth, and support future multimodal transit options and bicycle and pedestrian

use in Solano County would be unmet. Increased traffic congestion under this alternative could also result in impacts to air quality, bicyclists, pedestrians, and transit operations.

The assessment of Alternatives B, C, D, and E reveals a number of important tradeoffs. In terms of traffic operations, effects on environmental justice communities, disturbance to riparian woodlands and protected trees, effect on threatened and endangered species, and potential loss of cultural resources, these alternatives are generally similar. None of the build alternatives would result in cumulative impacts to resources. Key differences indicated in Table S-2 include:

- Alternative B, because of the Walters Road Extension, would have a greater effect on wetlands (about two more acres of fill), and vernal pool habitat.
- Alternative C would displace the fewest number of jobs. Compared to Alternative B, this alternative would have slightly less biological impact on the species and habitats of concern. This alternative would have the highest construction costs.
- Alternative D would displace four industrial businesses, resulting in job loss four to five times greater than Alternatives B or C. The biological effects of Alternative D are comparable to Alternative C.
- Of the build alternatives, Alternative E would result in the use of Section 4(f) properties. The U.S. Department of Transportation requires the identification of other practicable alternatives if Section 4(f) impacts are identified. Alternative E also would result in the greatest number of residential displacements. Thus, while Alternative E offers other benefits, such as less farmland conversion and fewer impacts to certain threatened and endangered species, it rates lowest among the build alternatives in terms of environmental impacts.

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
3.1 Land Use						
Existing land uses	No Conflict	No Conflict	No Conflict	No Conflict	No Conflict	None required
Planned land uses	No Conflict	No Conflict	No Conflict	No Conflict	Minor Conflict	None required
Consistency with Plans and Policies	Inconsistent	Consistent	Consistent	Substantially Consistent	Substantially Consistent	None required
Parks and Recreation	No Impact	No Impact	No Impact	No Impact	Adverse Effect	LU-1: Provide Fencing at Arlington Park. LU-2: Maintain Use of Alamo Creek Bicycle Path During Construction.
3.2 Growth						
Growth Inducement	No Effect	No Effect	No Effect	No Effect	No Effect	None required
3.3 Farm/Agricultural Lands						
Conversion of Farmlands (acres)	0 acres	75.4 acres	68.6 acres	64.5 acres	29.6 acres	FA-1: Compensate for Conversion of Prime Farmland and Farmland of Statewide Significance. (No federal funds will be used to mitigate for impacts to farmlands.)
Protection Required under Farmland Protection Policy Act – Land Evaluation and Site Assessment Conversion Rating	N/A	No	No	No	No	Not Required
Williamson Act Contract Conflict (number of parcels)	No (0)	Yes (1)	Yes (2)	Yes (1)	Yes (6)	Not Required

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
3.4 Community Impacts						
Community Cohesion	No	Minor	Minor	Minor	Minor Adverse Effect	Not Required
Tax Revenue	No	Minor	Minor	Minor	Minor	Not Required
Jobs Lost	0 jobs	58 jobs	40 jobs	224 jobs	80 jobs	Not Required
Relocations						
Single-Family Homes	0 homes	0 homes	0 homes	0 homes	26 homes	Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act.
Multi-Family Units	0 units	0 units	0 units	0 units	10 units	Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act. CI-3: Replace Displaced Parking with On-Site In-Kind Parking.
Additional Right-of-Way Acquisitions	None	Minor	Minor	Minor	Minor	Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act. CI-1: Reconstruct Displaced Driveways and Replace Displaced Fencing, Signage, Trees, and Landscaping.
Commercial Structures	0 structures	10 structures	9 structures	11 structures	4 structures	Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act.
Industrial Structures	0 structures	0 structures	0 structures	4 structures	1 structure	Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act.
Public Structures	0 structures	2 structures	2 structures	2 structures	0 structures	Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act. CI-2: Relocate the Travis Unified School District Facility.

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Environmental Justice	No adverse effect	No adverse effect	No adverse effect	No adverse effect	No adverse effect	Not Required
3.5 Utilities/Emergency Services						
Police, Fire, Emergency Service Providers	No impact	Temporary disruption during construction	UT-1: Notify Emergency Service Providers and Allow Emergency Vehicles on Closed Roadways.			
Utilities	No adverse effect	No adverse effect	No adverse effect	No adverse effect	No adverse effect	Not Required
3.6 Traffic and Transportation/Pedestrian and Bicycle Facilities						
Number of Study Intersections Operating Below Local LOS Standards in 2010	7	3	3	3	4	TRA-1: Evaluate Unsignalized Study Intersections in the Corridor for Signal Warrants TRA-2: Implement Transportation Management Plan During Construction
Number of Study Intersections Operating Below Local LOS Standards in 2030	13	0	0	0	0	TRA-1, TRA-2
3.7 Visual/Aesthetics						
Temporary visual changes from construction	No Impact	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects	VIS-1: Install Temporary Visual Barriers between Construction Staging Areas and Residences.
Permanent changes in light and glare	No Impact	Yes	Yes	Yes	Yes	VIS-2: Prepare and Implement a Lighting Plan. VIS-3: Construct Walls and Barriers with Low-Sheen and Non-Reflective Surface Materials.
Permanent visual changes resulting from earthwork and vegetation removal	No Impact	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects	None Required

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Permanent changes in Landscape Unit 1	No Impact	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	No Impact	VIS-2, VIS-3, VIS-4: Incorporate Design Characteristics to Minimize Visual Obtrusion.
Permanent changes in Landscape Unit 2	No Impact	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	No Impact	VIS-2 through VIS-4
Permanent changes in Landscape Unit 3	No Impact	No Impact	No Impact	No Impact	Minor Adverse Change in Visual Quality	VIS-2 through VIS-4
Permanent changes in Landscape Unit 4	No Impact	No Impact	No Impact	No Impact	Minor Adverse Change in Visual Quality	VIS-2 through VIS-4
Permanent changes to views in Landscape Unit 5	No Impact	Minor Adverse Change in Visual Quality	No Impact	No Impact	No Impact	VIS-2 through VIS-4
Permanent changes to views in Landscape Unit 6	No Impact	No Impact	Adverse Change in Visual Quality	No Impact	Adverse Change in Visual Quality	VIS-2 through VIS-4
Permanent changes to views in Landscape Unit 7	No Impact	No Impact	No Impact	Minor Adverse Change in Visual Quality	No Impact	VIS-2 through VIS-4
Permanent changes to views in Landscape Unit 8	No Impact	Minor Adverse Change in Visual Quality	VIS-2 through VIS-4 VIS-5: Provide Aesthetic Treatments to All Noise Barriers.			
Inconsistency with Local Visual Policies	No Impact	No Impact	No Impact	No Impact	No Impact	None Required.

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
3.8 Cultural Resources						
Identified Cultural Resources	No Impact	None Required				
3.9 Hydrology & Floodplains						
Permanently change local stormwater drainage patterns or volumes	No	Yes	Yes	Yes	Yes	HYD-1: Prepare Detailed Master Drainage Plan (MDP) and Implement Plan Requirements.
Encroach into the FEMA-mapped 100-year floodplain	No	Yes	Yes	Yes	Yes	HYD-1 HYD-2: Improve Undersized Culverts.
Potentially encroach into floodplains not mapped by FEMA	No	Yes	Yes	Yes	Yes	HYD-1
3.10 Water Quality and Stormwater Runoff						
Temporary construction-related water quality impacts Putah South Canal	No Impact	No Impact	No Impact	No Impact	The existing bridge will be widened as required. Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the canal.	Comply with Storm Water Pollution Prevention Plan (SWPPP) Requirements.

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Temporary construction-related water quality impacts to Alamo Creek	No Impact	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Comply with Storm Water Pollution Prevention Plan (SWPPP) Requirements.
Temporary construction-related water quality impacts to new Alamo Creek	No Impact	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	No Impact	Comply with Storm Water Pollution Prevention Plan (SWPPP) Requirements.
Temporary construction-related water quality impacts to McCoy Creek	No Impact	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	No Impact	No Impact	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Comply with Storm Water Pollution Prevention Plan (SWPPP) Requirements.

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Temporary construction-related water quality impacts to Union Creek	No Impact	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Comply with Storm Water Pollution Prevention Plan (SWPPP) Requirements.
Permanent changes in local stormwater contaminant loading	No Impact	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading.	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading.	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading.	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading.	Prepare and implement a post-construction Stormwater Management Plan (SMP) per regulatory requirements.
3.11 Geology, Soils, Seismicity, and Paleontology						
Geologic Hazards (known earthquake fault, strong groundshaking, seismic-related ground failure, liquefaction, or landslides)	No Impact	No Impact	No Impact	No Impact	No Impact	None Required
Expansive Soils	No Impact	No Impact	No Impact	No Impact	No Impact	None Required
Destruction of Buried Paleontological or Unique Geologic Features	No Impact	Potential adverse effect	Potential adverse effect	Potential adverse effect	Potential adverse effect	GEO-1: Prepare and Implement Paleontological Mitigation Plan

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
3.12 Hazardous Waste and Materials						
Expose Construction Workers or Nearby Land Uses to Previously Unknown Hazardous Materials	No Impact	Potential to encounter previously unreported hazardous materials during project construction.	Low risk to encounter previously unreported hazardous materials during project construction.	Low risk to encounter previously unreported hazardous materials during project construction.	Potential to encounter previously unreported hazardous materials during project construction.	HAZ-1: Develop a Health and Safety Plan to Address Worker Health and Safety. HAZ-2: Perform Additional Literature Review to Identify Potential for Historical Contamination. HAZ-3: Conduct Soil Sampling and Analysis to Identify and Remove Contaminated Soil. HAZ-8: Test Soil and Groundwater at LUST and UST sites and Remove Contaminated Soil.
Expose Known Hazardous Materials to Humans or the Environment	No Impact	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.	HAZ-3, HAZ-8 HAZ-4: Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway. HAZ-5: Conduct Sampling and Analysis of Transformer Fluid from Electrical Transformers. HAZ-6: Conduct Testing for Aerially Deposited Lead in Surface and Near-Surface Soils. HAZ-7: Time Construction to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals. HAZ-9: Phase 2 Environmental Site Assessments (ESA).

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Expose Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials	No Impact	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.	HAZ-1

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
3.13 Air Quality						
Violations of Carbon Monoxide NAAQS	No violations of CO standards	No violations of CO standards	No violations of CO standards	No violations of CO standards	No violations of CO standards	None Required
Increase ROG, NO _x , and PM ₁₀ Construction-Related Emissions	No Impact	Increased construction-related emissions	Increased construction-related emissions	Increased construction-related emissions	Increased construction-related emissions	AQ-1: Implement Construction Mitigation Measures to Reduce Construction Equipment Exhaust Emissions. AQ-2: Implement Construction Mitigation Measures to Reduce Construction Emissions, as Required by the BAAQMD.
Regional Conformity	No Impact	Included in a Regional Conformity Plan	Included in a Regional Conformity Plan	Included in a Regional Conformity Plan	Included in a Regional Conformity Plan	None Required
Mobile Source Air Toxics	No impact	No impact	No impact	No impact	No impact	None Required
3.14 Noise						
Construction Noise	N/A	Temporary, intermittent and short-term impacts to residents along Walters Road and Leisure Town Road	Temporary, intermittent and short-term impacts to residents along Walters Road and Leisure Town Road	Temporary, intermittent and short-term impacts to residents along Walters Road and Leisure Town Road	Temporary, intermittent and short-term impacts to residents along Peabody Road	N-1: Employ Noise-Reduction Construction Measures. N-2: Prohibit Nighttime Construction Activities N-3: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program.

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Noise Levels above the NAC or a Substantial Increase in Traffic Noise Levels	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Peabody Road	Abatement measures provided for all build alternatives.
3.15 Biological Environment						
3.15.1 Natural Communities						
Direct loss of riparian woodland (acres)	No Impact	2.1 acres	2.1 acres	2.1 acres	0.4 acres	BR-1: Avoid and Minimize Potential Indirect Disturbance of Riparian Communities. BR-2: Compensate for Permanent Loss of Riparian Communities.
Indirect loss of riparian woodland (acres)	No Impact	1.4 acres	1.4 acres	1.4 acres	0.6 acres	BR-1 and BR-2
Habitat Modification	No Impact	Minor modification of annual grassland, vernal pool, and pond habitat along the Walters Road Extension alignment.	No Impact	No Impact	No Impact	BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Loss of protected trees	No Impact	Removal of 19 native oaks; loss of landscape trees along Leisure Town Road	Removal of 19 native oaks; loss of landscape trees along Leisure Town Road	Removal of 19 native oaks; loss of landscape trees along Leisure Town Road	Removal of 4 native trees, loss of landscape trees along Peabody Road	BR-3: Plant Native Trees in Rural Landscaping Areas.
3.15.2 Wetlands and Other Waters of the United States						
Jurisdictional wetlands	No Impact	2.94 acres	1.17 acres	1.17 acres	0.40 acres	BR-4: Obtain and Comply with Conditions of Clean Water Act Permits and Streambed Alteration Agreement.
Jurisdictional other waters	No Impact	1.90 acres	1.52 acres	1.13 acres	0.64 acres	BR-5: Implement Measures to Protect Water Quality. BR-6: Avoid and Minimize Disturbance of Waters of the United States and Nonjurisdictional Wetlands. BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss BR-8: Compensate for the Permanent and Temporary Filling of Seasonal Wetland, Freshwater Marsh, and Pond. BR-9: Compensate for the Permanent and Temporary Filling of Other Waters of the United States.

Table S-2
Summary of Impacts by Alternative

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
3.15.3 Plant Species						
Loss of Brittlegrass	No Impact	No Impact	No Impact	No Impact	No Impact	BR-10: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions. BR-11: Retain a Biologist to Monitor Construction Activities. BR-12: Install Construction Barrier Fencing around the Construction Area. BR-13: Minimize Potential Impacts on Special-Status Plant Species during Construction. BR-15: Implement Mitigation Measure BR-7, BR-10 to BR-13, BR-15
Loss of Pappose spikeweed	No Impact	1.0 acres	No Impact	No Impact	No Impact	BR-10 to BR-13, BR-15 BR-14: Compensate for Loss of Pappose Spikeweed.
Loss of Gairdner's yampah	No Impact	2.0 acres	No Impact	No Impact	No Impact	BR-10 to BR-13, BR-15
Loss of Saline Clover	No Impact	1.0 acre	No Impact	No Impact	No Impact	BR-10 to BR-13, BR-15
3.15.4 Animal Species						
Loss of habitat for Northwestern Pond Turtle	No Impact	Potential Impact	Unlikely to be affected	Unlikely to be affected	Unlikely to be affected	BR-10 to BR-12 BR-16: Conduct Preconstruction Surveys for Western Pond Turtle
Disturbance to Burrowing Owl breeding or wintering burrow site	No Impact	Possible effect if present	BR-10 to BR-12 BR-17: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the CDFG Guidelines for Burrowing Owl Mitigation.			

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Loss of Swainson's Hawk nesting and foraging habitat	No Impact	58.5 acres	57.4 acres	49 acres	32.1 acres	BR-10 to BR-12 BR-18: Implement the CDFG Guidelines for Swainson's Hawk Foraging Habitat Mitigation and Conduct Preconstruction Surveys for Nesting Swainson's Hawk.
Degradation or disturbance to White-Tailed Kite nesting sites	No Impact	Possible effect on nesting birds if present	BR-10 to BR-12 BR-19: Avoid Disturbance of Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors			
Degradation or disturbance to Northern Harrier nesting sites	No Impact	Possible effect on nesting birds if present	BR-10 to BR-12, BR-19			
Disturbance to nesting sites of migratory birds, including raptors	No Impact	Possible effect on nesting birds if present	BR-10 to BR-12, BR-19			
3.15.5 Threatened and Endangered Species						
Loss or degradation of Contra Costa Goldfields populations						
Direct	0 acres	0.40 acres	0.24 acres	0.27 acres	0.24 acres	BR-10 to BR-12 BR-20: Implement Mitigation Measure BR-7. BR-21: Compensate for the Permanent Loss of Contra Costa Goldfields.
Temporary (Direct)	0 acres	0.17 acres	0.22 acres	0.15 acres	0.22 acres	
Indirect	0 acres	2.45 acres	4.58 acres	2.51 acres	4.58 acres	
Total	0 acres	3.02 acres	5.04 acres	2.93 acres	5.04 acres	

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
Loss of vernal pool crustacean habitat						BR-22: Minimize Potential Impacts on Listed Vernal Pool Crustaceans and Contra Costa Goldfields. BR-23: Compensate for Permanent Losses of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat.
Direct	0 acres	0.97 acres	1.42 acres	1.42 acres	0.94 acres	
Indirect	0 acres	3.72 acres	0.30 acres	0.30 acres	0.20 acres	
Total	0 acres	4.69 acres	1.45 acres	1.45 acres	0.96 acres	
Loss or degradation of suitable habitat for Delta Green Ground Beetle	No Impact	No Impact	No Impact	No Impact	No Impact	None required
Loss of elderberry shrubs that are habitat for Valley Elderberry Longhorn Beetle	No Impact	4 shrubs; 16 stems greater than 1 inch in diameter at ground level	4 shrubs; 16 stems greater than 1 inch in diameter at ground level	4 shrubs; 16 stems greater than 1 inch in diameter at ground level	13 shrubs; 26 stems greater than 1 inch in diameter at ground level	BR-24: Minimize Impacts on Valley Elderberry Longhorn Beetle. BR 25: Compensate for Impacts on Valley Elderberry Longhorn Beetle.
Loss or degradation of suitable habitat for California Tiger Salamander						BR-26: Minimize Potential Impacts on California Tiger Salamanders. BR-27: Compensate for Removal and Disturbance of California Tiger Salamander Habitat.
Upland Habitat	No Impact	22.7 acres	22.7 acres	22.7 acres	1.6 acres	
Aquatic Habitat	No Impact	No Impact	No Impact	No Impact	0.10 acres	

**Table S-2
Summary of Impacts by Alternative**

Affected Resource	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Avoidance, Minimization, and/or Mitigation Measures
3.15.6 Invasive Species						
Invasive Species	No impact	Potential to spread invasive species	BR-28: Educate Construction Crews on Invasive Species Control and Prevention, and Monitor Compliance. BR-29: Implement Revegetation and Restoration Measures Required in the Storm Water Pollution Prevention Plan.			
3.16 Energy						
Energy	Inefficient energy consumption	Efficient energy consumption	Efficient energy consumption	Efficient energy consumption	Efficient energy consumption	None required

S.7 Coordination with Public and Other Agencies

Both the federal and State environmental processes call for coordination and consultation with various federal, State, and local agencies; elected officials; community organizations; Native American tribes; and other individuals from the neighborhoods and communities within the vicinity of the corridor. Public outreach was conducted through a variety of means, including public agency coordination, consultation, and the public scoping process. In keeping with these processes, a Notice of Intent (NOI) for the Jepson Parkway Project was published in the Federal Register on August 4, 2000, and a Notice of Preparation (NOP) was released on July 14, 2000. These notices announced that environmental documents were being prepared to assess the effects of the proposed action. Comments received in response to the notices have been taken into account in the preparation of this document.

In order to ensure appropriate input from other affected agencies, particularly those that have jurisdiction over natural resources, FHWA, Caltrans, and STA began a scoping process soon after the issuance of the above notices, during which direct outreach was made to the public and other local, State, and federal agencies. A public scoping meeting for the project was held on August 9, 2000. The three agencies also agreed to initiate the NEPA/Clean Water Act Section 404 integration process (generally referred to as “NEPA/404”), which is a formal effort to coordinate the review and approval process of key EIS elements and how these elements address waters of the United States and associated sensitive species. The integration process is outlined in an MOU between FHWA, the Federal Transit Administration (FTA), the Corps, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and Caltrans. The participants in the NEPA/404 process agreed on the project purpose and need, the four alternatives that were considered in the EIS, and the Least Environmentally Damaging Practicable Alternative (LEDPA).

The Draft EIR/EIS was circulated for public review and comment in May, 2008 for 60 days. A public hearing on the Draft EIR/EIS was held on June 24, 2008 at the Callison Elementary School in Vacaville. Alternative B, which includes portions of Leisure Town, Vanden, Cement Hill, and Walters Roads and constructs the Walters Road Extension, has been identified as the Preferred Alternative.

In addition, as noted previously, a Section 4(f) evaluation was conducted for the project under the Department of Transportation Act of 1966 (49 U.S. Government Code 303). The Section 4(f) evaluation is intended to identify the potential use of publicly-owned parks, recreation areas, wildlife or waterfowl refuges, and historic sites for transportation improvements. If such use is necessary, the Section 4(f) evaluation is also intended to establish that there is no feasible and prudent alternative to the use of Section 4(f) resources and that all possible planning to minimize harm to the resource has occurred. This evaluation is included as Appendix A to this document.

A letter of concurrence from the State Historic Preservation Officer for the project is provided with other agency consultation letters in Appendix B to this document. This letter is necessary to demonstrate that potentially significant historic resources have been considered during project planning. Appendix K includes letters from FHWA documenting air quality conformance.

S.8 List of Other Authorizations and Approvals That May Be Required for the Proposed Action

As identified above, there are a number of other agencies that may have some oversight or permit requirements over the project. The chart below summarizes other State and federal agencies that have such jurisdiction.

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Consultation for Federally Listed Threatened and Endangered Species under Section 7 of the Endangered Species Act.	Formal consultation and request for Biological Opinion were conducted. See Appendix J for a copy of the USFWS No Jeopardy Biological Opinion
U.S. Army Corps of Engineers	Individual Permit under Section 404 of the Clean Water Act for filling or dredging waters of the United States.	Section 404 permit would be obtained prior to construction.
California Department of Fish and Game	Streambed Alteration Agreement under California Fish and Game Code Section 1602.	Section 1602 permit would be obtained prior to construction.
	Section 2080 Agreement or Concurrence for State-Listed Threatened and Endangered Species.	Section 2080 permit would be obtained prior to construction.
San Francisco Bay and Central Valley Regional Water Quality Control Board	Water Quality Certification under Section 401 of the Clean Water Act.	Section 401 certification would be completed prior to construction.
California Public Utilities Commission	Authority to construct a new public railroad-highway crossing	Permits to be obtained prior to construction.
Reclamation Board	Encroachment permit for activities conducted within Reclamation Board's right-of-way	Permits to be obtained prior to construction.

S.9 Related Projects

In addition to the proposed action, there are a number of other major projects and improvements that can affect transportation in central Solano County. The following major actions are in the planning stages or have recently been completed by other governmental agencies in the same geographic area as the project.

- I-80/Leisure Town Road Overcrossing and Interchange, City of Vacaville.
- Al Patch Park, City of Vacaville: a 34.3-acre sports complex at the northwest corner of Peabody Road and California Drive.
- Elmira Road Widening from Peabody Road to Allison Drive, City of Vacaville.
- Fairfield-Vacaville Multimodal Train Station, City of Fairfield.
- Technology Park, City of Fairfield: an 800-acre technology park designated in the City of Fairfield General Plan.

- Travis Air Force Base Expansion, City of Fairfield.
- Petersen Ranch, City of Suisun City: a 153-acre residential development adjacent to Walters Road between Bella Vista Drive and East Tabor Avenue.
- Villages at Fairfield Residential Development, City of Fairfield: 440 acres with 2,400 housing units, a commercial shopping center, an elementary school, two neighborhood parks, a portion of the Fairfield Linear Park, and associated public facilities, roadways and utilities. Located north of Air Base Parkway between Claybank Road and Peabody Road.
- Kinder Morgan Energy Partners, Concord to Sacramento Petroleum Products Pipeline Project.
- Solano Countywide Bicycle Plan, STA.
- Improvements to I-80/I-505 Interchange.
- High-Occupancy Vehicle Lanes on I-80.
- General Plan Amendment for Peabody Road: a General Plan amendment to designate Peabody Road as a four-lane arterial street was approved in 2004.
- I-80/North Texas Street Interchange and Manuel Campos Parkway Extension, City of Fairfield.
- Realignment of Peabody Road and Vanden Road/Cement Hill Road intersection, City of Fairfield.
- Improvements to the I-80/I-680/SR 12 Interchange.
- Extension of High Occupancy Vehicle Lanes on I-80 from Air Base Parkway to I-505.

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Chapter 1 **Proposed Project**

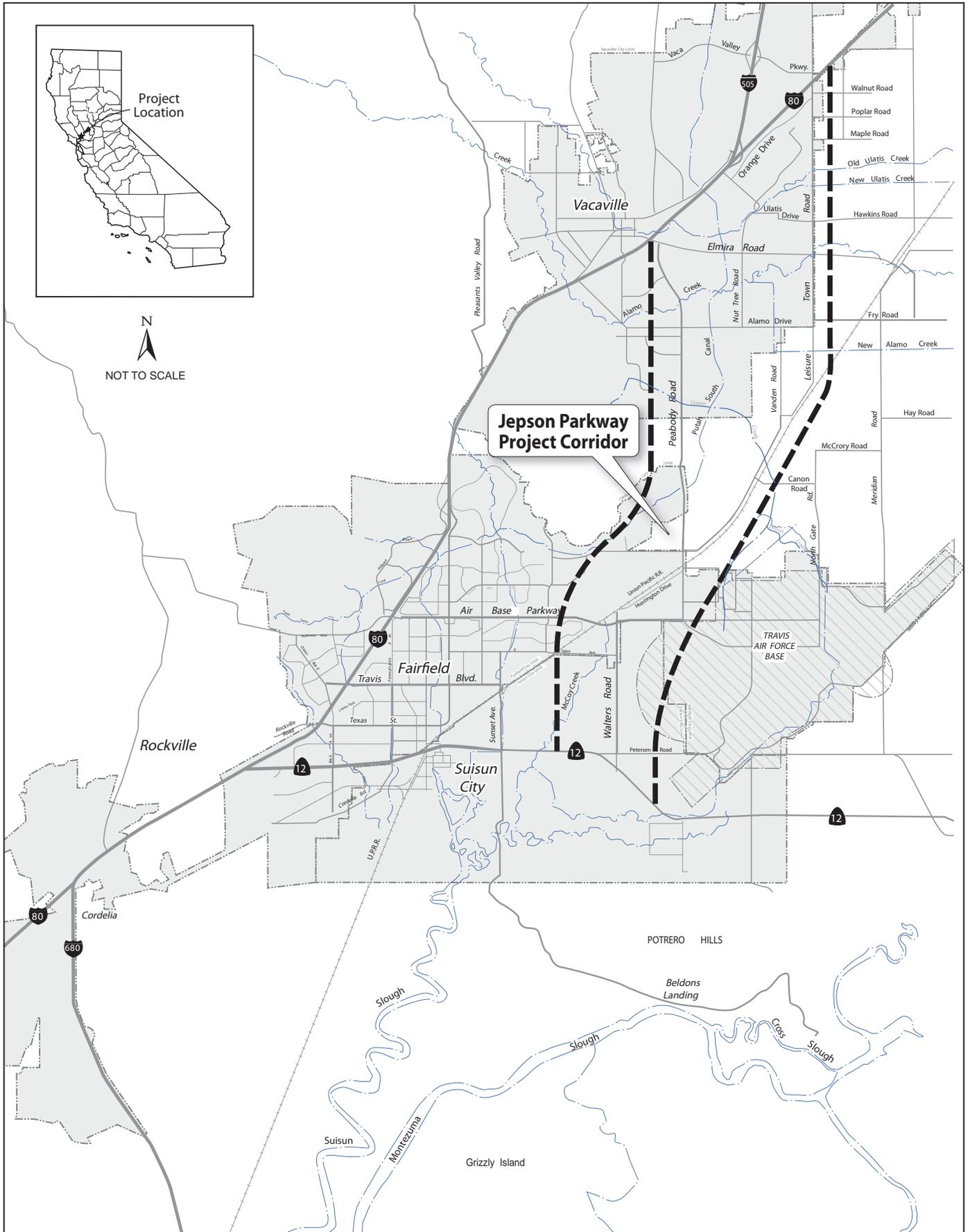
1.1 Introduction

The Solano Transportation Authority (STA), in conjunction with the Cities of Fairfield, Suisun City, and Vacaville; and Solano County, proposes roadway improvements in mid-Solano County between Interstate 80 (I-80) in Vacaville to the north and State Route (SR) 12 in Suisun City to the south. The approximately 12-mile corridor, referred to as the Jepson Corridor, is located within the jurisdictions of the Cities of Suisun City, Fairfield, and Vacaville, and unincorporated portions of central Solano County (Figure 1-1).

The project is subject to federal as well as State environmental review requirements because STA proposes the use of federal funds from the Federal Highway Administration (FHWA) and/or the project requires a FHWA approval action. Project documentation, therefore, has been prepared in compliance with the National Environmental Policy Act (NEPA). STA is the project proponent and the lead agency under CEQA. FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being carried out by Caltrans under its assumption of responsibility pursuant to the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (23 USC 327).

The Jepson Parkway Project (project) would upgrade and link a series of existing local two- and four-lane roadways (as well as construct an extension of an existing roadway under one alternative) to provide a four- to six-lane north-south travel route for motorists who face increasing congestion when traveling between jurisdictions in central Solano County. Roadways proposed for improvements in the corridor could include Peabody Road, Leisure Town Road, Vanden Road, Cement Hill Road, Huntington Drive, Air Base Parkway, and/or Walters Road, including a possible extension of Walters Road north of its existing terminus. These existing roadway segments are depicted on Figure 1-2. The project also includes safety improvements such as the provision of roadway medians, traffic signals, shoulders, separate turn lanes, railroad grade separations, and separate bike lanes/pedestrian paths, and landscaping.

The Jepson Parkway Project is named for Willis Linn Jepson, born August 19, 1867, in Little Oak, near Vacaville. Jepson was one of America's greatest regional botanists and the principal interpreter of California flora. A passionate conservationist, Jepson founded the California Botanical Society. During his fruitful career, he wrote more than 200 scientific papers and eight books, including *Flora of Western Middle California* (1901), *Silva of California* (1910), and *A Manual of the Flowering Plants of California* (1923–1925). This manual, familiarly known as the "Jepson Manual," is the outstanding work on regional flora produced in this country.



**Figure 1-1
Jepson Parkway Regional Location**

The corridor has logical termini and is of sufficient length to meet the purpose and need for the project, as described in this section. Each of the four build alternatives described in Chapter 2, Project Alternatives, has independent utility, meaning that proposed roadway improvements can be implemented for any alternative and that completion of other projects would not be required in order to realize the operational benefits of the specific alternative. In addition, the four build alternatives have been designed to complement future planned transportation projects. None of the four build alternatives would restrict consideration of these future projects.

Funding is currently being provided by segment with funds programmed to complete improvements of the narrow rural segments connecting Vacaville and Fairfield first, followed immediately by upgrading urban segments in each city. The project would be constructed by segment until completion beginning in 2013. Assuming availability of funding, project construction would last 12 to 24 months on each segment, over a total duration of approximately 48 to 60 months. Project costs range from \$122,558,000 to \$136,752,000, depending on the alternative.

1.1.1 Project History

In 2000, STA, Solano County, and the Cities of Vacaville, Fairfield, and Suisun City completed the *Jepson Parkway Concept Plan* (Concept Plan). The Concept Plan was developed to address intra-county mobility for Solano County residents. It focused on a comprehensive, innovative, and coordinated strategy for developing what has become known as the Jepson Parkway corridor. Completed after a process of extensive community input, the Concept Plan provided a coordinated strategy for developing a multimodal corridor that would link land use and transportation decisions, support the use of alternative modes of transportation, and minimize impacts on existing and future residential neighborhoods. The plan also identified improvements to the corridor that would provide intra-county mobility for central Solano County residents. The corridor improvements were designed to relieve existing and future congestion, address existing safety issues, and facilitate the use of alternative travel modes.

Planning efforts leading to development of the Concept Plan began in the late 1980s. The following is a summary of the planning activities and decisions leading up to the development of this project.

- **1989:** The Metropolitan Transportation Commission (MTC) and the Sacramento Area Council of Governments (SACOG) completed a joint study of the I-80 corridor, titled the *Strategic Transportation Planning Study*. The study forecasted long-term congestion on I-80 and showed that use of I-80 by local traffic in Solano County would be a major contributing factor to that congestion.
- **1990:** MTC completed the *Bay Area Freeway Reliever Routes Phase II Evaluation Report*. One of the four routes evaluated in the report included improvements to Walters Road, Peabody Road, Vanden Road, and Leisure Town Road in Solano County as reliever routes for I-80. The report concluded that the projects “in all four of the corridors will be beneficial elements of an overall program for corridor traffic management” for the San Francisco Bay Area and that they should proceed.

- **1996:** MTC completed the *Interstate 80 Corridor Study*, which advanced a long-term multimodal strategy and investment plan for improving mobility in the I-80 corridor. Recommended plan elements included an I-80 reliever route in Solano County.
- **1997:** STA completed the Phase 1 Report, addressing a 12-mile segment of the route identified in the MTC 1990 study. This report outlined a concept for a continuous four-lane roadway from the I-80/Leisure Town Road interchange in Vacaville to the SR 12/Walters Road intersection in Suisun City. The Phase 1 Report recommended a modification in the alignment along a 1.5-mile segment in the central portion of the route. In lieu of improvements to Air Base Parkway and Peabody Road, the Phase 1 Report recommended improvements to parallel facilities involving an extension of Walters Road north to Cement Hill Road, and a widening of Cement Hill Road between the Walters Road Extension and Peabody Road. The purpose of the modified alignment is to facilitate the construction of a grade separation of the Union Pacific Railroad (UPRR) tracks on the Walters Road Extension as a means to mitigate safety and capacity constraints at the existing two-lane at-grade crossing of the railroad on Peabody Road.
- **2000:** The Federal Highway Administration (FHWA), Caltrans, and STA began the scoping process in anticipation of the preparation of an Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for improvements to the Jepson Parkway corridor as outlined in the Concept Plan. The three agencies also agreed to initiate the National Environmental Policy Act (NEPA)/Clean Water Act (CWA) Section 404 integration process (generally referred to as “NEPA/404”).

The NEPA/404 integration process is a formal effort to coordinate the review and approval of key EIR/EIS elements and how these elements address impacts to waters of the United States and associated sensitive species. The integration process is supported by a memorandum of understanding (MOU) between FHWA, the Federal Transit Administration (FTA), the U.S. Army Corps of Engineers (Corps), the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NOAA Fisheries), and Caltrans.

Members of the NEPA/404 group for the Jepson Parkway Project include the above-listed agencies (with the exception of FTA); the San Francisco Bay Regional Water Quality Control Board (RWQCB); California Department of Fish and Game; Solano County; STA; and the Cities of Fairfield, Vacaville, and Suisun City.

- **2001:** The NEPA/404 group agreed on the project purpose and need, as well as the four build alternatives subject to environmental analysis in this EIS. The purpose and need for the project is described below. The project alternatives, and the screening process for identifying and selecting these alternatives, are described in Chapter 2, Project Alternatives.

STA has identified the project as a priority undertaking for Solano County. The project would provide a four- to six-lane parkway between I-80 in Vacaville and SR 12 in Suisun City, consistent with adopted local plans. The project is also included in the Transportation 2035 Plan for the San Francisco Bay Area in the MTC Regional Transportation Plan (RTP). The RTP identifies the total project cost as \$194 million.

The project is also included in the Solano Comprehensive Transportation Plan (CTP 2030).¹ The CTP 2030 estimates the total cost of the improvements as \$143 million. In addition to the three above-listed projects already constructed, the CTP identifies the following segment of the corridor as fully funded:

- Cement Hill Road: Walters Extension to Peabody Road.

The CTP identifies the following two partially-funded segments of the corridor:

- Walters Road Extension (Fairfield); and
- Vanden Road: Peabody Road to Leisure Town Road (Solano County).

1.2 Purpose and Need

1.2.1 Project Purpose

The project is designed to meet the objectives of the Concept Plan. These objectives include: safety improvements at various locations and along various road segments; relief from existing and anticipated traffic congestion on north-south routes in central Solano County; improved and new transit, bicycle, and pedestrian facilities; and a crossing of the UPRR tracks. The Concept Plan also proposes advisory guidelines that address visual continuity along the roadway for design elements such as landscaping and signage. The project design is consistent with these guidelines.

Implementation of the project would meet the objectives of the Concept Plan, and would assist STA in meeting the following specific purposes, each of which is described in more detail in the sections that follow:

- Provide an integrated and continuous route for local north-south trips between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County as an alternative to using I-80.
- Provide local traffic a safe, convenient route between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County using existing roadways when feasible.
- Enhance multimodal transportation options for local trips in central Solano County, including providing a safe, convenient bicycle and pedestrian path and options for transit use in the area.

1.2.1.1 Provide an Integrated and Continuous Route for Local North-South Trips as an Alternative to Using Interstate 80

One purpose of the project is to provide a continuous route for local north-south trips as an alternative to using I-80. The *I-80 Reliever Route Implementation Plan, Phase 1* (Phase 1 Report), initially outlined the concept of a continuous four-lane roadway from the I-80/Leisure Town Road interchange in Vacaville to SR 12 in Suisun City.² Further planning subsequent to the Phase 1 Report resulted in the Concept Plan.³ Completion of the project would fulfill STA's integrated planning effort to enhance

¹ Solano Transportation Authority. 2005. Solano Comprehensive Transportation Plan (CTP 2030). Adopted by the STA Board of Directors June 8, 2005. Suisun City, CA.

² Korve Engineering. 1997. I-80 Reliever Route Implementation Plan Phase I.

³ Moore Iacofano Goltsman, Inc (MIG). 2000. Jepson Parkway Concept Plan. Berkeley, CA. Prepared for the Solano Transportation Authority, Suisun City, CA.

facilities for all modes of transportation in the region. The project would create a direct route between I-80 and SR 12, benefiting local traffic and providing an alternative to using I-80.

1.2.1.2 Provide Local Traffic a Safe, Convenient Route Using Existing Roadways when Feasible

Another purpose of the project is to provide a safe, convenient route for local north-south traffic in central Solano County. According to the *Solano Travel Safety Plan*, four intersections within the corridor were among the top 40 most accident-prone locations in Solano County.⁴ Additionally, the existing at-grade UPRR crossing on Peabody Road is a safety hazard in an area that can become congested during peak hours. Improvements to the corridor, which is conveniently located for central Solano County residents, would improve roadway safety for area residents. In 2005, the *Solano Travel Safety Plan* was updated, and these intersections were still among the top 40 most accident-prone intersections in the County.

The project would also improve existing roadways when feasible, rather than constructing new facilities. As currently defined, the project would consist primarily of improvements to existing roadways, as shown in Figure 1-2. Such an approach will result in fewer environmental impacts than construction of new roadways on undeveloped parcels. Additionally, the use of existing roadways would result in cost savings that would not be realized if new roadways were constructed.

1.2.1.3 Enhance Multimodal Transportation Options for Local Trips

Another purpose of the project is to enhance multimodal transportation options for local trips in central Solano County by providing a safe, convenient bicycle and pedestrian path and options for transit use in the area. Although a number of transit routes cross the Jepson Parkway corridor, there are no transit routes along the corridor. As the population increases along the corridor, transit needs will also increase. The project would enhance transit options along the corridor. Through the Jepson Parkway, STA would provide a continuous pedestrian and bicycle corridor in central Solano County and links to existing corridors in Vacaville, Fairfield, and Suisun City. These improvements would enhance multimodal options for local trips.

1.2.2 Project Need

The project is needed to:

- Address existing and future traffic congestion for north-south mobility in central Solano County.
- Improve existing and future roadway safety along the corridor.
- Accommodate traffic associated with future planned growth, as identified in the following adopted local and regional plans:
 - California Transportation Plan 2030;
 - MTC Regional Transportation Plan (RTP);

⁴ Solano Travel Safety Plan, 1998.

- City of Vacaville General Plan;
 - City of Fairfield General Plan;
 - City of Suisun City General Plan; and
 - Solano County General Plan.
- Relieve existing and future (2030) traffic congestion on I-80.
 - Support future multimodal transit options and bicycle and pedestrian use.

Each of these needs is described in more detail below.

1.2.2.1 Address Existing and Future Congestion for North-South Mobility

Studies to date indicate that traffic volumes in the corridor will increase to the point that volumes will exceed the capacity of existing roadways. This lack of capacity will result in added travel delays. A review of studies conducted for the study corridor since 1989, including recent information summarized below, demonstrates the need for the project.

An evaluation of 11 freeway segments along I-80, between SR 12 and I-505, indicates that six of these segments operated at unacceptable Levels of Service (LOS), i.e., below LOS D, during the PM peak hour in 2005; four of these segments operated at LOS E and two of these segments operated at LOS F.⁵ Between 2005 and 2030, conditions at these freeway segments will continue to deteriorate. In 2030, six of the 11 freeway segments are projected to operate at LOS F and one segment is projected to operate at LOS E.

An evaluation of 21 intersections in the corridor indicated that during the PM peak hour in 2005, four of these intersections operated at unacceptable levels of service: three operated at LOS F and one at LOS E. The number of corridor intersections operating at unacceptable levels would double to eight during the PM peak hour in 2030, with seven intersections projected to operate at LOS F and one intersection projected to operate at LOS E.

1.2.2.2 Improve Existing and Future Roadway Safety

The project is needed to improve traffic safety in the corridor. In 1998, STA prepared the *Solano Travel Safety Plan* (STA 1998; updated 2005) to identify travel safety deficiencies in Solano County and to recommend a program of cost-effective travel safety improvements and projects. Four intersections in the corridor were among the top 40 most accident-prone local intersections throughout the County:

- Walters Road and Air Base Parkway (ranked 23rd in 1998 and 30th in 2005),
- Peabody Road and Vanden Road (ranked 33rd in 1998 and 15th in 2005),

⁵ LOS is a qualitative description of an intersection and roadway's operation, ranging from LOS A to LOS F. LOS A represents free flow uncongested traffic conditions. LOS F represents highly congested traffic conditions with unacceptable delay to vehicles on the road segments and at intersections.

- Peabody Road and Cement Hill Road (ranked 40th in 1998)⁶, and
- Vanden Road and Canon Road (ranked 29th in 1998 and 41st in 2005).

Traffic on Peabody Road currently crosses directly over the UPRR tracks, creating a potential conflict between trains and automobiles. The existing two-lane, at-grade crossing is close to a heavily used intersection (Peabody Road and Cement Hill Road/Vanden Road) and an access road to a local high school (Markley Lane). Over the three-year study period used for the safety plan, the segment of Peabody Road that represents the approaches to the crossing (between Vanden Road and Markley Lane) was the site of an average of seven accidents per year. The project would improve the safety and capacity of the crossing by providing an improved at-grade crossing or an above-grade crossing. An above-grade crossing would separate the auto traffic from the trains by elevating the roadway over the railroad.

1.2.2.3 Accommodate Traffic Associated with Planned Growth

The project is needed to accommodate traffic associated with future planned growth. Growth outlined in approved local plans is expected to increase traffic congestion along the corridor. The following discussion highlights some of the approved components of these various plans.

1.2.2.4 City of Suisun City General Plan

The City of Suisun City's adopted General Plan (1992) shows Walters Road as a four-lane arterial with a median and 104-foot right-of-way, which includes Class I (separated) bicycle and pedestrian facilities. Walters Road is currently a four-lane arterial with Class I bicycle and pedestrian facilities between SR 12 and East Tabor Avenue. A 1996 Environmental Impact Report (EIR) on the 153-acre Petersen Ranch single-family residential development, which was recently constructed in the area adjacent to Walters Road between Bella Vista Drive and East Tabor Avenue, indicated that four lanes were needed to accommodate traffic generated by the planned residential uses, parks, and schools.

1.2.2.5 City of Fairfield General Plan

The City of Fairfield's adopted General Plan (2002) identifies improvements planned along the Jepson Parkway corridor. The General Plan conceptually shows that both Vanden Road and Peabody Road need "roadway improvements" to accommodate planned growth. Vanden Road travels through an area designated in the general plan for an 800-acre technology park, an area to be reserved for expansion of Travis Air Force Base, and open space/agricultural uses. Peabody Road travels through areas identified for open space/agricultural uses and technology, as well as residential and commercial areas and stream crossings identified as conservation areas. Huntington Drive, an industrial service road with multiple driveways, travels through a business and industrial park. Additional road improvements identified in the General Plan include widening Walters Road to four lanes with a median and bike lanes from East Tabor Avenue to the UPRR crossing, constructing a new four-lane Walters Road extension from the UPRR crossing to Cement Hill Road, widening Peabody Road to four lanes from Air Base Parkway to the city limits, and widening Vanden Road to four lanes from Peabody Road to the city limits.

⁶ The intersection of Peabody Road and Cement Hill Road/Vanden Road was realigned in 2000.

The City of Fairfield's 1994 *Peabody-Walters Master Plan*⁷ also identifies improvements planned for the Jepson Parkway corridor. The master plan diagram shows Walters Road extended north as a six-lane facility in an alignment east of the McCoy detention basin, as well as a widening of Cement Hill Road to four lanes. Currently the City of Fairfield is preparing a Specific Plan for the Fairfield-Vacaville Multimodal Train Station Area and upon adoption of the Specific Plan and previous planning efforts, the Peabody-Walters Master Plan will be effectively repealed and superseded by the Specific Plan. The Specific Plan will reflect the 2002 General Plan, which has designated some of the nearby land for transit-supportive uses and calls for Walters Road to be constructed as a four-lane facility between the UPRR crossing and Cement Hill Road.

1.2.2.6 City of Vacaville General Plan

The City of Vacaville's adopted General Plan (2007) indicates that Leisure Town Road should be widened from two to four lanes between I-80 and Alamo Drive. This widening is scheduled to meet existing traffic demands and potential growth in the area. The General Plan also shows the extension of Leisure Town Road to Vanden Road so that it aligns with the proposed extension of Foxboro Parkway.

1.2.2.7 Solano County General Plan

According to the Land Use and Circulation Element of Solano County's adopted General Plan (1980), rapid growth in the County over the past four decades has been enhanced by accessibility to the San Francisco and Sacramento metropolitan areas, the location of government employment centers such as Travis AFB, and moderate housing costs. The General Plan anticipates that Solano County will continue to grow in the future.

1.2.2.8 Relieve Existing and Future Traffic Congestion on Interstate 80

The 1989 *Strategic Traffic Planning Study*⁸ indicated that the project is needed to help alleviate current and future congestion on I-80 by diverting and providing an alternative route for local traffic in Solano County. Although it is an east-west route, I-80 is aligned generally north-south in this segment of Solano County (Figure 1-1). The study showed that local Solano County traffic is a major factor contributing to congestion on I-80, and that resulting delays on I-80 will escalate as the County grows and regional traffic increases. The study recommended improving local arterial roadways to serve local trips along a continuous route from the I-80/Leisure Town Road interchange in Vacaville to I-680. According to STA's Phase 1 Report, I-80 between the I-80/Leisure Town Road interchange and I-680 included the most congested segments of the freeway in central Solano County.⁹

⁷ City of Fairfield. 1994. *Peabody-Walters Master Plan*, prepared by Creegan & D'Angelo Consulting Engineers, September 6, 1994.

⁸ Metropolitan Transportation Commission and Sacramento Area Council of Governments. 1989. *Strategic Traffic Planning Study*. Suisun City, CA.

⁹ Korve Engineering. 1997. *I-80 Reliever Route Implementation Plan Phase I*.

1.2.2.9 Support Future Multimodal Travel Options

The project is needed to support future multimodal transit options in central Solano County. As a separate project being planned in coordination with the Jepson Parkway Project, the Fairfield-Vacaville Multimodal Train Station would be a multimodal transportation hub for the Capitol Corridor intercity passenger train service and for feeder bus systems serving the train station. The Multimodal Train Station was identified in the *1995 Solano Rail Facilities Plan* as one of three priority station projects. This rail station would be located at the southeast corner of the intersection of Peabody Road and Cement Hill Road/Vanden Road, a major intersection within the corridor (Figure 1-2). The Jepson Parkway Project has been designed to accommodate the proposed train station and enhance access to the station site.

In 1994, the *Fairfield/Suisun Short-Range Transit Plan* projected that an additional bus route to the northern part of Fairfield would be needed by 2004. Two bus routes are proposed along the corridor to link major residential and employment centers and to reduce travel times between major destination points, such as Travis Air Force Base, the Vacaville Business Park, the Fairfield Industrial Park, downtown Suisun City, and the I-80/West Texas interchange area, as well as the planned Fairfield-Vacaville Multimodal Train Station and other transfer centers.

The project is also needed to meet the planning goals of the countywide bicycle plan. In the corridor, this plan shows a continuous bicycle path along Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road. The updated Solano Countywide Bicycle Plan (STA 2004) describes bikeways along the entire corridor as countywide priority projects. The Alternatives Modes Element of STA's CTP 2030 describes the Jepson Parkway Bikeway as a multi-jurisdictional project being developed by Suisun City, Fairfield, Vacaville, and the County of Solano. The Jepson Parkway Project would provide a 10-foot wide bike path along most of the entire (12-mile) length of the planned Jepson Parkway.

1.2.2.10 Related Projects

The following projects are in the planning stages or have recently been completed in the corridor or corridor vicinity.

- I-80/Leisure Town Road Overcrossing and Interchange, City of Vacaville.
- Al Patch Park, City of Vacaville: a 34.3-acre sports complex at the northwest corner of Peabody Road and California Drive.
- Elmira Road Widening from Peabody Road to Allison Drive, City of Vacaville.
- Fairfield-Vacaville Multimodal Train Station, City of Fairfield.
- Technology Park, City of Fairfield: an 800-acre technology park designated in the City of Fairfield General Plan.
- Travis Air Force Base Expansion, City of Fairfield.
- Petersen Ranch, City of Suisun City: a 153-acre residential development adjacent to Walters Road between Bella Vista Drive and East Tabor Avenue.

- Villages at Fairfield Residential Development, City of Fairfield: 440 acres with 2,400 housing units, a commercial shopping center, an elementary school, two neighborhood parks, a portion of the Fairfield Linear Park, and associated public facilities, roadways and utilities. Located north of Air Base Parkway between Claybank Road and Peabody Road.
- Solano Countywide Bicycle Plan, STA.
- Improvements to I-80/I-505 Interchange.
- High-Occupancy Vehicle Lane on I-80.
- General Plan Amendment for Peabody Road: a General Plan amendment to designate Peabody Road as a four-lane arterial street was approved in 2004.
- I-80/North Texas Street Interchange and Manuel Campos Parkway Extension, City of Fairfield.
- Realignment of Peabody Road and Vanden Road/Cement Hill Road intersection, City of Fairfield.

Chapter 2 **Project Alternatives**

This chapter describes the build alternatives that were developed by the multi-disciplinary project team and the National Environmental Policy Act (NEPA)/404 group to achieve the project purpose and need while avoiding or minimizing environmental impacts.

2.1 Project Description

The Jepson Parkway Project (project) would upgrade and link a series of existing local two- and four-lane roadways (as well as construct an extension of an existing roadway under one alternative) to provide a four- to six-lane north-south travel route for motorists who face increasing congestion when traveling between jurisdictions in central Solano County. The approximately 12-mile corridor, referred to as the Jepson Corridor, is located within the jurisdictions of the Cities of Suisun City, Fairfield, and Vacaville, and unincorporated portions of central Solano County. Roadways proposed for improvements in the corridor could include Peabody Road, Leisure Town Road, Vanden Road, Cement Hill Road, Huntington Drive, Air Base Parkway, and/or Walters Road, including a possible extension of Walters Road north of its existing terminus. These existing roadway segments are depicted on Figure 1-2. The project also includes safety improvements such as the provision of roadway medians, traffic signals, shoulders, separate turn lanes, railroad grade separations, and separate bike lanes/pedestrian paths, and landscaping.

Several different packages of improvements, referred to as the “build alternatives”, have been formulated to meet the needs of the project objectives. In addition, NEPA requires the consideration of a “no-build” alternative, the purpose of which is to disclose the effects of doing nothing. Each of the four build alternatives described in this chapter has independent utility, meaning that the proposed roadway improvements can be implemented for any alternative and that completion of other projects would not be required in order to realize the operational benefits of the specific alternative. In addition, the four build alternatives have been designed to complement future planned transportation projects. None of the four build alternatives would restrict consideration of these future projects. The following analysis discusses each of the alternatives in further detail and identifies a preferred alternative for the project.

2.2 Alternative Development Process

The *Jepson Parkway Concept Plan* (Concept Plan) was developed by the Solano Transportation Authority (STA), Fairfield, Suisun City, Vacaville, and Solano County to improve local traffic in central Solano County and to encourage the linkage between transportation and land use. Dialogue was facilitated between various stakeholders of the project, including developers; neighborhood groups; STA; the Cities of Fairfield, Suisun City, and Vacaville; Solano County; the Metropolitan Transportation Commission (MTC); and community representatives, to ensure that the Concept Plan reflected community feedback and priorities.

In addition to the alternative described in the Concept Plan, additional project alternatives were suggested by community members at a public scoping meeting conducted in August 2000. In September 2000, STA, Caltrans, the Federal Highway Administration (FHWA), the U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service (USFWS), National Oceanic Atmospheric Administration Marine Fisheries Service (NOAA Fisheries), and U.S. Environmental Protection Agency (EPA) began the NEPA/404 integration process. Pursuant to the NEPA/404 integration memorandum of understanding (MOU), the NEPA/404 group considered a full range of alternatives using existing information sources and limited field surveys. This effort included baseline analyses of several action alternatives, including the project identified in the Concept Plan. The NEPA/404 group conducted a screening process that considered 39 factors under six headings. These headings included natural environmental effects, physical environmental effects, community effects, transportation effectiveness, engineering feasibility, and financial feasibility. The alternatives were rated for each factor using a qualitative range of + + + (*very positive effect*) to - - - (*very negative effect*). The matrix ratings reflected the group's understanding of the potential effects of the different alternatives based on readily available information. As a result of this consultation process, 6 of 11 alternatives that were taken into consideration during the screening process were recommended for detailed analysis in the EIS. After further detailed field reviews, the list of six alternatives was eventually narrowed to five, including a no-build alternative and four build alternatives. This section describes the proposed action and the design alternatives that were developed to achieve the project purpose and need while avoiding or minimizing environmental impacts. The alternatives are described below.

The project is in Solano County between Interstate 80 (I-80) in Vacaville in the north and State Route (SR) 12 in Suisun City in the south. The approximately 12-mile corridor, referred to as the Jepson Corridor, is located within the jurisdictions of the Cities of Suisun City, Fairfield, and Vacaville, and unincorporated portions of central Solano County. The Jepson Parkway Project would upgrade and link a series of existing local two- and four-lane roadways (as well as construct an extension of an existing roadway under one alternative) to provide a four- to six-lane north-south travel route for residents who face increasing congestion when traveling between jurisdictions in central Solano County.

The purpose of the proposed action is to provide roadway improvements that create a safe, environmentally-conscious route for local traffic through central Solano County. The project is designed to meet objectives of the *Jepson Parkway Concept Plan* (Concept Plan), prepared by STA. In accomplishing the project purpose, the Jepson Parkway Project would overcome a number of shortcomings and deficiencies in the existing patchwork of road segments. The project purpose and need is described in detail in Chapter 1, Purpose and Need.

2.3 Project Alternatives

The five project alternatives evaluated in this EIS include the following:

- Alternative A: No Build (No Action)
- Alternative B: Leisure Town Road (Segments B1 to B5)–Vanden Road (Segment B6)–Cement Hill Road (Segment B7)–Walters Road Extension (Segment B8)–Walters Road (Segments B9 and B10)

- Alternative C: Leisure Town Road (Segment C1 to C5)–Vanden Road (Segment C6)–Peabody Road (Segment C7)–Air Base Parkway (Segment C8)–Walters Road (Segments C9 and C10)
- Alternative D: Leisure Town Road (Segment D1 to D5)–Vanden Road (Segment D6)–Peabody Road (Segment D7)–Huntington Drive (Segment D8)–Walters Road (Segments D9 and D10)
- Alternative E: Peabody Road (Segments E1 to E5)–Air Base Parkway (Segment E6)–Walters Road (Segment E7 and E8)

Figures 2-1 to 2-5 show the locations of the four build alternatives, the roadway segments that make up each alternative, the number of proposed lanes on these roadway segments, and typical cross sections for each of the project segments. The segments represent the portions of the corridor as they were identified in the Concept Plan and on subsequent engineering/design drawings. The segments consist of the following (from north to south).

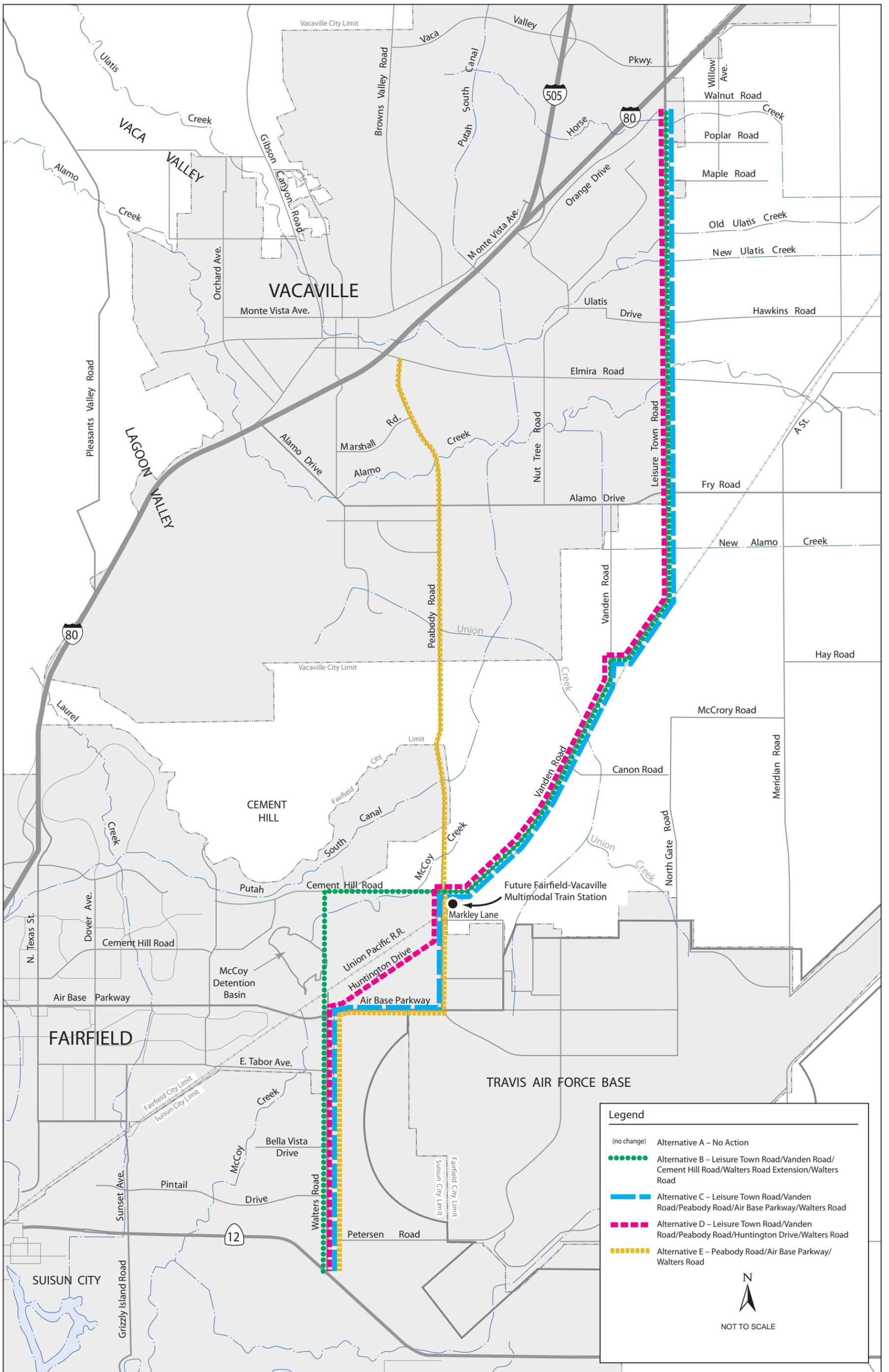
- Alternative B
 - Segment B1, Leisure Town Road from Orange Drive to south of Poplar Road
 - Segment B2, Leisure Town Road from south of Poplar Road to Sequoia Drive
 - Segment B3, Leisure Town Road from Sequoia Drive to New Ulatis Creek
 - Segment B4, Leisure Town Road from New Ulatis Creek to Alamo Drive
 - Segment B5, Leisure Town Road from Alamo Drive to Vanden Road
 - Segment B6, Vanden Road from Leisure Town Road to Peabody Road
 - Segment B7, Cement Hill Road from Peabody Road to Walters Road Extension
 - Segment B8, Walters Road Extension from Cement Hill Road to Air Base Parkway
 - Segment B9, Walters Road from Air Base Parkway to East Tabor Avenue
 - Segment B10, Walters Road from East Tabor Avenue to SR 12
- Alternative C
 - Segment C1, Leisure Town Road from Orange Drive to south of Poplar Road
 - Segment C2, Leisure Town Road from south of Poplar Road to Sequoia Drive
 - Segment C3, Leisure Town Road from Sequoia Drive to New Ulatis Creek
 - Segment C4, Leisure Town Road from New Ulatis Creek to Alamo Drive
 - Segment C5, Leisure Town Road from Alamo Drive to Vanden Road
 - Segment C6, Vanden Road from Leisure Town Road to Peabody Road
 - Segment C7, Peabody Road from Cement Hill Road/Vanden Road to Airbase Parkway
 - Segment C8, Airbase Parkway from Peabody Road to Walters Road
 - Segment C9, Walters Road from Air Base Parkway to East Tabor Avenue
 - Segment C10, Walters Road from East Tabor Avenue to SR 12

- Alternative D
 - Segment D1, Leisure Town Road from Orange Drive to south of Poplar Road
 - Segment D2, Leisure Town Road from south of Poplar Road to Sequoia Drive
 - Segment D3, Leisure Town Road from Sequoia Drive to New Ulatis Creek
 - Segment D4, Leisure Town Road from New Ulatis Creek to Alamo Drive
 - Segment D5, Leisure Town Road from Alamo Drive to Vanden Road
 - Segment D6, Vanden Road from Leisure Town Road to Peabody Road
 - Segment D7, Peabody Road from Cement Hill Road/Vanden Road to Huntington Drive
 - Segment D8, Huntington Drive from Peabody Road to Walters Road
 - Segment D9, Walters Road from Air Base Parkway to East Tabor Avenue
 - Segment D10, Walters Road from East Tabor Avenue to SR 12
- Alternative E
 - Segment E1, Peabody Road from Elmira Road to the Vacaville city limits
 - Segment E2, Peabody Road, from the Vacaville city limits to Putah South Canal
 - Segment E3, Peabody Road, from Putah South Canal to North Bay Aqueduct
 - Segment E4, Peabody Road from North Bay Aqueduct to Cement Hill Road/Vanden Road
 - Segment E5, Peabody Road from Cement Hill Road/Vanden Road to Air Base Parkway
 - Segment E6, Air Base Parkway from Peabody Road to Walters Road
 - Segment E7, Walters Road from Air Base Parkway to East Tabor Avenue
 - Segment E8, Walters Road from East Tabor Avenue to SR 12

It should be noted that there is a great deal of commonality among the various alternatives. For example, the two segments along existing Walters Road are common to all the build alternatives. Alternatives B, C, and D share the six segments along Leisure Town Road and Vanden Road. Alternatives C and E share both the segment along Peabody Road from Cement Hill Road/Vanden Road to Airbase Parkway and the segment along Air Base Parkway from Peabody Road to Walters Road. The five alternatives, along with preliminary widths proposed for roadway lanes, shoulders, sidewalks, and bicycle lanes, are further described below.

2.3.1 Alternative A: No Build

Alternative A is the no-build alternative. Under Alternative A, none of the proposed roadway improvements would be constructed. However, ongoing maintenance of existing roads and facilities would continue. Without the project, the need to reduce existing and future traffic congestion, improve roadway safety, accommodate planned growth, and support future multimodal transit options and bicycle and pedestrian use in Solano County would be unmet.



**Figure 2-1
Jepson Parkway Project Location**

Alternative B

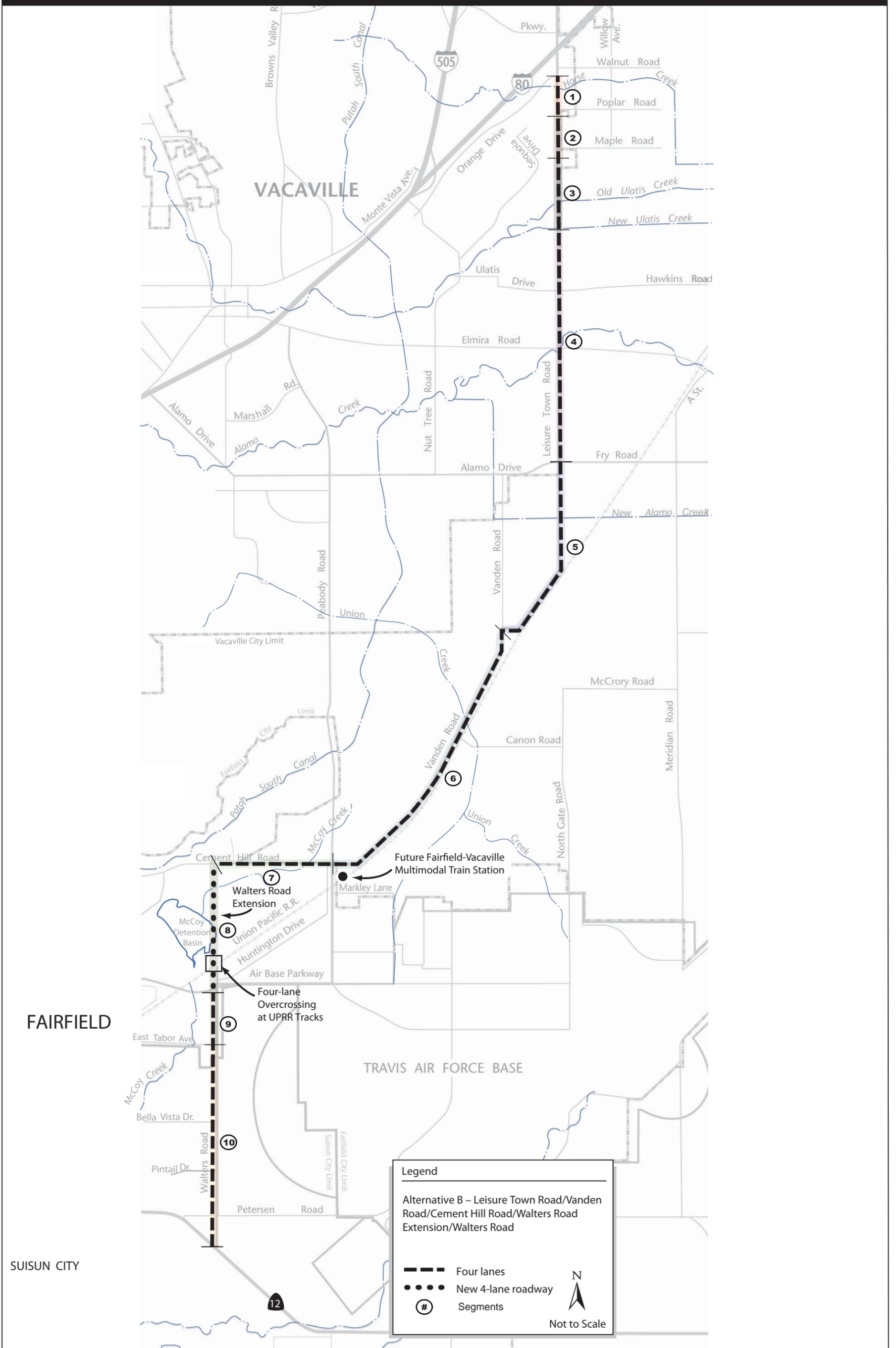


Figure 2-2
Jepson Parkway Project Alternative B

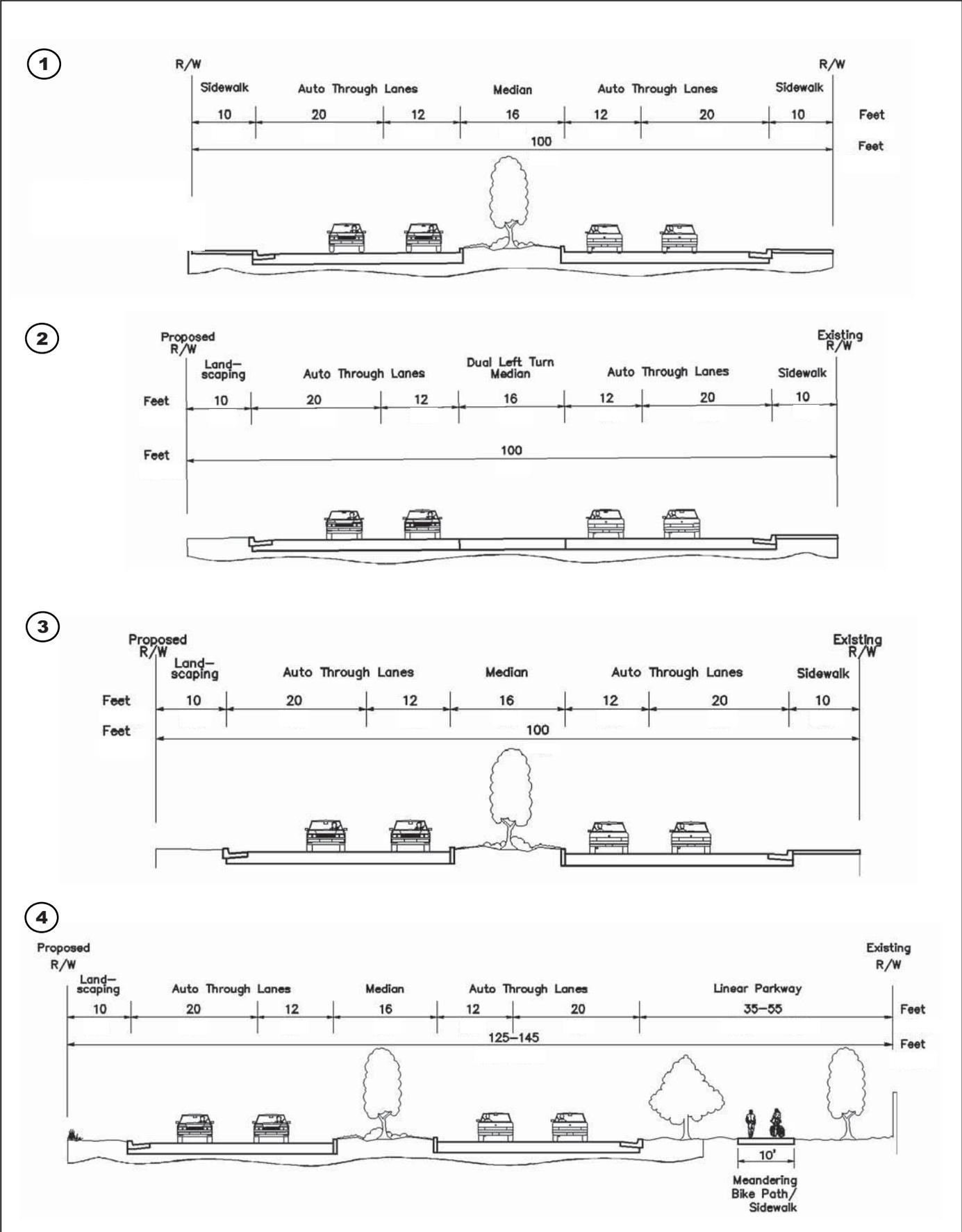
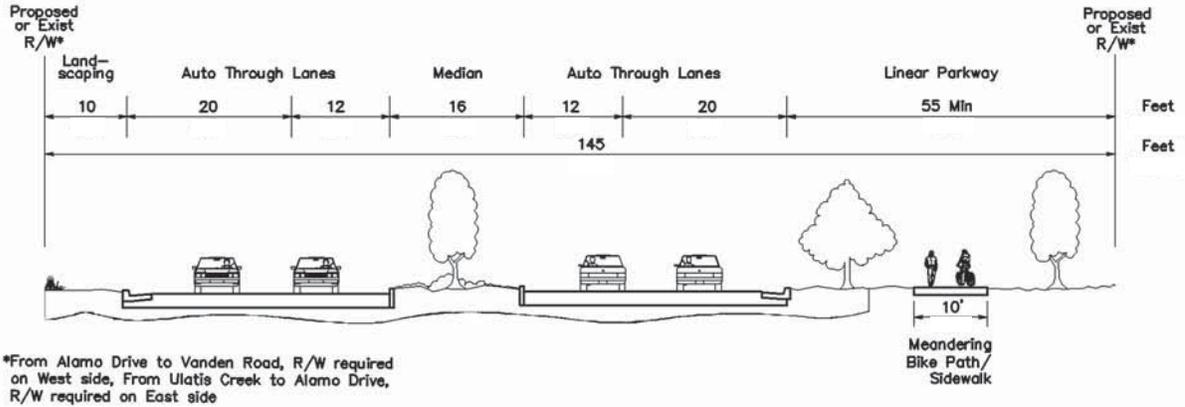
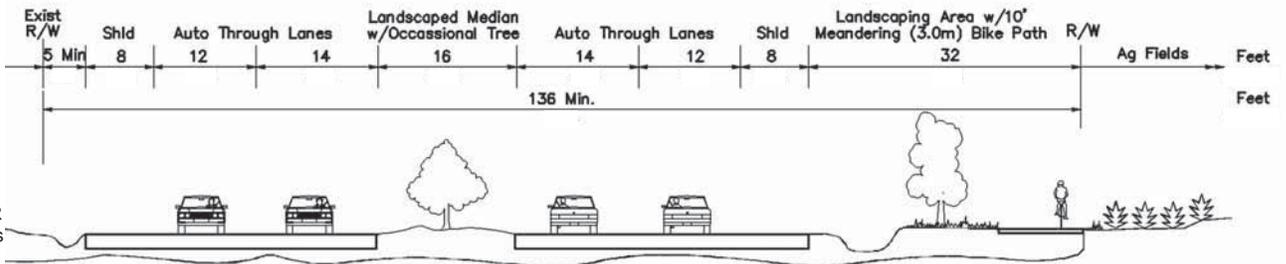


Figure 2-2A
Alternative B - Road Segments 1 to 4

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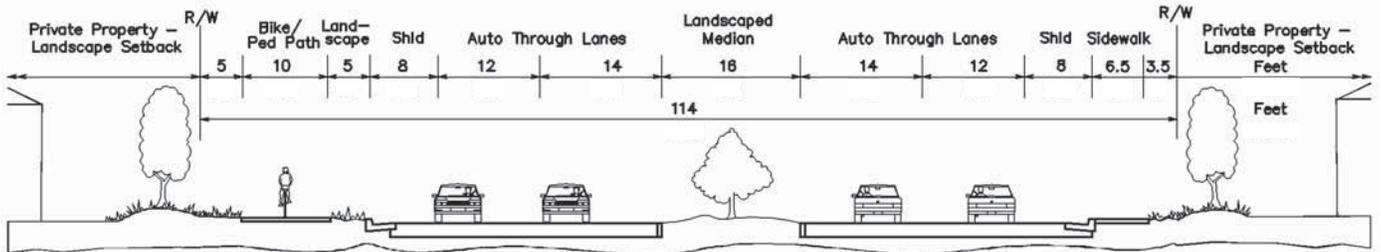
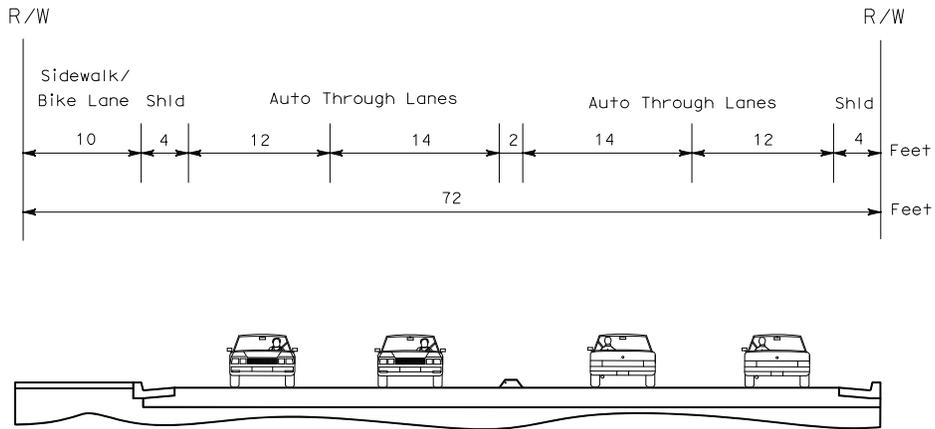
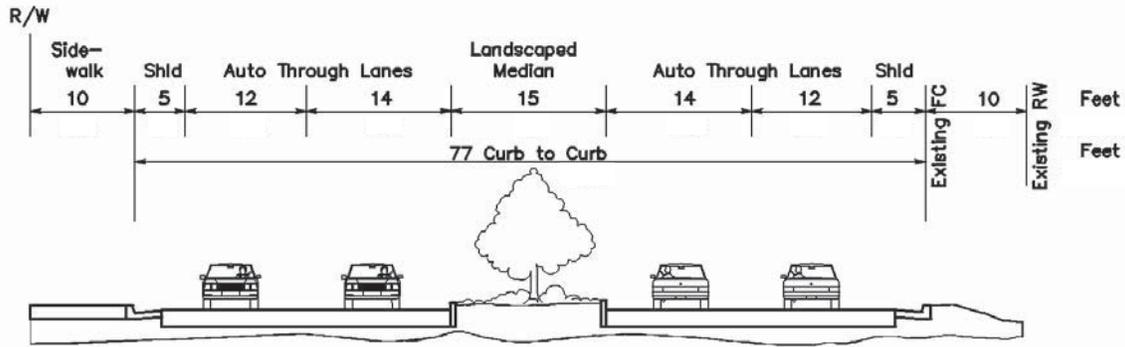


Figure 2-2B
Alternative B - Road Segments 5 to 7

8



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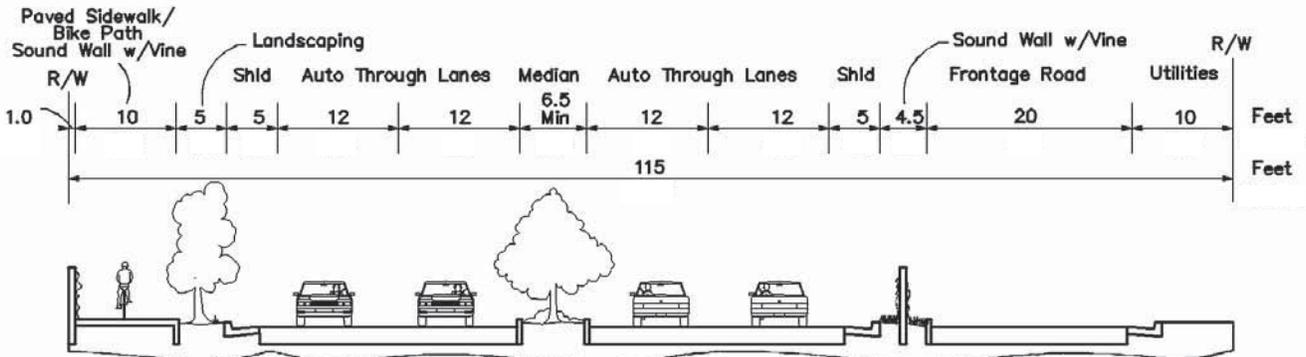


Figure 2-2C
Alternative B - Road Segments 8 to 10

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Alternative C

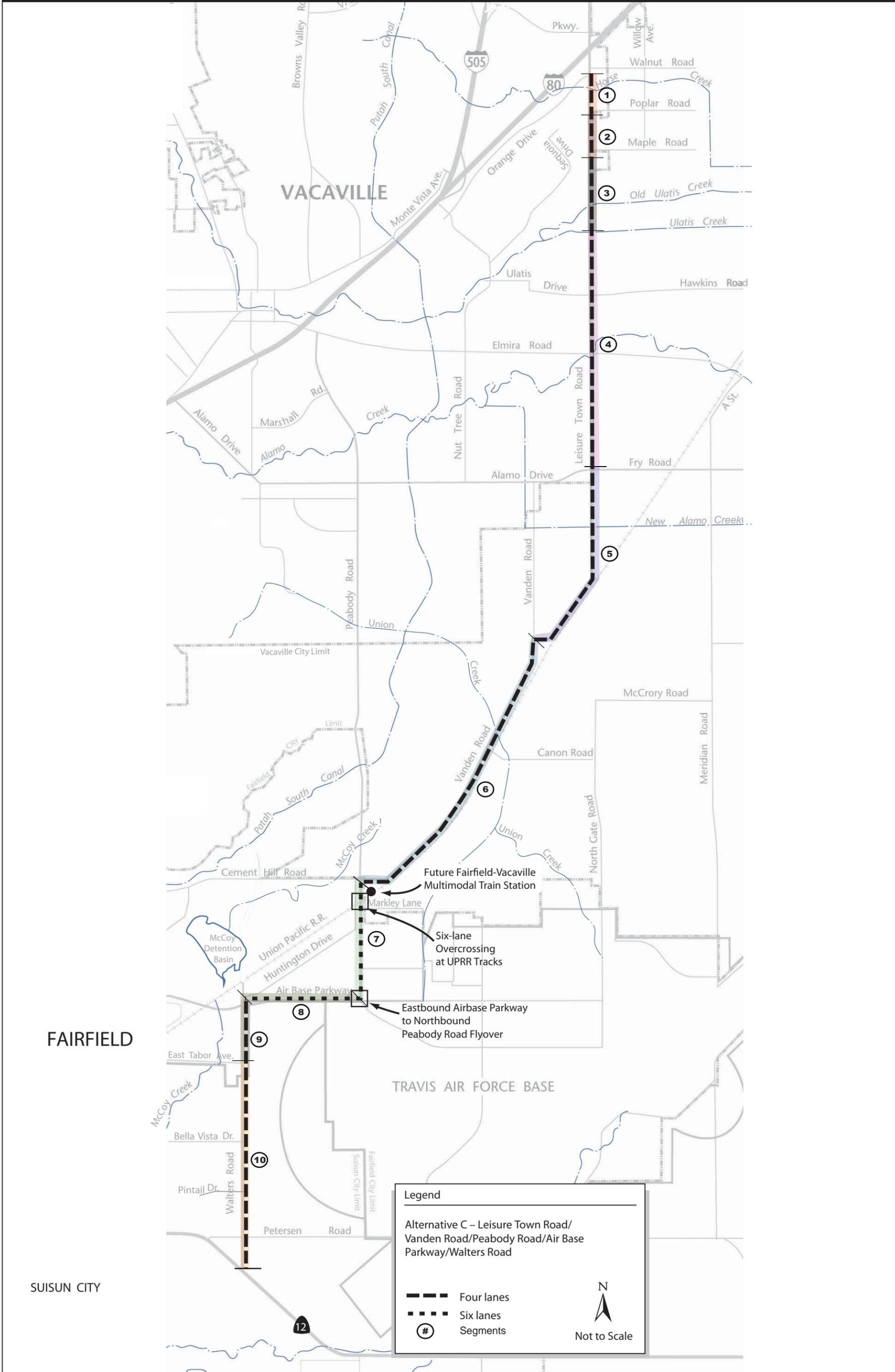
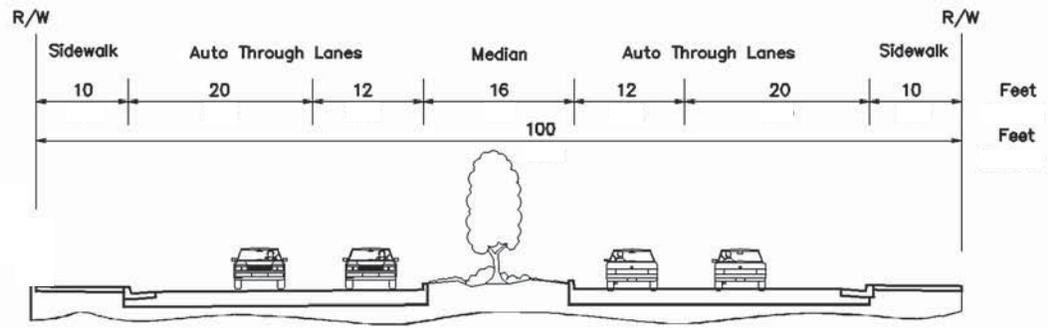
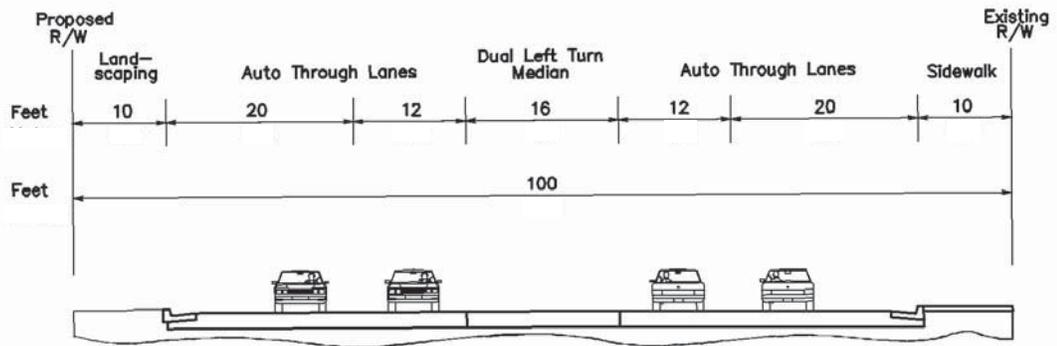


Figure 2-3
Jepsen Parkway Project Alternative C

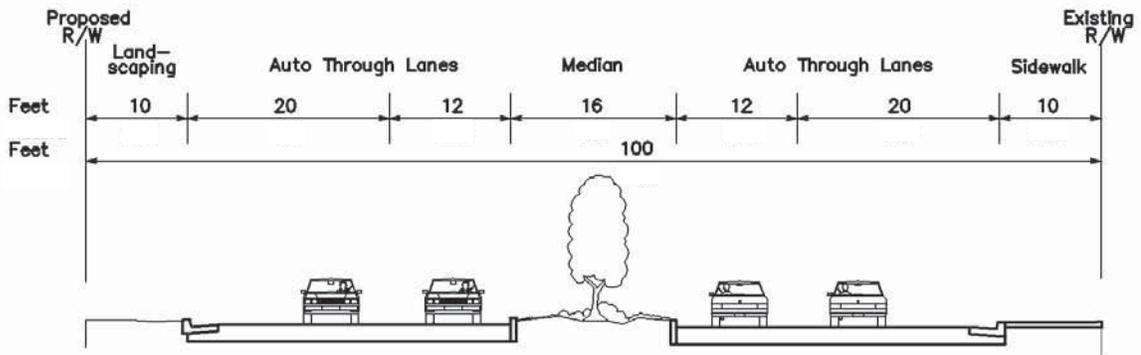
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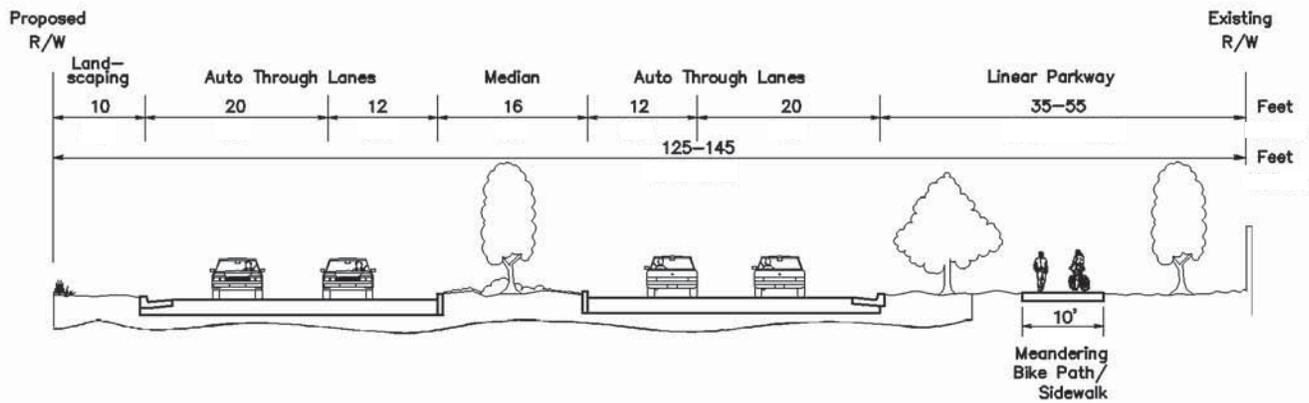
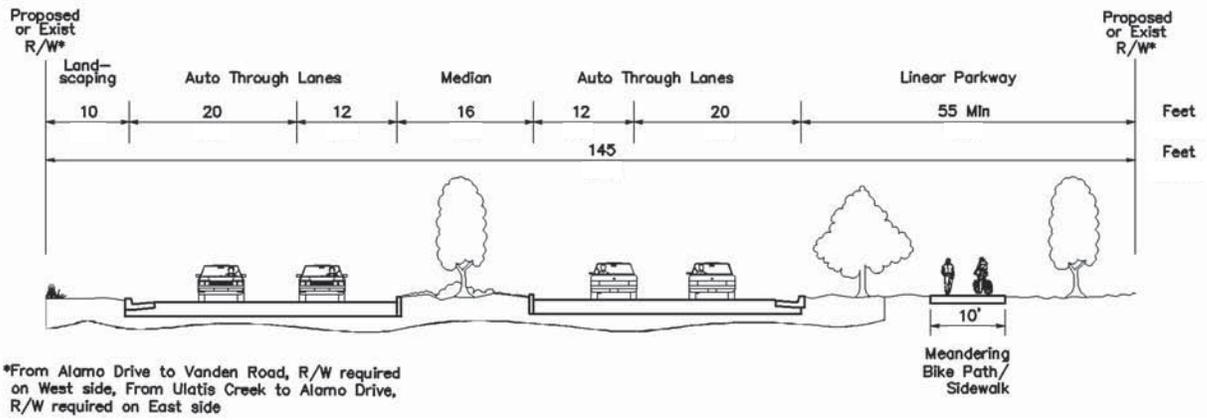
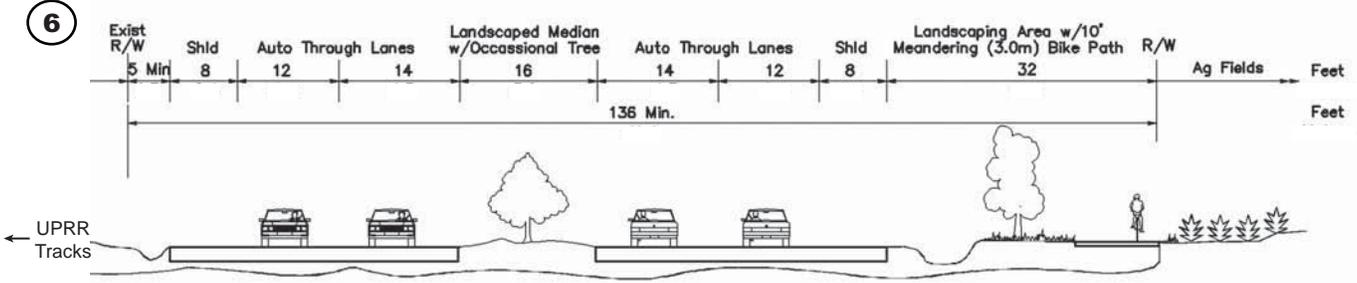


Figure 2-3A
Alternative C - Road Segments 1 to 4

5



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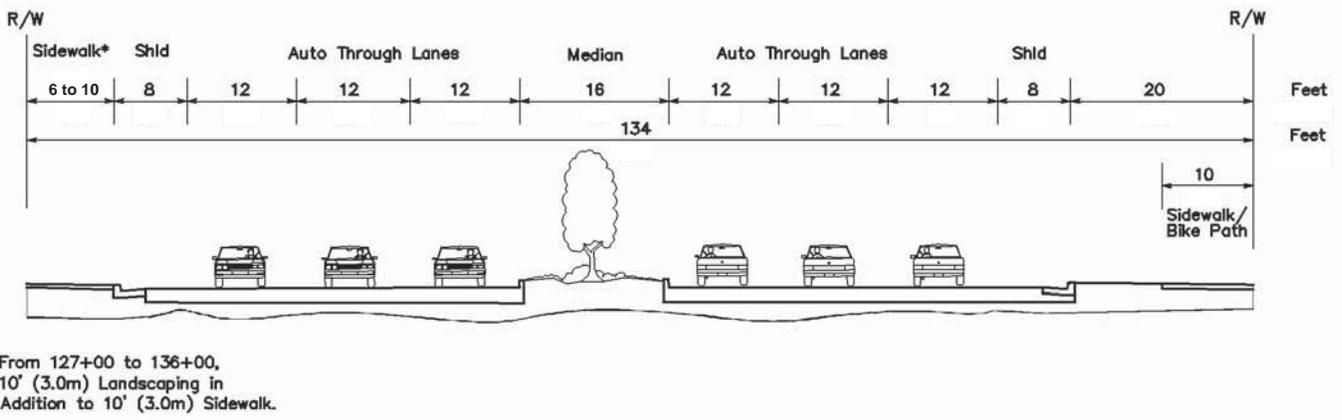


Figure 2-3B
Alternative C - Road Segments 5 to 7

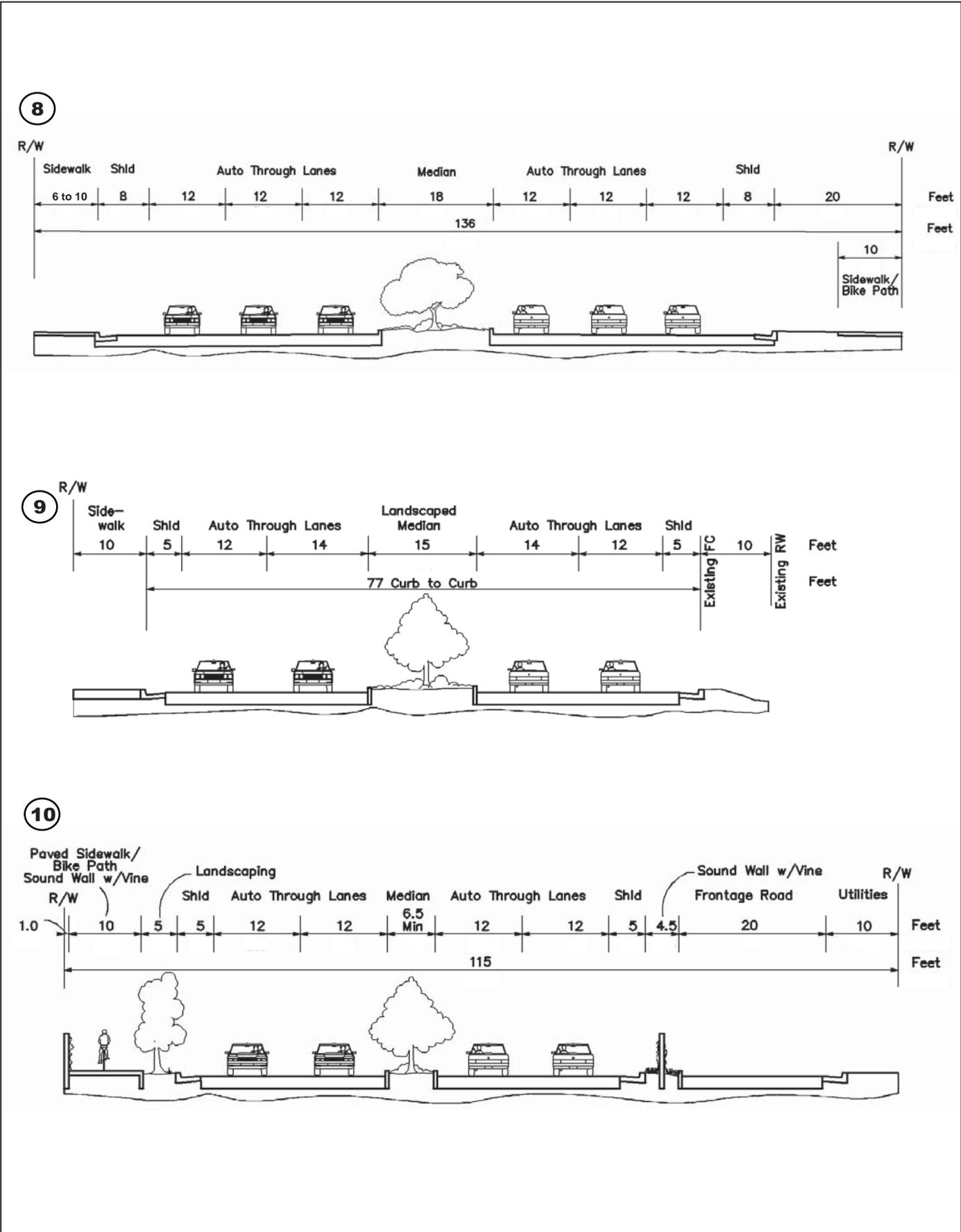
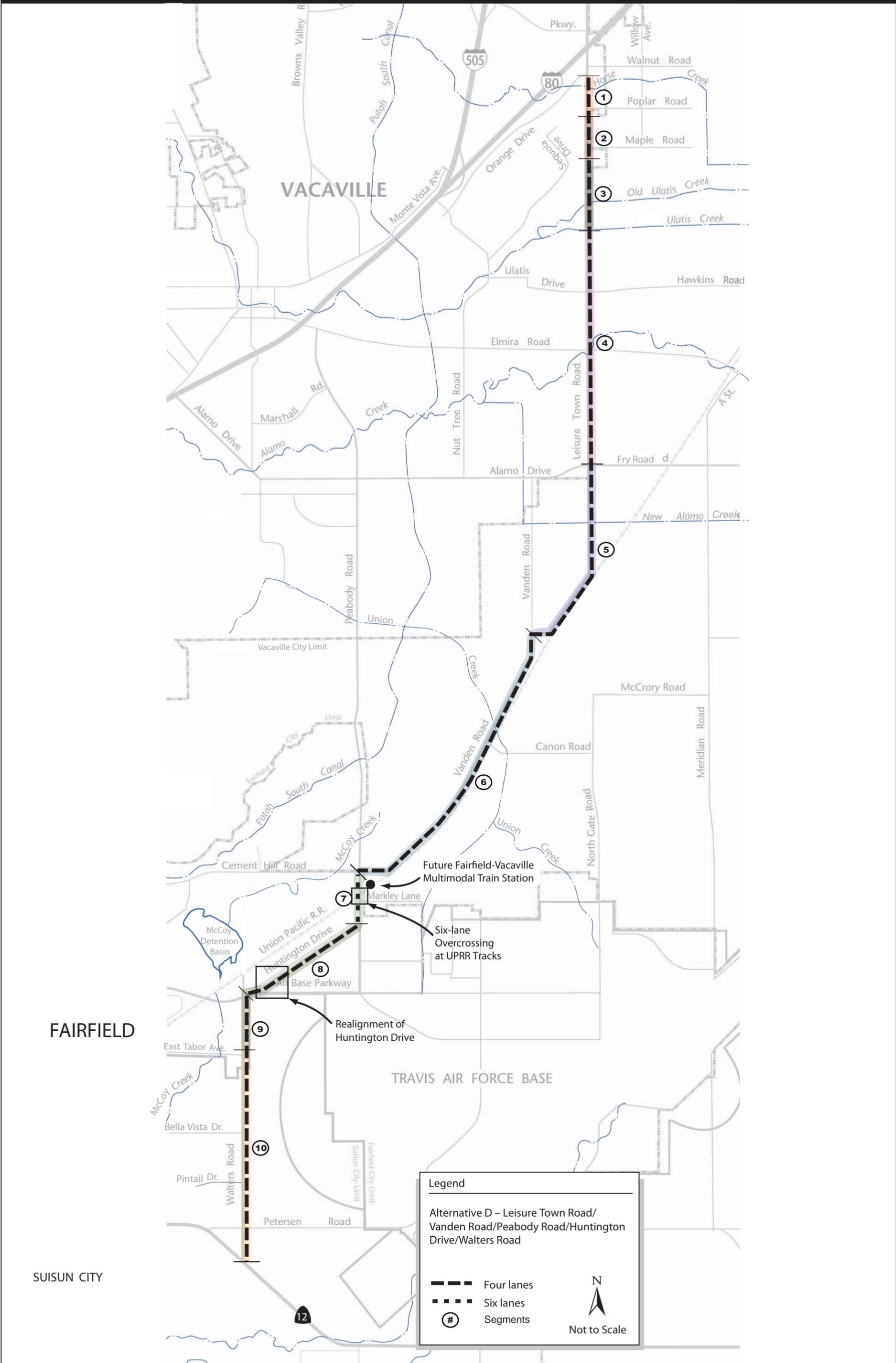


Figure 2-3C
Alternative C - Road Segments 8 to 10

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Alternative D



**Figure 2-4
Jepson Parkway Project Alternative D**

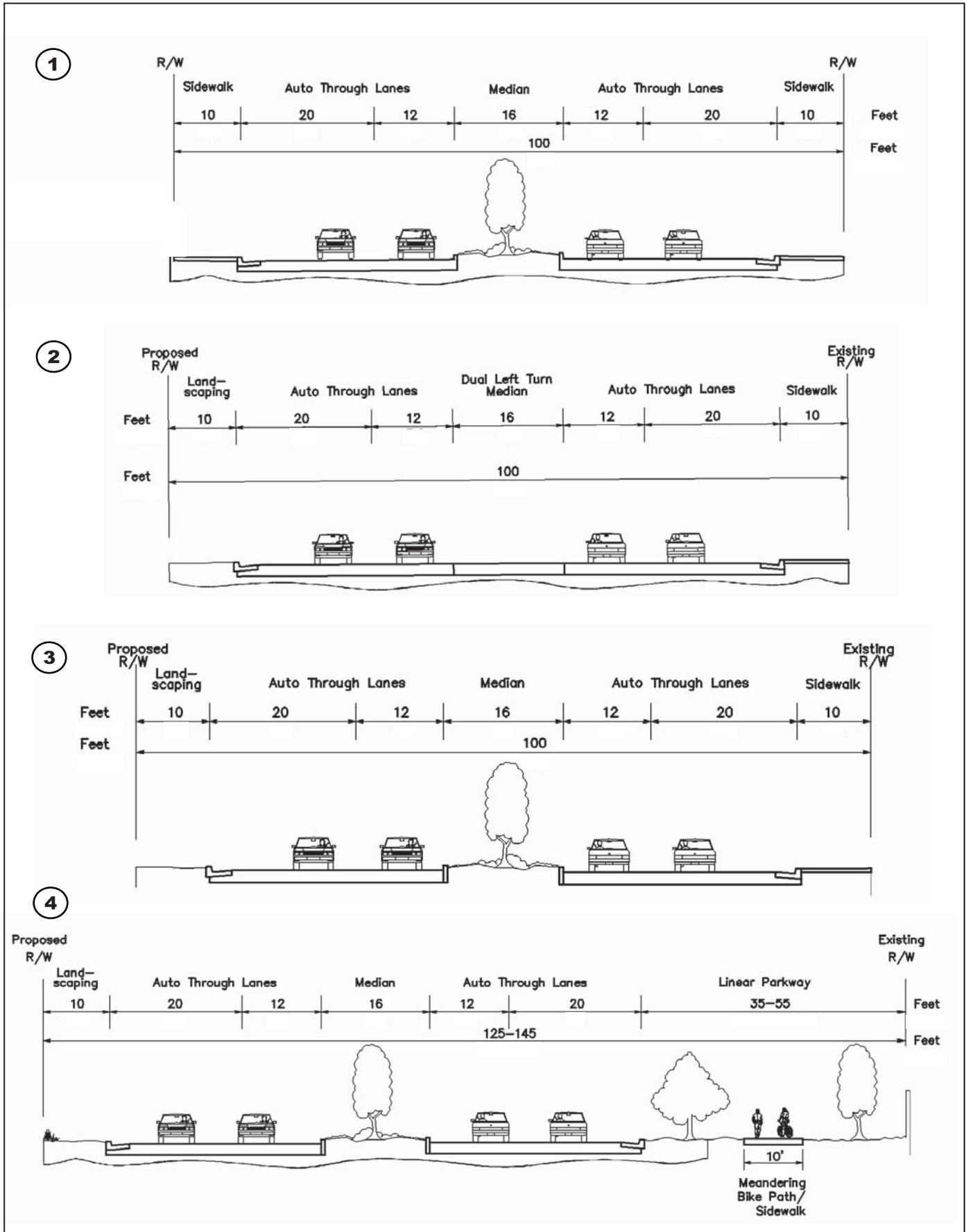


Figure 2-4A
Alternative D - Road Segments 1 to 4

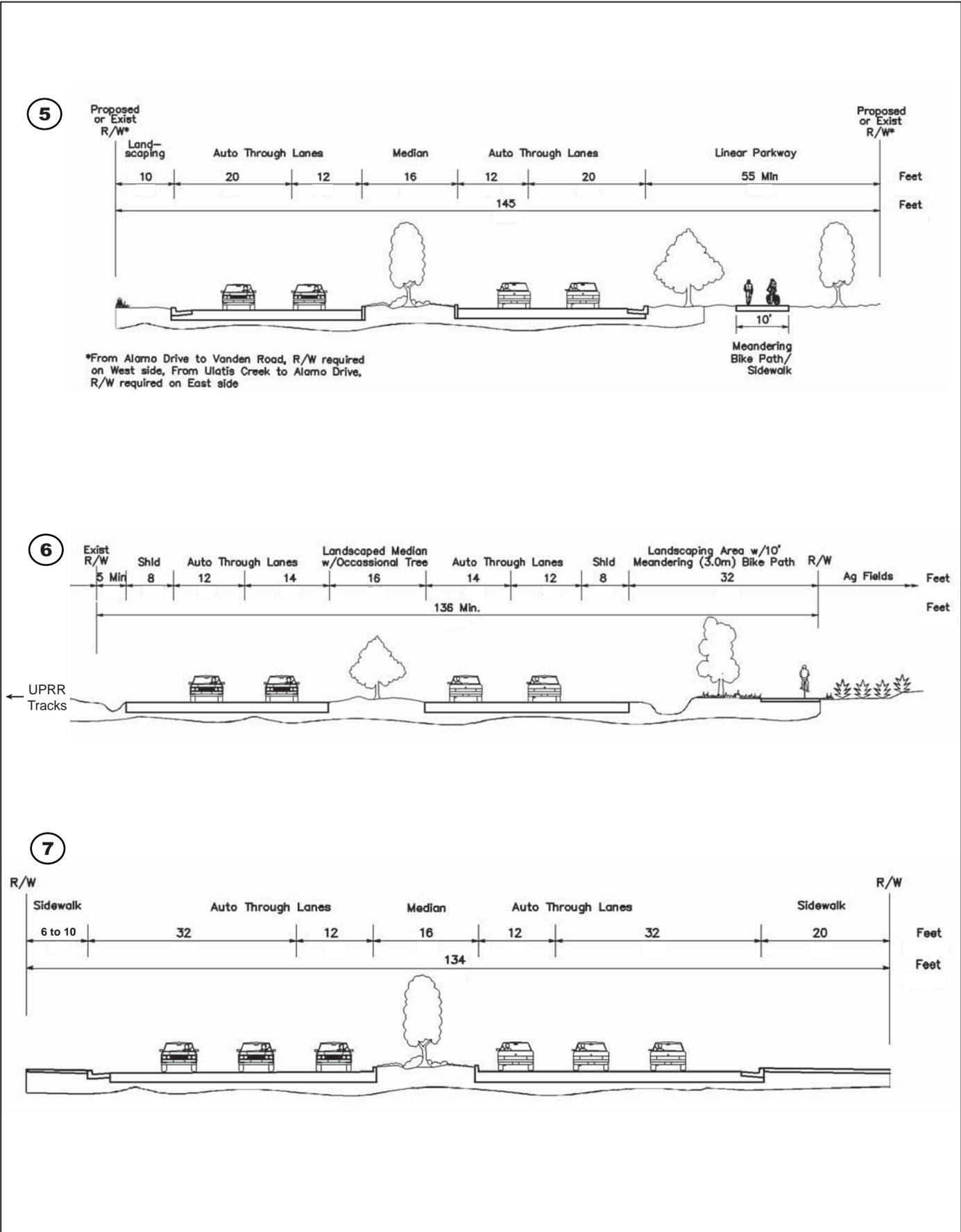
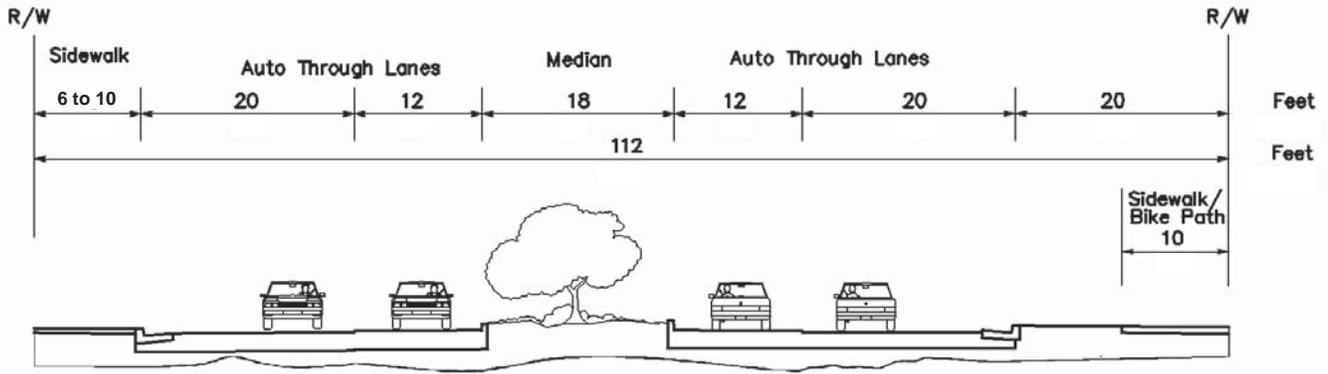
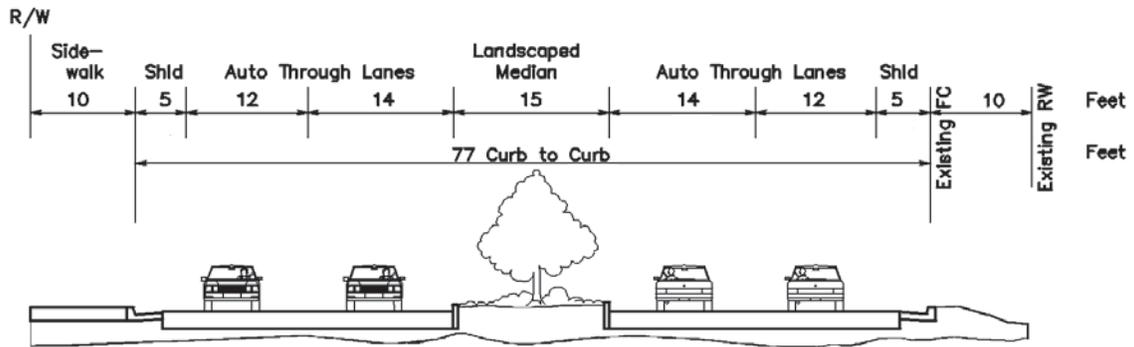


Figure 2-4B
Alternative D - Road Segments 5 to 7

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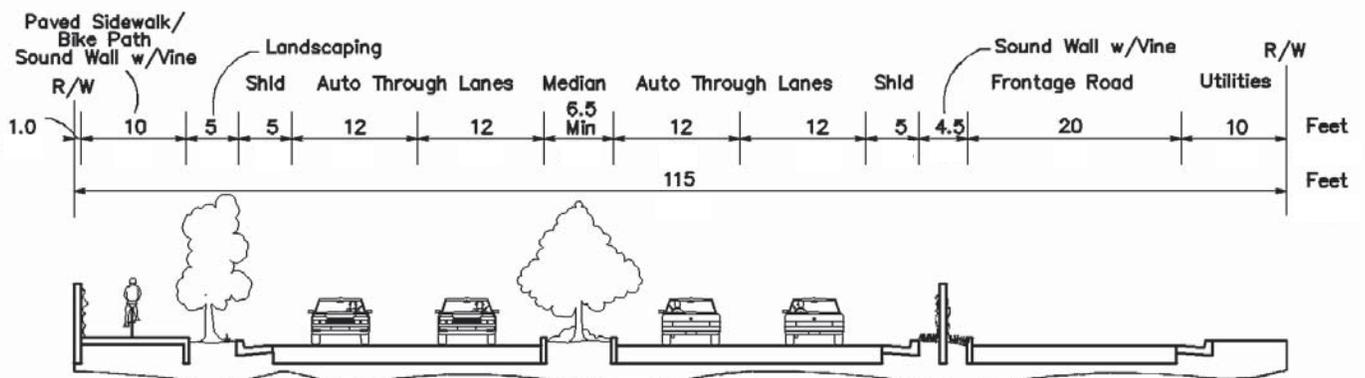
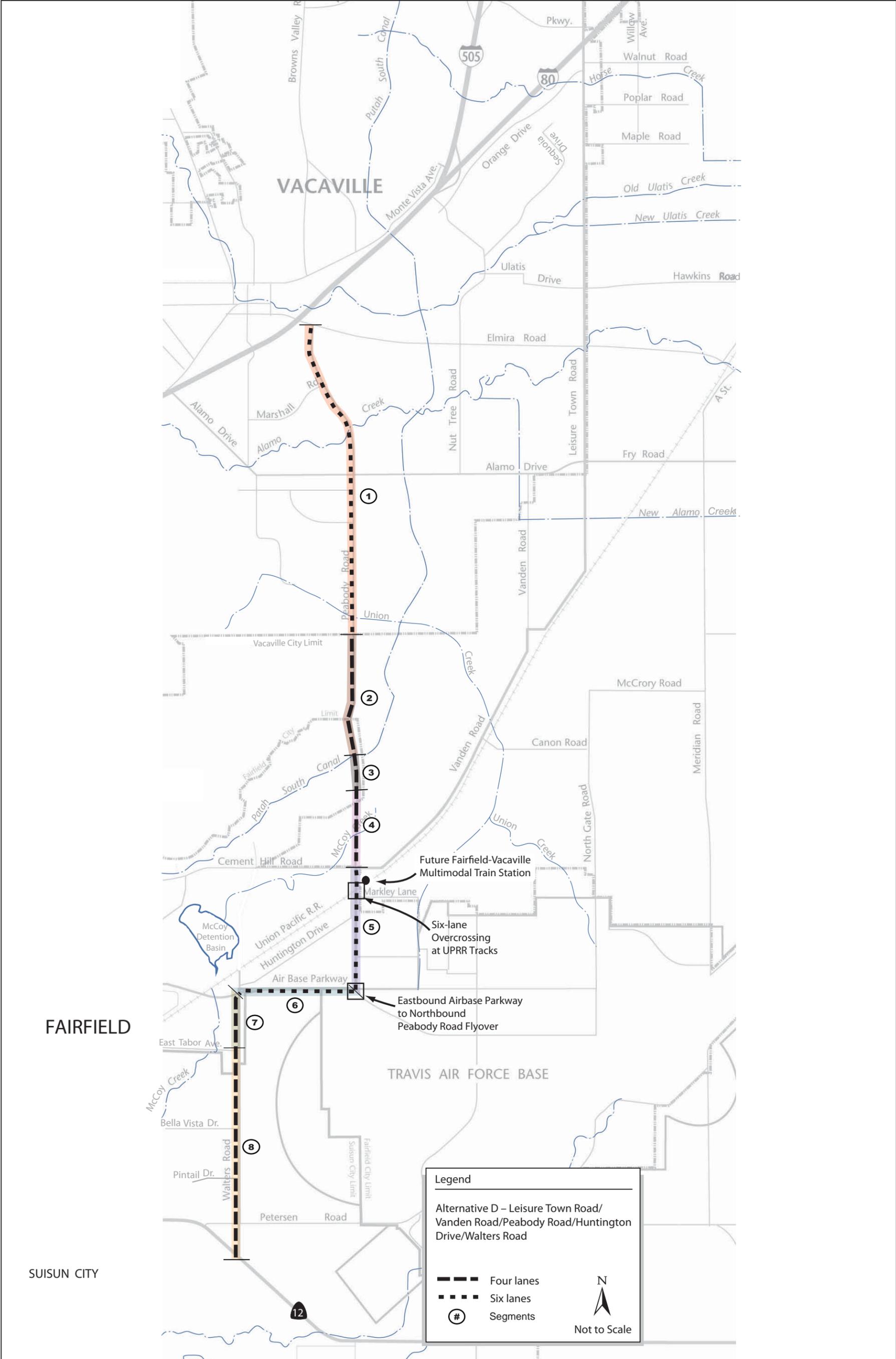


Figure 2-4C
Alternative D - Road Segments 8 to 10

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Alternative E



**Figure 2-5
Jepson Parkway Project Alternative E**

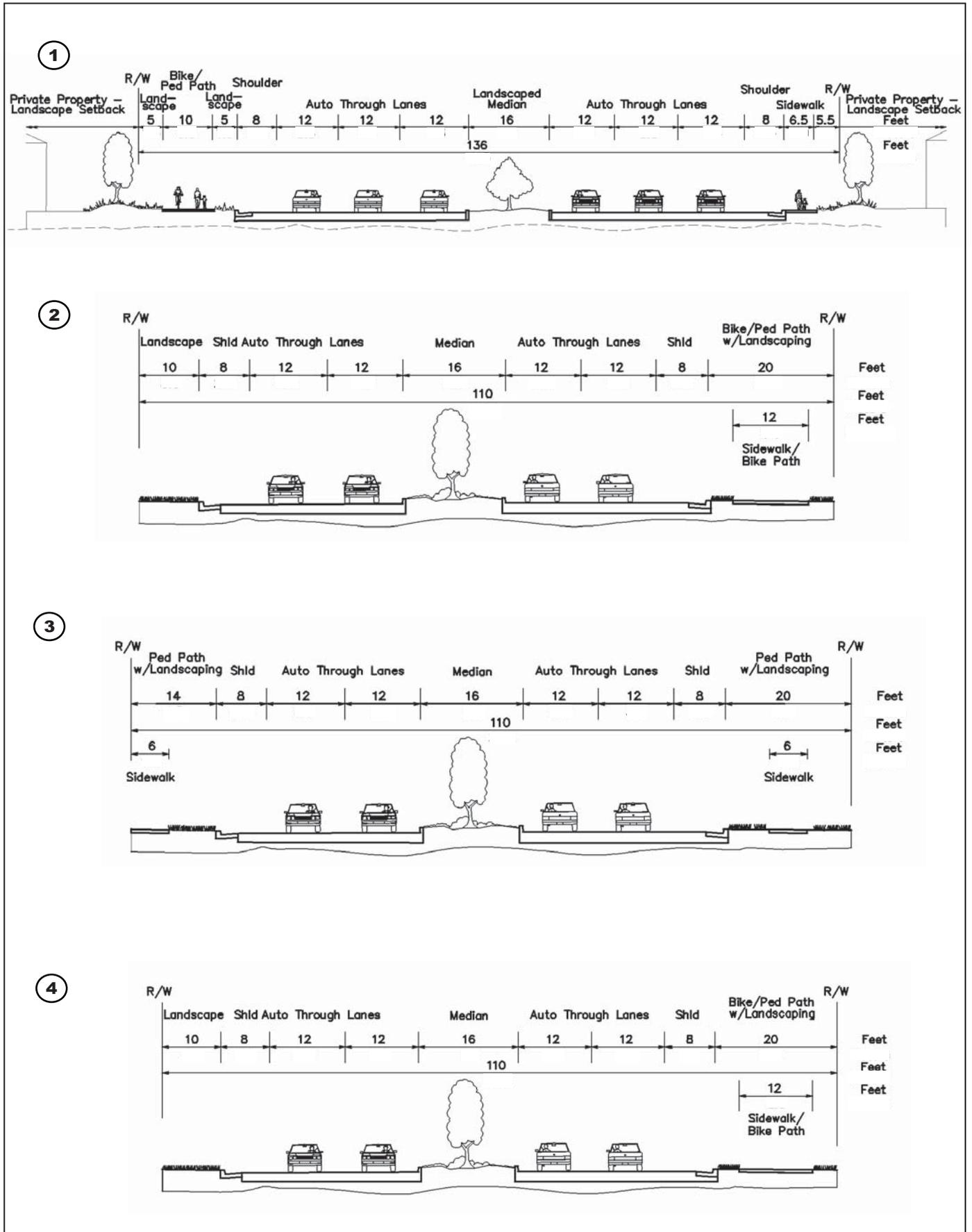


Figure 2-5A
Alternative E - Road Segments 1 to 4

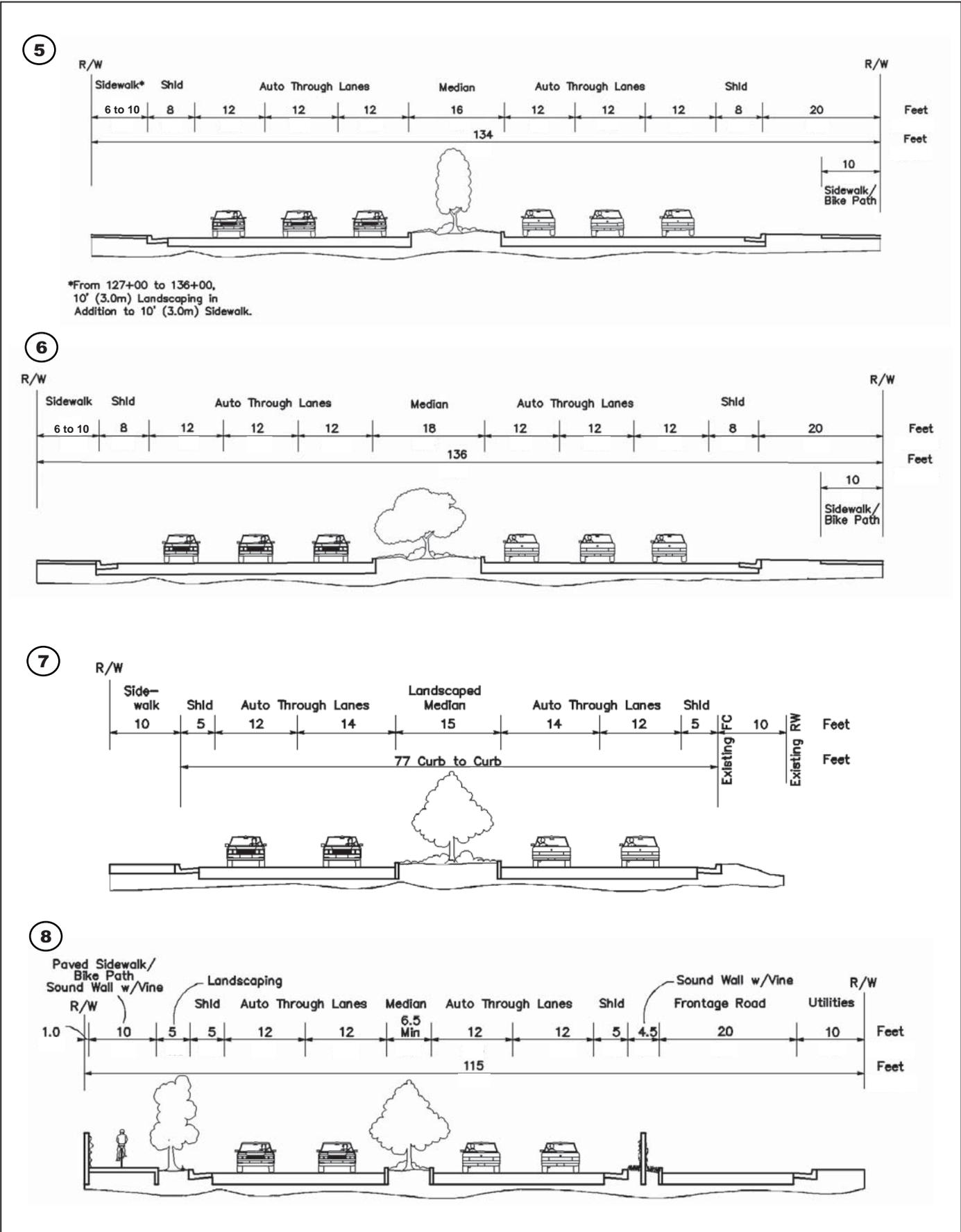


Figure 2-5B
Alternative E - Road Segments 5 to 8

2.3.2 Alternative B: Leisure Town Road–Vanden Road–Cement Hill Road–Walters Road Extension–Walters Road

Alternative B would provide a four-lane divided arterial for the entire length of the corridor and includes improvements to (from north to south) Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road (Figure 2-2). The project components for Alternative B include the widening of existing roadways along the alternative; construction of a northern extension of Walters Road between Cement Hill Road and the intersection of Air Base Parkway; a grade separation (overpass) of the Union Pacific Railroad (UPRR) mainline tracks as part of the Walters Road Extension; improvements at the Leisure Town Road crossings of Alamo Creek and New Alamo Creek; a new crossing of McCoy Creek; bicycle and pedestrian paths; landscaping; and utilities relocation.

The alignment for Alternative B begins in Vacaville on Leisure Town Road at Orange Drive. It extends south along Leisure Town Road to the intersection of Leisure Town Road and Vanden Road in unincorporated Solano County. It then extends southwest along Vanden Road to the intersection of Cement Hill Road/Vanden Road and Peabody Road in Fairfield. From here, the alignment continues west along Cement Hill Road to the intersection of Cement Hill Road and the north end of the Walters Road Extension, extends south along the Walters Road Extension to the intersection of Walters Road and Air Base Parkway, and then continues south along Walters Road in Fairfield and Suisun City to the Walters Road/SR 12 intersection.

Alternative B is supported by the City of Fairfield because it would provide an additional north/south crossing of the UPRR mainline tracks in eastern Fairfield. The proposed Walters Road Extension is approximately one mile southwest of the Peabody Road crossing. This distance is the ideal spacing for arterials. The city desires an additional crossing of the UPRR mainline tracks, as provided by Alternative B because:

- The additional crossing would provide an alternative crossing in the event the main entrance to Travis Air Force Base (AFB) is closed for security reasons and the closure backs up traffic into the adjacent Air Base Parkway/Peabody Road intersection; and
- The additional crossing and the Walters Road extension alignment would provide a valuable transportation network improvement. This would provide important redundant connections that would ease future congestion on the already heavily traveled Air Base Parkway and Peabody Road segments.
- The wider six-lane UPRR overpass needed for the other build alternatives, and the partial interchange at the Peabody Road/Vanden Road intersection, also substantially reduce the amount of land available for the Fairfield/Vacaville train station that Fairfield is planning to locate at the southeast corner of the intersection of Cement Hill Road/Peabody Road and Vanden Road.

After the public circulation period, all comments were considered, and the project development team identified a preferred alternative and made the final determination of the project's effect on the environment. Alternative B was identified as the preferred alternative. As described in further detail

in subsection 2.5, Preferred Alternative, below, similar to other build alternatives, Alternative B would affect vernal pools and other seasonal wetlands. In addition, Alternative B would impact other waters of the U.S. along the proposed Walters Road extension and Cement Hill Road. However, in consultation with the USFWS and the NEPA-404 MOU signatories, avoidance, minimization, and mitigation measures have been identified and agreed to that would achieve the appropriate balancing of resource protection, project construction, and mitigation costs to address these impact issues. The identification of Alternative B as preferred is confirmed pursuant to avoidance and minimization measures stipulated in the USFWS's no-jeopardy Biological Opinion (see Appendix J and mitigation measures BR-7, BR-8, and BR-9). The NEPA-404 MOU signatory agencies also concurred with the designation of Alternative B as the Least Environmentally Damaging Practicable Alternative (LEDPA). The signatories' letters of concurrence and/or agreement with the LEDPA determination are included in Appendix B.

With respect to the NEPA, the Department, as assigned by FHWA, will document and explain its decision regarding the identified alternative, project impacts, and mitigation measures in a Record of Decision in accordance with NEPA.

The cost estimate for Alternative B is \$155,478,200 and includes utility and right-of-way costs. Roadway improvements associated with Alternative B are further described below.

2.3.2.1 Leisure Town Road¹

Segments B1, B2, and B3

Under Alternative B, Leisure Town Road would be widened to four lanes from Orange Drive south to the New Ulatis Creek bridge, a distance of approximately 1.3 miles. The road would be widened to the east to retain the westerly right-of-way line of Leisure Town Road. This portion of the roadway would consist of curb and gutter, a 8-foot outside shoulder, and two 12-foot lanes in each direction (for a total of four lanes) separated by a 16-foot-wide median. Left-turn lanes would be provided at all local street intersections by reducing the 16-foot-wide median width. A 10-foot-wide sidewalk would be constructed on both the east and west sides of Leisure Town Road, except for the east side of Leisure Town Road between Sequoia Drive and Maple Road. Because of constrained right-of-way, sidewalks in these segments would not be separated from the roadway by a landscaped area. The median would be raised and landscaped, except near Poplar Road, where the median would be paved and striped to allow dual left-turn lanes. The right-of-way width for this section of Leisure Town Road would be approximately 100 feet.

Segment B4

South from the New Ulatis Creek bridge to Alamo Drive, a distance of approximately two miles, Leisure Town Road would continue to be widened to four lanes under Alternative B. The roadway would continue to be widened to the east to retain the westerly right-of-way line. This portion of the

¹ Roadway improvements described for Leisure Town Road under Alternative B would be similar under Alternative C and Alternative D.

roadway would consist of curb and gutter, a 8-foot outside shoulder, two 12-foot lanes in each direction (for a total of four lanes) separated by a 16-foot-wide raised, and landscaped median. Left-turn lanes would be provided at all local street intersections by reducing the 16-foot-wide median width.

A 10-foot-wide landscaped area would be provided on the east side of Leisure Town Road in this segment. On the west side, the existing southbound lane and shoulder would be removed and reconstructed as a part of a linear park to buffer existing residential uses. The 35- to 55-foot-wide linear park would consist of landscaping and a 10-foot-wide meandering bicycle and pedestrian path that would link to the existing Alamo Creek bicycle path just south of the intersection of Leisure Town and Elmira Roads. The bicycle and pedestrian path would be separated from the roadway by at least five feet and from the back of the right-of-way line by at least two feet. The right-of-way width for this section of Leisure Town Road would be 125 feet to 145 feet.

Roadway improvements in this segment would include the widening of approximately 300 feet of Elmira Road east of Leisure Town Road to conform to the reconfigured Leisure Town Road/Elmira Road intersection.

Segment B5

From the signalized intersection at Alamo Drive southwest to the New Alamo Creek the roadway widening would be to the east, similar to segment B4. From New Alamo Creek southwest to the Vanden Road intersection, a distance of approximately 1.7 miles, Leisure Town Road would be widened to the west approximately 85 feet to retain the existing southeasterly right-of-way. The alignment shifts to the east 650 feet south of Alamo Drive to align with the existing westerly right-of-way north of Alamo Drive. This portion of the segment would consist of curb and gutter, a 8-foot outside shoulder, a 12-foot outside lane, and a 12-foot inside lane in each direction (for a total of four lanes) separated by a 16-foot-wide raised, landscaped median. A 10-foot-wide landscaped area would be provided on the southeasterly side of Leisure Town Road, and a minimum 55-foot-wide linear park would be provided on the northwesterly side. The linear park would consist of a 10-foot-wide meandering bicycle and pedestrian path and 45 feet of landscaped area. The bicycle and pedestrian path would be separated from the roadway by at least five feet and from the back of the right-of-way line by at least two feet. The right-of-way width for this section of Leisure Town Road would be 145 feet.

Leisure Town Road crosses Horse Creek, Old Ulatis Creek, New Ulatis Creek, Alamo Creek, and New Alamo Creek. Existing bridges crossing Horse Creek, Old Ulatis Creek, and New Ulatis Creek have recently been upgraded and would not need additional work to accommodate implementation of Alternative B. However, the roadway crossings of Alamo Creek and New Alamo Creek would be widened as part of Alternative B. The bridge over New Alamo Creek would be widened approximately 50 feet to the west and the existing box culvert at Alamo Creek would either be extended or replaced with large culverts.

2.3.2.2 Vanden Road²

Segment B6

From the intersection of Leisure Town Road and Vanden Road, the alignment of Alternative B continues southwest on Vanden Road to the intersection of Peabody Road. Under Alternative B, Vanden Road between Leisure Town Road and the beginning of the Vanden Road realignment portion (to the old railroad grade approximately one half mile northeast of the Peabody Road intersection) would be widened to the west of the existing roadway right-of-way to include a combination 10-foot-wide bicycle and pedestrian path and landscaped strip. At the signalized intersection of Vanden and Leisure Town Roads, the improvements would be extended 500 feet north of the intersection to conform to the existing two-lane Vanden Road section. This portion of Vanden Road would consist of an 8-foot outside shoulder, two 12-foot lanes (for a total of four lanes), and a 2-foot-wide shoulder inside lane in each direction separated by a 16-foot-wide landscaped median. No outside curb and gutter or median curb would be constructed except within approximately 400 feet of the Vanden Road/Leisure Town Road and Vanden Road/Canon Road intersections, and within approximately 2,500 feet of intersection of Cement Hill Road/Vanden Road and Peabody Road on each side. The median would be paved adjacent to the residential units south of Leisure Town Road to provide left-turn access to and from Vanden Road. A 20-foot-wide landscaped area would be provided on the southeasterly side of Vanden Road, and a minimum 32-foot-wide area would be provided on the northwesterly side, consisting of a 10-foot-wide meandering bicycle and pedestrian path and landscaped area. The bicycle and pedestrian path would be separated from the roadway by at least 15 feet and from the back of the right-of-way line by at least two feet. The right-of-way width for this section of Vanden Road would be 136 feet.

The intersection of Vanden and Canon Roads would be improved to accommodate turn lanes, northbound acceleration and deceleration lanes, and the bicycle and pedestrian path connection. A traffic signal would also be installed at this intersection. The new traffic signal would be interconnected with the railroad crossing arms. Minor improvements at the railroad crossing on Cannon Road would be completed. The west approach of the intersection of Vanden Road and Leisure Town Road would be constructed to allow for a connection to the future Foxboro Parkway³ (opposite Leisure Town Road). Vanden Road would be raised near Union Creek and a new series of concrete box culverts or short bridge would be constructed to remove the roadway from the floodplain.

Urban landscaping within this segment would be implemented from the intersection of Peabody Road and Cement Hill Road/Vanden Road to approximately 3,000 feet north along Peabody Road. Rural landscaping would be implemented in the remainder of the segment.

² Roadway improvements described for Vanden Road under Alternative B would be similar under Alternative C and Alternative D.

³ The City of Vacaville General Plan calls for the extension of Foxboro Parkway between Nut Tree Road and Vanden Road (Vacaville General Plan Policy 2.3-I13). The extension is intended to support development of the South Vanden Area as defined in the General Plan, and would occur independent of the Jepson Parkway Project, subject to its own separate environmental evaluation.

2.3.2.3 Cement Hill Road

Segment B7

The Alternative B alignment turns west onto Cement Hill Road at the intersection of Cement Hill Road/Vanden Road and Peabody Road. Cement Hill Road would be widened from the existing two lanes to four lanes from 600 feet west of its intersection with Peabody Road west to the proposed intersection with the Walters Road Extension, a distance of approximately 0.75 mile. Under Alternative B, the widening would be accomplished by widening Cement Hill Road to the south approximately 34 feet and retaining the existing right-of-way on the north side. This portion of Cement Hill Road would consist of a 8-foot outside shoulder, a 12-foot outside lane, and a 14-foot inside lane in each direction (for a total of four lanes) separated by a 16-foot-wide raised, landscaped median. A 6.5-foot-wide sidewalk would be constructed adjacent to the back of the curb on the north side of Cement Hill Road, with a 3.5-foot landscaped strip between the sidewalk and the right-of-way line. A 10-foot-wide concrete bicycle and pedestrian path would be constructed on the south side of Cement Hill Road, separated from the face of curb by a 5-foot landscaped strip. An additional 5-foot-wide landscaped strip would be located between the bicycle and pedestrian path and the southerly right-of-way line. Driveways would be provided for all existing properties on the north side of Cement Hill Road. Access from north-side businesses or unsignalized local roads to eastbound Cement Hill Road would be restricted to right-turn movements only. The right-of-way width on this portion of Cement Hill Road would be 114 feet.

2.3.2.4 Walters Road Extension

Segment B8

Approximately 0.75 miles west of the intersection of Cement Hill Road/Vanden Road and Peabody Road, the Alternative B alignment turns south at a point just east of the former Sacramento Northern Railroad right-of-way. The former Sacramento Northern Railroad right-of-way is designated as a future linear park in the City of Fairfield's *Peabody-Walters Master Plan*.⁴ The northerly portion of this alignment is located adjacent to the originally planned Fairfield sports complex, shown in the *Peabody-Walters Master Plan*. The new roadway, referred to as the Walters Road Extension in the Fairfield General Plan, would be a four-lane roadway (two lanes in each direction with a median) and would connect Cement Hill Road with the existing Walters Road south of Huntington Drive. Under Alternative B, the Walters Road Extension would extend south from Cement Hill Road, traversing an undeveloped, privately owned area and crossing over the UPRR tracks, to the intersection of Walters Road and Huntington Drive, for a distance of 1.06 miles. A new traffic signal has been installed for the three existing legs at the intersection of Walters Road and Cement Hill Road.

The proposed four-lane Walters Road Extension would consist of a curb and gutter, a 5-foot outside shoulder, a 12-foot outside lane, and a 14-foot inside lane in each direction separated by a 2-foot-wide

⁴ City of Fairfield. 1994. *Peabody-Walters Master Plan*, prepared by Creegan & D'Angelo Consulting Engineers, September 6, 1994.

raised median. A 10-foot-wide bicycle and pedestrian sidewalk would be constructed on the east side of Walters Road. The northerly 1,600 feet of sidewalk on the east side of Walters Road would be separated from the curb by a 5-foot-wide landscaped strip on either side and the bicycle and pedestrian sidewalk. The right-of-way width in this section of Walters Road would generally be approximately 72 feet, except at the northerly limits, where Walters Road would be widened an additional 10 feet to the east to accommodate the two 5-foot-wide landscaped strips.

The Walters Road Extension would include a grade separation (overpass) at the UPRR tracks and would span both McCoy Creek and a man-made detention basin with bridges to minimize impacts to biological resources. The profile would conform to the existing grade at Air Base Parkway and rise approximately 30 feet to cross over the UPRR tracks. The approaches to the structure over the UPRR tracks would be constructed on fill with retaining walls on both sides of the rail crossing.

Under Alternative B, the existing Walters Road in this segment would be widened a small amount on each side to create four lanes from Huntington Drive south to Air Base Parkway, for a distance of 200 feet, with left-turn lanes provided at each intersection. Approximately 300 feet of Huntington Drive on either side of its intersection with Walters Road would be reconstructed to conform to the proposed Walters Road alignment.

2.3.2.5 Existing Walters Road⁵

Segment B9

From Air Base Parkway south to East Tabor Avenue, a distance of approximately 2,300 feet, Walters Road would be widened approximately 40 feet to the east. The existing Walters Road (four-lane undivided roadway and right-of-way) would be retained as a part of the new Walters Road. The new roadway would consist of curb and gutter, a 5-foot outside shoulder, a 12-foot outside lane, and a 14-foot inside lane in each direction separated by a raised, landscaped median that would vary in width from 5 to 16 feet. Northbound left-turn lanes would be provided at the mobile home park entrance, Walters Court, and Air Base Parkway (double left-turn lane). A 10-foot-wide bicycle and pedestrian concrete sidewalk would be constructed immediately behind the back of curb on the east side. The right-of-way width along Walters Road would generally be 97 feet, including the existing right-of-way width, except at the northerly limits by Air Base Parkway, where Walters Road would be widened to the east to accommodate a right-turn lane and the second left-turn lane.

Segment B10

Most of Walters Road in this segment has been widened under previously-approved projects. In this segment, Walters Road consists of a 5-foot outside shoulder and two 12-foot lanes in each direction separated by a minimum 6.5-foot-wide raised, landscaped median. Improvements along the east side of Walters Road included a 5-foot-wide landscaped strip separating the roadway from a 10-foot-wide

⁵ Roadway improvements described for Walters Road south of Air Base Parkway under Alternative B would be similar under Alternative C, Alternative D, and Alternative E.

paved bicycle and pedestrian path. A soundwall was built between the bicycle path and the approved Petersen Ranch development east of Walters Road, with a 1-foot separation from the bicycle path.

Between Tabor Avenue and SR 12, the existing Walters Road has been improved to a four-lane roadway, including soundwalls, a 10-foot-wide sidewalk on the east side of Walters Road from Bella Vista Drive to Petersen Road, and traffic signals at the intersections of Walters Road at Tabor Avenue, Petersen Drive, and SR 12. Under Alternative B, some improvements to Walters Road between Bella Vista Drive and SR 12 are proposed, including: restriping Walters Road at SR 12 for an additional left-turn lane; constructing a median along Walters Road from Petersen Road north approximately 600 feet; and installing signal-interconnect cable from Bella Vista Drive to SR 12.

2.3.2.6 Proposed Landscaping

In urban areas of the Alternative B alignment, landscaping on both sides of the roadway and a landscaped median would be provided wherever feasible. Trees would be planted in the center median, with an understory of low shrubs, native grasses, and groundcover or decomposed granite. Per the Concept Plan at no time would exotic (non-native) invasive plants, such as Pampas Grass, Eucalyptus, Tamarisk, or Giant Reed be used as part of any plantings along the corridor. Trees in the center median would be planted at regularly spaced intervals 30 to 50 feet. Where left-turn lanes are provided, the median would be too narrow for tree plantings. Vines would be planted at regular intervals along the soundwall.

Within its jurisdiction, the City of Vacaville has committed to consult further with its citizens regarding the specific density and design of the landscaping within the linear park. It is anticipated that the landscaped buffer within the City of Vacaville would be more dense and lush than in other portions of the Alternative B alignment to buffer existing residential neighborhoods from the effects of the traffic on the roadway. The landscaped buffers would be funded by development proposed for this area.

In rural areas of the alignment, native trees would be planted on both sides of the roadway at irregular intervals (300 to 500 feet) in clusters, with at least five trees per cluster and native grasses as understory. Trees would also be used to mark intersections and drainages. In drainage areas, trees would be more densely planted to mimic what might occur naturally. New trees would be planted to augment existing vegetation. The median would be planted with native grasses and shrubs.

In industrial areas of the alignment, trees would be planted in the median and spaced approximately 30 feet apart, with an understory of low shrubs, grasses, and decomposed granite. The landscaped strips would be planted with native shrubs and groundcover.

2.3.2.7 Proposed Utility Improvements

Major drainage courses in the alignment of Alternative B would be crossed using concrete box culverts or pipe culverts. The existing 5-foot by 10-foot box culvert for Alamo Creek would be extended or replaced with a series of large culverts underneath the widened Leisure Town Road and Elmira Road. New Alamo Creek would be spanned by widening the existing bridge to the west. Vanden Road would be raised near Union Creek and a new series of concrete box culverts or a short bridge would be

constructed. McCoy Creek and the existing man made detention basin would be spanned with bridges on the Walters Road Extension.

Irrigation facilities would be maintained and extended or reconstructed as required. A storm drain system would be constructed to collect and convey drainage along Leisure Town Road where necessary, connecting to Vacaville's existing storm drain lines where possible.

The existing joint pole line (Pacific Gas & Electric Company [PG&E], telephone, and cable) would be relocated in areas where it is within the project right-of-way. Conduit for future fiber-optic communication cable would be installed along the length of the Alternative B alignment.

A sewer trunk line extending north along the proposed alignment, between the City of Fairfield pump station north of the UPRR tracks and Huntington Drive, is being abandoned by the Villages project and would not need to be relocated.

2.3.3 Alternative C: Leisure Town Road–Vanden Road–Peabody Road–Air Base Parkway–Walters Road

Alternative C would provide a four- to six-lane divided arterial for the entire length of the roadway (Figure 2-3). The Alternative C alignment begins on Leisure Town Road at Orange Drive and is identical to Alternative B until it reaches the intersection of Cement Hill Road/Vanden Road and Peabody Road. Unlike Alternative B, Alternative C does not include improvements to Cement Hill Road or the construction of a northern extension of Walters Road. Instead, Alternative C continues south on Peabody Road from the Cement Hill Road/Vanden Road intersection to the intersection with Air Base Parkway. Alternative C continues west along Air Base Parkway to Walters Road. From the intersection of Air Base Parkway and Walters Road, Alternative C would continue south on Walters Road to SR 12, following the same alignment as Alternative B. The project components for Alternative C include roadway widening, improvements at the crossings of Alamo Creek, New Alamo Creek, and Union Creek, bicycle and pedestrian paths, landscaping, and utilities relocation.

The cost estimate for Alternative C is \$150,825,000 and includes utility and right-of-way costs. For a description of improvements to Leisure Town Road and Vanden Road included in Alternative C, please refer above to Section 2.3.2.1 and 2.3.2.2, respectively on pages 2-30 to 2-32. For a description of improvements to existing Walters Road, please refer above to Section 2.3.2.5 on page 2-34. Roadway segments unique to Alternative C are described below.

2.3.3.1 Peabody Road⁶

Segment C7

From the intersection of Peabody Road and Cement Hill Road/Vanden Road to the intersection of Peabody Road and Air Base Parkway, a distance of approximately 0.9 miles, Peabody Road would be widened towards the east to just south of the UPRR crossing, at which point widening would take place to the west. Peabody Road would be widened to six lanes, consisting of curb and gutter, 8-foot outside shoulders, and three 12-foot lanes in each direction (for a total of six lanes) separated by a 16-foot-wide raised, landscaped median. A 10-foot-wide sidewalk would be provided on the east and a 10-foot-wide shared bicycle/pedestrian path on the west, separated by a 5-foot landscaped area on each side. The width of the right-of-way of this portion of Peabody Road under Alternative C would be 134 feet. Under Alternative C, left-turn lanes would be provided on Peabody Road at all local street intersections by reducing the width of the 16-foot-wide median.

Markeley Lane, which intersects Peabody Road to the east, south of the UPRR tracks, would be realigned approximately 328 feet south of the existing alignment to a new intersection with Peabody Road, and would extend approximately 246 feet east and then 328 feet north to intersect the existing Markeley Lane. The portion of existing Markeley Lane, no longer needed north of this new intersection, would be reconstructed as a cul-de-sac. The realigned Markeley Lane would avoid the wetland mitigation ponds located south of the proposed Markeley Lane realignment, along the east side of Peabody Road, and would accommodate the Peabody Road overcrossing.

Access would be restricted to full-access intersections every 0.25 to 0.5 miles. All existing signals along the roadway in this segment would be maintained, with new signals at the intersection of Peabody Road and (realigned) Markeley Lane and at the intersection of Peabody Road and Dobe Road.

Alternative C would include an overcrossing that carries the Peabody Road and the bicycle/pedestrian facilities over the UPRR tracks just south of the intersection of Peabody and Cement Hill/Vanden Roads. The future Fairfield-Vacaville Multimodal Train Station would be constructed at this location as part of a separate project. The overcrossing would be designed to facilitate automobile, pedestrian, and bicycle access to the station.

2.3.3.2 Air Base Parkway⁷

Segment C8

The intersection of Air Base Parkway and Peabody Road would be reconstructed as a partial interchange. A flyover ramp overcrossing would be constructed for eastbound Air Base Parkway traffic continuing left onto northbound Peabody Road. The ramp would have a design speed of 30 to 35 miles per hour (mph).

⁶ Roadway improvements described for Peabody Road under Alternative C would be similar under Alternative E.

⁷ Roadway improvements described for Air Base Parkway under Alternative C would be similar under Alternative E.

From the intersection of Peabody Road and Air Base Parkway to the intersection of Walters Road and Air Base Parkway, a distance of approximately one mile, the alignment of Alternative C veers to the west, down Air Base Parkway. The roadway would be widened to the north and south. The roadway would be six lanes, consisting of curb and gutter, a 20-foot outside lane, and two 12-foot inside lanes in each direction separated by a 18-foot-wide landscaped median. A 6- to 10-foot-wide sidewalk would be constructed behind the back of curb on the south, and a 10-foot-wide shared pedestrian/bicycle path separated by a 5-foot landscaped area on each side would be constructed on the north.

From the intersection of Walters Road and Air Base Parkway, Alternative C would continue south on Walters Road to SR 12, identical to Alternative B.

2.3.3.3 Proposed Landscaping

The landscaping under Alternative C would be similar to that described for Alternative B. For urban areas, landscaping on both sides of the roadway and a landscaped median would be provided wherever feasible. Trees would be planted in the center median, with grasses or groundcover as understory. Native species would be used where feasible. In rural areas, native trees would be planted at irregular intervals in clusters, with native grasses as understory on both sides of the roadway. Trees would also be used to mark intersections and drainages. The median would be planted with native grasses and shrubs. In industrial areas, trees would be planted in the median, with an understory of low shrubs, grasses, and decomposed granite. The landscaped strips would be planted with native shrubs and groundcover.

2.3.3.4 Proposed Utility Improvements

Major drainage courses would be maintained and spanned using concrete box culverts or pipe culverts. The existing ditches along Air Base Parkway, Peabody Road, and Vanden Road would be maintained or relocated as required. The existing storm drain system along the east side of Peabody Road, from Air Base Parkway to Huntington Drive, would be maintained.

The existing 5-foot by 10-foot box culvert for Alamo Creek would be extended or replaced with a series of large culverts underneath the widened Leisure Town Road and Elmira Road. New Alamo Creek would be spanned by widening the existing bridge to the west. Vanden Road would be raised near Union Creek and a new series of concrete box culvert or a short bridge would be constructed. The existing ditches along Air Base Parkway and Peabody Road would be maintained or relocated as required. A storm drain system would be constructed to collect and convey drainage along Leisure Town Road, where necessary, connecting to Vacaville's existing storm drains where possible. Irrigation facilities would be maintained and extended or reconstructed as required.

The project sponsors would relocate existing joint pole lines (PG&E, telephone, and cable) as required. The PG&E electric substation on the west side of Peabody Road, just south of Vanden Road, would not be affected by the project. Poles carrying overhead electric lines to and from the substation would be modified and relocated as required. Conduit for future fiber-optic communication would be installed along the length of Alternative C.

Underground utilities (water and sewer) along Peabody Road, between Air Base Parkway and Huntington Drive, would be relocated wherever they are in conflict with the project. Water and sewer manholes would be modified as required.

The UPRR crossing on Peabody Road would be replaced with a new six-lane overcrossing.

2.3.4 Alternative D: Leisure Town Road–Vanden Road–Peabody Road–Huntington Drive–Walters Road

Alternative D would provide a four- to six-lane divided arterial (Figure 2-4) in the corridor. Alternative D is identical to Alternatives B and C, except that it does not include Cement Hill Road, improvements to Air Base Parkway, or the construction of a northern extension of Walters Road. The Alternative D alignment continues south on Peabody Road from the intersection of Cement Hill Road/Vanden Road and Peabody Road to the intersection of Huntington Drive and Peabody Road. As with Alternative C, this alternative would require construction of an overcrossing at the UPRR tracks just south of the intersection of Cement Hill Road/Vanden Road and Peabody Road and the realignment of Markeley Lane.

The cost estimate for Alternative D is \$165,463,300 and includes utility and right-of-way costs. For a description of improvements to Leisure Town Road and Vanden Road included in Alternative D, please refer above to Section 2.3.2.1 and 2.3.2.2, respectively on pages 2-30 to 2-32. For a description of improvements to existing Walters Road included in Alternative D, please refer above to Section 2.3.2.5 on page 2-34. Roadway segments unique to Alternative D are described below.

2.3.4.1 Peabody Road

Segment D7

South of the intersection of Peabody Road and Cement Hill Road/Vanden Road to the intersection of Peabody Road and Huntington Drive, Peabody Road would be widened to six lanes as described above for Alternative C. An overcrossing that carries the Peabody Road and the bicycle/pedestrian facilities over the UPRR tracks would be constructed and Markeley Lane would be realigned. However, under Alternative C, Peabody Road would conform to the existing roadway south of Huntington Drive.

Segment D8

At the intersection of Huntington Drive and Peabody Road, the Alternative D alignment turns west and follows Huntington Drive southwest to Walters Road. The Peabody Road/Huntington Drive intersection would include a right-turn only ramp for southbound Peabody Road traffic continuing on westbound Huntington Avenue. The roadway in this segment would be four lanes, consisting of curb and gutter, 20-foot outside lanes, and 12-foot inside lanes in each direction separated by a 18-foot-wide landscaped median. A 10-foot-wide sidewalk would be provided on the south and a 10-foot-wide shared pedestrian/bicycle path separated by a 5-foot landscaped area on each side would be provided on the north. To minimize the displacement of existing businesses, a portion of new roadway would be elevated over the railroad spur with a new overcrossing.

From the intersection of Walters Road and Huntington Road, Alternative D would continue south on Walters Road to SR 12, identical to Alternative B (see Section 2.3.2.5 on page 2-34).

2.3.4.2 Proposed Landscaping

The landscaping under Alternative D would be similar to that described for Alternative B. For urban areas, landscaping on both sides of the roadway and a landscaped median would be provided wherever feasible. Trees would be planted in the center median, with grasses or groundcover as understory. Native species would be used where feasible. In rural areas, native trees would be planted at irregular intervals in clusters, with native grasses as understory on both sides of the roadway. Trees would also be used to mark intersections and drainages. Rural medians would be planted with native grasses and shrubs. In industrial areas, trees would be planted in the median, with an understory of low shrubs, grasses, and decomposed granite. The landscaped strips in industrial areas would be planted with native shrubs and groundcover.

2.3.4.3 Proposed Utility Improvements

Major drainage courses would be maintained and spanned using concrete box culverts or pipe culverts. The existing ditches along Peabody Road and Vanden Road would be maintained or relocated as required. The existing storm drain system along Huntington Road would be reconstructed as required.

The existing 5-foot by 10-foot box culvert for Alamo Creek would be extended or replaced with a series of large culverts underneath the widened Leisure Town Road and Elmira Road. New Alamo Creek would be spanned by widening the existing bridge to the west. Vanden Road would be raised near Union Creek and a new concrete box culvert or a short bridge would be constructed. A storm drain system would be constructed to collect and convey drainage along Leisure Town Road where necessary, connecting to Vacaville's existing storm drains where possible. Irrigation facilities would be maintained and extended or reconstructed as required.

The existing joint pole lines (PG&E, telephone, and cable) would be relocated as required. The PG&E electric substation on the west side of Peabody Road, just south of Vanden Road, would not be affected by the project. Poles carrying overhead electric lines to and from the substation would be modified and relocated as required. Conduit for future fiber-optic communication would be installed along the length of Alternative D.

Underground utilities (water and sewer) along Huntington Road would be relocated where they are in conflict with the project. Water and sewer access holes would be modified as required.

The UPRR crossing on Peabody Road would be replaced with a new six-lane overcrossing. The railroad spur crossing on Huntington Road would be replaced with a four-lane grade separation.

2.3.5 Alternative E: Peabody Road–Air Base Parkway–Walters Road

Alternative E would provide a four- to six-lane divided arterial along the entire roadway (Figure 2-5). Two lanes would be added to the existing two- to four-lane facility. The alignment differs from Alternatives B to D in the northern portion, between I-80 and Vanden Road in Vacaville. Instead of

starting at the I-80/Leisure Town Road interchange, this alternative alignment begins at the intersection of Peabody Road and Elmira Road in Vacaville and travels south along Peabody Road until it meets the Alternative C alignment at the intersection of Peabody Road and Cement Hill Road/Vanden Road.

The cost estimate for Alternative E is \$158,917,000 and includes utility and right-of-way costs. For a description of improvements to Peabody Road south of Cement Hill Road/Vanden Road and to Air Base Parkway included in Alternative E, please refer above to Section 2.3.3.1 and Section 2.3.3.2, respectively on pages 2-37 to 2-38. For a description of improvements to existing Walters Road included in Alternative E, please refer above to Section 2.3.2.5 on page 2-34. Roadway segments unique to Alternative E are described below.

2.3.5.1 Peabody Road

Segment E1

Between Elmira Road and the Vacaville city limits, Peabody Road would be widened from four lanes to six lanes. Generally, the roadway would consist of 8-foot outside shoulders and three 12-foot lanes in each direction separated by a 16-foot-wide landscaped median. On the west, a 10-foot-wide bicycle and pedestrian path would be separated from the street and from residential properties by 5-foot-wide landscaped areas. On the east, a 6.5-foot-wide pedestrian sidewalk would be bordered on the residential side by a 5.5-foot-wide landscaped area. Private property landscaped setbacks would be located on both sides of the street. In areas with constrained right-of-way, the shoulder width would be reduced to four feet. The width of the right-of-way would vary from 128 to 136 feet, depending on the amount of existing development.

Segments E2, E3, and E4

South of the Vacaville city limits to the intersection of Peabody Road and Cement Hill Road/Vanden Road, the existing two-lane roadway would be widened to four lanes, consisting of curb and gutter, a 8-foot outside shoulder, two 12-foot lanes, and a 2-foot-wide inside shoulder in each direction separated by a 16-foot-wide landscaped median. A 10-foot-wide shared bicycle/pedestrian path with a 5-foot landscaped area on each side would be constructed on the west side of the roadway. The width of right-of-way on this portion of Peabody Road would be 110 feet, which would require widening the existing bridges over Alamo Creek and the Putah South Canal.

At the intersection of Peabody Road and Cement Hill Road/Vanden Road, the alignment of Alternative E follows the same alignment as Alternative C; Peabody Road South to Air Base Parkway and then west onto Air Base Parkway to Walters Road (see Section 2.3.3.1 and Section 2.3.3.2 on pages 2-37 to 2-38). From the intersection of Walters Road and Air Base Parkway, the route continues south on Walters Road to SR 12, following the same alignment as Alternative B (see Section 2.3.2.5 on page 2-34).

2.3.5.2 Proposed Landscaping

The landscaping under Alternative E would be similar to that described for Alternative B. For urban areas, landscaping on both sides of the roadway and a landscaped median would be provided wherever feasible. Trees would be planted in the center median, with grasses or groundcover as understory. Native species would be used where feasible. In rural areas, native trees would be planted at irregular intervals in clusters, with native grasses as understory on both sides of the roadway. Trees would also be used to mark intersections and drainages. Rural medians would be planted with native grasses and shrubs. In industrial areas, trees would be planted in the median, with an understory of low shrubs, grasses, and decomposed granite. The landscaped strips in industrial areas would be planted with native shrubs and groundcover.

2.3.5.3 Proposed Utility Improvements

Major drainage courses, including McCoy Creek and Union Creek, would be maintained and spanned using concrete box culverts or pipe culverts. The existing ditches along Air Base Parkway and Peabody Road would be maintained or relocated as required. The existing storm drain system along the east side of Peabody Road, from Air Base Parkway to Huntington Drive, would be maintained. The existing storm drain system along the west side of Peabody Road, from approximately 0.4 to 1.0 mile north of Vanden Road, along the residential subdivision frontage in Fairfield, would be maintained. The existing storm drain system along Peabody Road, in the Vacaville city limits, would be reconstructed as required. The existing bridge crossings of Alamo Creek and the Putah South Canal would be widened as required. Irrigation facilities would be maintained and extended or reconstructed as required.

The existing joint pole lines (PG&E, telephone, and cable) would be relocated as required. The PG&E electric substation on the west side of Peabody Road, just south of Vanden Road, would not be affected by the project. Poles carrying overhead electric lines to and from the substation would be modified and relocated as required. Conduit for future fiber-optic communication would be installed along the length of Alternative E.

Underground utilities (water and sewer) along Peabody Road would be relocated wherever they are in conflict with the project. Water and sewer manholes would be modified as required.

2.3.6 Summary of Project Features by Alternative

Table 2-1 is a summary comparison of the major project features by alternative, which identifies both the common and unique design features of the four build alternatives.

**Table 2-1
Summary of Features of the Build Alternatives**

Feature	Alternative B	Alternative C	Alternative D	Alternative E
Roadway Widening				
Leisure Town Road	Yes	Yes	Yes	No
Vanden Road	Yes	Yes	Yes	No
Cement Hill Road	Yes	No	No	No
Huntington Drive	No	No	Yes	No
Peabody Road	No	Yes	Yes	Yes
Air Base Parkway	No	Yes	No	Yes
Walters Road	Yes	Yes	Yes	Yes
Number of Lanes	4	4-6	4-6	4-6
Roadway Extension on New Alignment				
Walters Road	Yes	No	No	No
UPRR Tracks Crossing				
Grade-Separated	Walters Road	Peabody Road	2 - Peabody Road and Huntington Drive	Peabody Road
Partial Interchange				
Air Base Parkway and Peabody Road	No	Yes	No	Yes
Drainage Crossing Improvements				
Alamo Creek	Yes	Yes	Yes	No
New Alamo Creek	Yes	Yes	Yes	No
Union Creek	Yes	Yes	Yes	Yes
McCoy Creek	Yes	No	No	No
Putah South Canal	No	No	No	Yes
Bicycle/Pedestrian Trail	Yes	Yes	Yes	Yes
Landscaping	Yes	Yes	Yes	Yes
Utility Improvements				
Irrigation	Yes	Yes	Yes	Yes
Water, Sewer, Storm Drain Infrastructure	Yes	Yes	Yes	Yes
Electrical, Cable, Telephone Line Relocation	Yes	Yes	Yes	Yes

2.4 Construction Schedule

When preparation of the EIR/EIS commenced in 2000, it was initially assumed that all or portions of the Jepson Parkway would be fully operational between 2005 and 2009. Funding is currently being provided by segment with funds programmed for the construction of the rural roadway segments. If funding is constrained, the project would be constructed by segment until completion beginning in 2013. Assuming availability of funding, project construction would last 12 to 24 months on each segment, over a total duration of approximately 48 to 60 months. It is possible that construction on

some segments would overlap. Construction would be limited to Monday through Friday, between 7:00 a.m. and 5:00 p.m., including equipment activity for deliveries, earthwork, paving, structural fabrication, and similar tasks. Maintenance and daily staging before equipment use may occur before 7:00 a.m. or after 5:00 p.m.

2.5 Identification of a Preferred Alternative

The various build alternatives have potential impacts in different environmental categories and different amounts of impact where they had impacts in the same environmental categories. Therefore, the identification of the preferred alternative was derived on the basis of a process of elimination that considered each of the related environmental laws. After public circulation of the Draft EIS/EIR, all comments have been considered, and the Department identified a preferred alternative and made the final determination of the project's effect on the environment. The Department, as assigned by FHWA, will document and explain its decision regarding the identified preferred alternative, project impacts, and mitigation measures in a Record of Decision in accordance with NEPA. The following is a summary of the reasoning behind identifying Alternative B, as the Preferred Alternative:

Alternative D would displace industrial and commercial properties in the Tolenas Industrial Park along Huntington Drive in the City of Fairfield and would result in the loss of some 224 local jobs. The severe economic hardship to these employees and the City of Fairfield is not acceptable to the local community. There is no way to construct Alternative D to avoid these impacts; therefore, Alternative D was not considered practicable as the preferred alternative.

While Alternative E appears to have the least overall impacts to natural resources among the build alternatives, Alternative E would result in permanent use of 1.7 acres of land from Al Patch Park and 1.2 acres of land from Will C. Wood High School. Both of these properties are protected by Section 4(f) of the Department of Transportation Act. Section 4(f) prohibits the Secretary of Transportation from approving a project that uses 4(f)-protected property if there is a feasible and prudent alternative to that use. Under Section 4(f) regulations, Alternative E cannot be identified as the preferred alternative unless all of the other build alternatives can be shown not to be prudent and feasible. Alternative E would also result in the acquisition of 26 single-family and 10 multi-family residential units along Peabody Road in the City of Vacaville.

A “flyover” ramp proposed to be constructed at the intersection of Peabody Road and Air Base Parkway with either Alternative C or Alternative E would provide high-elevation visual access to Travis Air Base facilities, including the Aero Club landing strip and the David Grant Hospital. David Grant Hospital serves sensitive Defense Department missions and is designed to provide emergency functions. This visual access—particularly on a roadway that offers quick access and retreat—poses a concern for homeland defense. Travis Air Force Base officials raised this concern in their comments on the Draft EIR/EIS; see Volume II of this Final EIS, Letter 2. In light its potential homeland defense, residential impacts, and Section 4(f) impacts, Alternative E was not considered practicable as the preferred alternative.

Alternative C, because it would also require the flyover ramp at Peabody Road and Air Base Parkway, would have an impact on homeland defense. Also, as described in the Travis Air Force Base letter referenced above, Alternative C has the potential to affect an area of high habitat value, consisting of a combination of natural and created vernal pools and seasonal wetlands with good populations of Contra Costa goldfields, and a contiguous property that is being developed as a mitigation bank. This site includes mitigation area for vernal pools where efforts are currently underway to propagate and preserve goldfields and other listed and special status plant species. Travis officials have agreed to maintain the portion on the Air Base for preservation of vernal pools, wetlands and these plant species.

Using these lands for Alternative C would violate this agreement. Because of the homeland defense issue and the potential impacts to dedicated wetland and plant preservation areas, Alternative C was not considered practicable as the preferred alternative.

By this process of elimination, Alternative B is the remaining practicable alternative. Similar to other build alternatives, Alternative B would affect vernal pools and other seasonal wetlands as well as other waters of the U.S. along the proposed Walters Road extension and Cement Hill Road. These waters provide high quality habitat for wetland vegetation and wildlife. But in informal consultation with the USFWS and the NEPA-404 MOU signatories, avoidance, minimization and mitigation measures have been identified that would achieve the appropriate balancing of resource protection, project construction, and mitigation costs to address these impact issues.

Alternative B was identified as the Preferred Alternative by the Department. The identification of Alternative B as preferred has been confirmed pursuant to avoidance and minimization measures stipulated in the USFWS's no-jeopardy Biological Opinion following completion of formal Section 7 consultation (see Appendix J and mitigation measures BR-7, BR-8, and BR-9). The NEPA-404 MOU signatory agencies also concurred with the designation of Alternative B as the Least Environmentally Damaging Practicable Alternative (LEDPA). The signatories' letters of concurrence and/or agreement with the LEDPA determination are included in Appendix B.

2.6 Alternatives Considered but Eliminated from Further Discussion Prior to Draft EIR/EIS

2.6.1 Transportation Systems Management Alternative

The NEPA/404 group's alternatives screening process, pursuant to the NEPA/404 integration MOU, considered a transportation system management alternative. This alternative would consist of low-cost capital improvements to improve the function of the existing roadway and transit systems. Improvements would include extension of pedestrian/bicycle facilities along existing roadways within the Jepson Parkway corridor and provision of additional bus transit services within the corridor. The transportation system management alternative could apply to several different alignments using existing roadways, including (from north to south) Leisure Town Road, Vanden Road, Peabody Road, Cement Hill Road, Air Base Parkway, and Walters Road.

This alternative, as a stand-alone alternative, was initially considered but subsequently dropped from further consideration because it did not meet the project purpose and need. Implementation of this alternative would not meet the roadway capacity needs projected for the corridor and would likely lead to a decline in the level of service of corridor intersections. It would have relatively low potential for environmental and community effects, but it would provide limited transportation benefits.

Although Transportation System Management measures alone could not satisfy the purpose and need of the project, the following Transportation System Management measures have been incorporated into the build alternatives for this project:

- Provision of a continuous bicycle and pedestrian path in the corridor.
- Accommodation for the proposed Fairfield/Vacaville train station.
- Provision of additional bus transit services within the corridor.

2.6.2 Modal Alternatives

2.6.2.1 Mass Transit Alternative

The NEPA/404 group's alternatives screening process considered a mass transit alternative. This alternative would construct an arterial roadway within the Jepson Parkway corridor. This would be accomplished by construction of new two-lane roadways, widening existing roadways to four or six lanes, or a combination of new construction and improvements to existing roadways. It would dedicate one lane in each direction to exclusive high occupancy vehicle (HOV) (bus, vanpool, and carpool) use during peak commute periods.

This alternative was eliminated because it did not meet the project purpose and need. The Mass Transit Alternative was withdrawn from further consideration in favor of the alternatives in the Jepson Parkway corridor that contain multimodal features. This alternative would meet most of the project purposes, but it would not address project needs to address existing and future traffic congestion, accommodate traffic associated with planned growth, or support future multimodal options, including pedestrian/nonmotorized transportation. The alternative was defined to include most of the features of the Jepson Parkway Concept Plan Alternative; notable differences included designation of the additional traffic lane for HOV use during morning and evening peak traffic periods and elimination of the pedestrian/bicycle path. However, comparison of the alternatives concluded that a mass transit-only alternative would provide few, if any, benefits beyond those provided by the multimodal Jepson Parkway Concept Plan Alternative, which includes features such as a continuous pedestrian/nonmotorized path and linkages to transit routes and the proposed rail transit station.

Although a mass transit alternative alone was not carried forward, the design of Jepson Parkway is intended to provide a multimodal corridor that enhances opportunities for transit use and alternative travel modes, including bicycle and pedestrian travel. The future Fairfield-Vacaville Multimodal Train Station is planned to be located in the corridor.

2.6.3 Other Alternatives Considered

The NEPA/404 group's alternatives screening process considered the following alternatives but did not recommend them for further analysis in the environmental document.

2.6.3.1 Limited Access Expressway Alternative

This alternative would construct an expressway along the length of the Jepson Parkway corridor. The expressway would maximize traffic-carrying capacity within the corridor by limiting the number of access points along a four-lane roadway. The number of existing driveways and cross streets would be consolidated by constructing access roads parallel to the expressway or by constructing grade separations at high-volume intersections. This alternative could apply to several different alignments using existing roadways, including (from north to south) Leisure Town Road, Vanden Road, Peabody Road, Cement Hill Road, Air Base Parkway, and Walters Road. This alternative was eliminated because it did not meet the project purpose and need, although certain portions of the project (depending on which alternative is identified as preferred) would be designed with limited access points.

Although it would address most components of the project purpose and need, the Limited Access Expressway Alternative was eliminated from further consideration because it was considered inconsistent with the concept plan goals to provide a continuous arterial roadway that could be integrated into the central Solano County communities without creating a physical barrier. In addition, it would have considerable negative environmental and community effects, and would be expensive to construct.

2.6.3.2 North of Interstate 80 Alternative

This alternative would construct a new two- or four-lane divided arterial roadway between Vacaville in the vicinity of the I-80/Leisure Town Road interchange to Fairfield in the vicinity of the I-80/SR 12 interchange. This new connection would essentially parallel I-80 on its north side and use existing roads where feasible. This alternative would include a continuous pedestrian/bicycle path, linkages to existing and planned transit services, landscaping, and parallel access roads along portions of the alignments to serve existing residential development. This alternative was eliminated because it did not meet the project purpose and need because it would not address transportation issues in the central Solano County corridor. The alternative was also determined to have negative environmental and community effects and was rated negative for transportation effectiveness, engineering feasibility, and funding feasibility.

2.6.3.3 East of Leisure Town Road Alternative

This alternative would construct a divided arterial roadway the length of the Jepson Parkway corridor. In Vacaville between I-80 and the Leisure Town Road/Alamo Drive intersection, this alternative would follow either of these two directions:

- The route would begin as a four-lane arterial roadway at the I-80/Leisure Town Road interchange and travel south on Leisure Town Road to approximately Ulatis Creek. At this point, the route

would extend east, and a new two-lane arterial roadway would parallel Leisure Town Road approximately 1,250 feet from the existing roadway. The new roadway would connect back to Leisure Town Road just south of Alamo Drive.

- The route would begin at the I-80/Midway Road/Weber Road interchange and continue south on a new two-lane roadway that parallels the UPRR tracks. Portions of Meridian Road, a discontinuous road that extends south from the interchange, would be used as appropriate. This new roadway would be approximately 5,280 feet east of Leisure Town Road. The new roadway would connect back to Leisure Town Road just south of Alamo Drive.

Either option would include a continuous pedestrian/bicycle path, linkages to existing and planned transit services, landscaping, and parallel access roads along portions of the alignments to serve existing residential development. Transportation effectiveness and engineering feasibility were rated as generally positive with this alternative. However, since the alternative would be located east of the communities proposed to be served, the alternative would not meet the project purpose and need. It was also determined to have negative environmental and community effects because it would place new roadway segments in undeveloped areas of the County.

2.7 Permits and Approvals Needed

In addition to complying with NEPA, the project may require the following permits and agency approvals and authorizations:

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Consultation for Federally Listed Threatened and Endangered Species under Section 7 of the Endangered Species Act.	Formal consultation and request for Biological Opinion were conducted. See Appendix J for a copy of the USFWS No Jeopardy Biological Opinion
U.S. Army Corps of Engineers	Individual Permit under Section 404 of the Clean Water Act for filling or dredging waters of the United States.	Section 404 permit would be obtained prior to construction.
California Department of Fish and Game	Streambed Alteration Agreement under California Fish and Game Code Section 1602.	Section 1602 permit would be obtained prior to construction.
	Section 2080 Agreement or Concurrence for State-Listed Threatened and Endangered Species.	Section 2080 permit would be obtained prior to construction.
San Francisco Bay and Central Valley Regional Water Quality Control Board	Water Quality Certification under Section 401 of the Clean Water Act.	Section 401 certification would be completed prior to construction.
California Public Utilities Commission	Authority to construct a new public railroad-highway crossing	Permits to be obtained prior to construction.
Reclamation Board	Encroachment permit for activities conducted within Reclamation Board's right-of-way	Permits to be obtained prior to construction.

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

3.0 Introduction

The purpose of this introduction is to describe the organization and approach for this Environmental Impact Statement (EIS). This EIS has been prepared to comply with the requirements of the National Environmental Policy Act (NEPA). Caltrans is the federal lead agency under NEPA pursuant to 23 U.S.C. 327, 49 U.S.C. 303. This EIS has been prepared based on the President's Council on Environmental Quality's (CEQ's) NEPA regulations (40 Code of Federal Regulations [CFR] 1500 to 1508); and U.S. Department of Transportation's Environmental Impact and Related Procedures (23 CFR 771). The intent of the preparers of this document is to provide the reader with a clear description of the environmental analysis conducted for the project within the framework of applicable regulations.

Caltrans is the lead agency for the preparation of this EIS under NEPA for the proposed action because they have determined that the whole of the proposed action may result in a significant overall impact on the quality of the human environment. FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being carried out by Caltrans under its assumption of responsibility pursuant to the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (23 USC 327).

The NEPA evaluation for this document is contained in Chapters 3, Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures. In most instances, the affected environment, or environmental setting, reflects the physical environmental conditions in the project area at the time the NEPA Notice of Intent (NOI) was published, per the requirements of NEPA. Since 2000, the conditions in the corridor have continually evolved, and the EIS and supporting technical reports have been updated to reflect current conditions. Additional field reviews and/or research were conducted for biological resources, visual resources, land use, traffic, noise, air quality, and hydrology/water quality.

As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

- Timberlands: There are no timberlands located in the project corridor.
- Wild and Scenic Rivers: There are no wild and scenic rivers in the project corridor.

3.0.1 Cumulative Impact Analysis

Potential cumulative impacts of the project and impact assessment under NEPA are described in each technical section of Chapter 3. The requirements of each law relative to cumulative analysis are described below. In addition, this section identifies the approach used for the cumulative analysis throughout Chapter 3. As shown throughout the chapter, there are no cumulative impacts associated with any of the four build alternatives.

3.0.1.1 Requirements for Cumulative Impact Analysis

Under NEPA, a cumulative impact is the impact on the environment that results from the incremental impact of the project when added to other past, present, and reasonably foreseeable future projects regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR § 1508.7).

A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past, present, and reasonably foreseeable future activities or actions of federal, non-federal, public, and private entities. Cumulative impacts may also include the effects of natural processes and events, depending on the specific resource in question. Cumulative impacts include the total of all impacts to a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence, including the direct and indirect impacts of a federal activity. Accordingly, there may be different levels of cumulative impacts on different environmental resources.

3.0.1.2 Approach to Cumulative Impact Analysis

Cumulative impacts are impacts on the environment that result from the incremental impact of a proposed project together with the impacts of other past, present and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant impacts taking place over a period of time.

Cumulative impacts on resources in the project area may result from the impacts of the transportation project together with other past, present, and reasonably foreseeable projects such as residential, commercial, industrial, and other development, as well as from agricultural activities and the conversion to more intensive types of agricultural cultivation. Such land use activities may result in cumulative effects on a variety of natural resources such as species and their habitats, water resources, and air quality. Additionally, they can also contribute to cumulative impacts on the urban environment such as changes in community character, traffic volume and patterns, increased noise, housing availability, and employment.

Cumulative impacts are best evaluated at a geographic scale that reflects their extent and likelihood of occurrence, such as a watershed or air shed, and must not be artificially limited to jurisdictional boundaries. Additionally, different resources may have different cumulative impact areas.

A definition of cumulative impacts under NEPA can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

The analysis of cumulative impacts includes information regarding other projects which have been recently completed or are in the planning stages. The existing and proposed projects listed below have been included in this analysis because they either are close to the corridor or could affect regional resources.

- **Leisure Town Road Overcrossing and Interchange at I-80, City of Vacaville.** The City of Vacaville and Caltrans replaced the existing Leisure Town Road/I-80 overcrossing with a new bridge structure similar to the Allison/I-80 overcrossing. This project is located at the end of Leisure Town Road outside the project limits for Alternative B, Alternative C, and Alternative D. Potential resources affected by the overcrossing project include traffic and visual resources.
- **Al Patch Park, City of Vacaville.** The City of Vacaville constructed a 34.3-acre sports complex consisting of five lighted softball fields, a lighted football field surrounded by an all-weather track, a playground/tot lot area, group picnic shelters, off-street parking, batting cages, and a single-story building complex housing a food concession area and restrooms. The park is located on the northwest corner of Peabody Road and California Drive.
- **Elmira Road Widening—Peabody Road to Allison Drive, City of Vacaville.** The City of Vacaville is acquiring right-of-way to widen the north side of Elmira Road between Peabody Road and Allison Drive.
- **Fairfield-Vacaville Multimodal Train Station, City of Fairfield (Sphere of Influence).** This station is planned as a multimodal transportation hub for the Capitol Corridor intercity passenger train service and for feeder bus systems serving the train station. Also, the Fairfield/Suisun Short-Range Transit Plan projects that an additional route to the northern part of Fairfield would be needed. The Fairfield-Vacaville Multimodal Train Station was identified in the Solano County Rail Facility Plan as one of three priority projects. This rail station would be located at the corner of Peabody Road and Cement Hill/Vanden Road, a major intersection along the corridor. Each of the four build alternatives includes roadway segments adjacent to the site of the proposed train station. Resources potentially affected by the train station would be similar to those described for the Jepson Parkway Project. However, all four build alternatives have been designed to accommodate the train station.

Technology Park, City of Fairfield. Vanden Road travels through an area designated in the City of Fairfield General Plan for an 800-acre technology park. It should be noted that the actual development area of Technology Park is expected to result in about 310 acres due to environmental constraints relating to wetlands. Similar to the Jepson Parkway Project, development of the Technology Park could impact biological resources, traffic, and visual resources.

- **Travis Air Force Base expansion, City of Fairfield.** Vanden Road travels through an area to be reserved for expansion of Travis Air Force Base. Similar to the development of the Technology Park, the Air Base expansion could impact biological resources, traffic, and visual resources.
- **Petersen Ranch, City of Suisun.** Petersen Ranch is a 153-acre residential development adjacent to Walters Road between Bella Vista Drive and East Tabor Avenue. Resources potentially affected by Petersen Ranch include visual, biological resources, and traffic.
- **Villages at Fairfield Residential Development, City of Fairfield.** The Villages at Fairfield residential development is located on approximately 440 acres in the northeastern area of the City of Fairfield, north of Air Base Parkway between Claybank Road and Peabody Road. The corridor is adjacent to the Woodlake Estates residential development to the west, and adjacent to the Goldridge residential development to the east. The Villages at Fairfield includes approximately 2,400 housing units, a commercial shopping center, an elementary school, two neighborhood parks, a portion of the Fairfield Linear Park, and associated public facilities, roadways and utilities. The Villages project could impact traffic, biological resources, and visual resources.
- **Solano Countywide Bicycle Plan.** A continuous bike path is proposed along Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road. Each of these roadways is included in one or more of the project alternatives. The updated Countywide Bicycle Plan describes bikeways along the corridor as priority projects. Implementation of the bike path could impact biological resources along the alignment.
- **Improvements to the I-80/I-505 Interchange.** Caltrans is preparing a project study report for improvements to the I-80/I-505 interchange in Vacaville. The report focuses on improvements that address existing weave conditions of traffic entering and exiting these roadways from local on- and off-ramps. Implementation of the plan could impact traffic, visual quality, noise, air quality, and biological resources.
- **High-Occupancy Vehicle (HOV) Lane on I-80.** The Metropolitan Transportation Commission's (MTC) Regional Transportation Plan (RTP) and the Solano Comprehensive Transportation Plan include a HOV lane on I-80 in Solano County. The segment between the I-80/I-680/SR 12 interchange and Air Base Parkway is not operational. The segment between Air Base Parkway and I-505 is in early planning stages.
- **Improvements to the I-80/I-680/SR-12 Interchange.** Caltrans, in cooperation with the Solano Transportation Authority (STA), is proposing to improve the I-80/I-680/SR 12 Interchange. Two alternatives are being considered to meet the long-term traffic and safety demands of the project area. Caltrans has prepared a Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the proposed project.
- **I-80/North Texas Street Interchange and Manuel Campos Parkway Extension.** The City of Fairfield will improve the I-80/North Texas Street interchange by widening the existing bridge over I-80 from two to four lanes and reconstructing the I-80 eastbound ramps. Manuel Campos

Parkway would extend from this interchange to Cement Hill Road, connecting to the Jepson Parkway at either Walters Road or Peabody Road. Manuel Campos Parkway would be a major east-west arterial. Implementation of this project could impact biological resources, air quality, traffic, noise, water quality, and, visual resources.

3.0.2 Section Organization

Each section of this chapter discusses a specific resource area (e.g., air quality, land use) and generally includes the following sections:

- **Regulatory Setting:** This section lists federal, State, and local policies, regulations, and standards that apply to the resource area, as well as applicable federal, State, and local agencies. For example, Section 3.15.6, Invasive Species, lists Executive Order 13112 (Invasive Species), the California Department of Food and Agriculture’s invasive plant species list, and the California Invasive Plant Council’s plant species list.
- **Affected Environment:** This section describes the existing project site and study area conditions with respect to the resource area. For example, Section 3.15.6, Invasive Species, lists potential invasive species that would occur in the biological study area, including the potential for infestation by specific species at particular locations.
- **Impacts (Including Permanent, Temporary, Direct, Indirect, and Cumulative):** This section first describes the technical methodology for impact assessment. If models were used to assess impacts, the models are described in this section, in addition to other technical tools. It also discusses the adverse effects of the project with respect to the resource area. Each impact discussion begins with a summary comparing the impacts of each alternative, and then continues to describe each alternative in detail. For example, in Section 3.3, Farmlands/Agricultural Lands, Impact FA-1 is followed by a description of the impacts under Alternatives A to E, respectively.

The following codes are used to identify the environmental issues discussed in this section:

- LU – Land Use
 - GR – Growth
 - FA – Farmlands/Agricultural Lands
 - CI – Community Impacts
 - UT – Utilities/Emergency Services
 - VIS – Visual/Aesthetics
 - CR – Cultural Resources
 - TRA – Traffic and Transportation/
Pedestrian and Bicycle Facilities
 - HYD – Hydrology and Floodplains
 - WQ – Water Quality and Stormwater
Run-Off
 - GEO – Geology, Soils, and Seismicity
 - HAZ – Hazardous Waste and Materials
 - AQ – Air Quality
 - N – Noise
 - BR – Biological Environment
- **Avoidance, Minimization, and/or Mitigation Measures:** This section lists measures that shall be sought to reduce all negative project impacts.

3.0.3 Overview and Terminology of Impacts and Mitigation Measures

Impacts are identified as permanent, temporary, direct, or indirect effects (the terms *effects* and *impacts* are synonymous).¹ Under NEPA, effects include ecological, aesthetic, historic, cultural, economic, social, and health effects, whether they are direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the overall effect would be beneficial (40 CFR 1508.8). For the purposes of this analysis, these terms are defined as follows:

- **Permanent impacts** are irreversible changes and changes that would occur from operation of the proposed action.
- **Temporary impacts** would occur only during the construction period of the proposed action.
- **Direct impacts** would occur within the project footprint or temporary construction areas. Direct impacts are caused by the proposed action and occur at the same time and place (40 CFR 1508.8).
- **Indirect impacts** would be caused by the proposed action and would occur later in time or farther removed in distance, but would still be reasonably foreseeable. Indirect impacts may include growth-inducing and other effects related to induced changes in the pattern of land use, population density, or growth rate, as well as related effects on air, water, and other natural systems, including ecosystems (40 CFR 1508.8).
- **Cumulative impacts**, according to the NEPA regulations, occur as a result of the incremental impact of the project when added to other past, present, and reasonably foreseeable future projects, regardless of what agency (federal or nonfederal) or person undertakes the other projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time (40 CFR 1508.7).
- **Mitigation measures** are recommended to reduce, avoid, or eliminate the negative effects of the proposed project. For each impact identified as being significantly adverse, this document suggests mitigation measures to reduce or eliminate the negative effect of the proposed project.

3.0.4 Background Technical Studies

The following technical studies have been prepared for the Jepson Parkway Project and form the basis for the analysis in the following resource sections. These technical studies are incorporated by reference and are available for public review at STA's and Caltrans offices. As reflected below, the technical reports were updated as needed to reflect current conditions in the corridor. These reports are also listed in Appendix G.

- España Geotechnical Consulting. 2005. Initial Site Assessment for the Proposed Jepson Parkway Project, Solano County, California. July. Prepared for Jones & Stokes, Sacramento, CA. Roseville, CA.

¹ California Department of Transportation (Caltrans). 2010. Environmental Impact Statement Annotated Outline. As Revised: May 2010. Available: <<http://www.dot.ca.gov/ser/forms.htm>>

- PBS&J. 2007. Updated Transportation/Circulation Impacts Report: Jepson Parkway Project. November. Prepared for Solano Transportation Authority Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2005. Visual Resources Technical Report: Jepson Parkway Project. September. (Updated by PBS&J, March 2008) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2005. Hydrology and Water Quality Technical Report: Jepson Parkway Project. August. Sacramento, CA. (Addendum by PBS&J, March 2011) Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2008. Updated Air Quality Technical Report: Jepson Parkway Project. May. Updated by PBS&J, February 2011. Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2008. Updated Noise Study Technical Report: Jepson Parkway Project. May (Revised October 2008). Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2010. Noise Abatement Decision Report (NADR): Jepson Parkway Project. November. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2005. Delineation of Waters of the United States: Jepson Parkway Project. October. Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2006. Historic Property Survey Report: Jepson Parkway Project. January. Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2006. Natural Environment Study: Jepson Parkway Project. February. (Updated by PBS&J, December 2007 and August 2009) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Trott, R. 2006. Community Impact Assessment: Jepson Parkway Project. February. (Updated by PBS&J, April 2008) (Addendum by PBS&J, August 2009) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Trott, R. 2006b. Relocation Impact Report: Jepson Parkway Project. February. (Updated by PBS&J, December 2007) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2008. Mobile Source Air Toxics Analysis. January. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Ninyo & Moore. 2008. Updated Initial Site Assessment Jepson Parkway Project. April. Prepared for PBS&J, San Francisco, CA.

- PBS&J. 2008. Updated Location Hydraulic Study Jepson Parkway Project. March. (Addendum by PBS&J, March 2011) Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2009. Biological Assessment: Jepson Parkway Project, Solano County, California. March. Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2009 Jepson Parkway Project Biological Assessment for NOAA Fisheries No Effect Documentation Prepared for Environmental Impact Statement. March. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Project Level PM2.5 Conformity Documentation, February 2011.

HUMAN ENVIRONMENT

3.1 Land Use

The information below is summarized from the Community Impact Assessment (CIA), Relocation Impact Report (RIR), and Section 4(f) Evaluation prepared for the proposed action. These three reports are incorporated by reference and are available for public review at the Solano Transportation Authority's (STA's) and Caltrans' offices. This section evaluates project consistency with existing and future land use, consistency with relevant plans, and project effects on park and recreational resources. The project is not in a coastal zone or in the vicinity of any wild and scenic rivers; therefore, those issues are not addressed.

3.1.1 Existing and Future Land Use

3.1.1.1 Regulatory Setting

Existing and future land uses in the corridor are guided by various planning documents. The following plans and initiatives are applicable to land use planning in the corridor:

- Solano County General Plan
- Solano County Orderly Growth Initiative (Proposition A)
- Vacaville General Plan
- City of Vacaville and Solano Irrigation District Master Water Agreement
- Fairfield General Plan
- Peabody-Walters Master Plan
- Suisun City General Plan
- Travis AFB Airport Land Use Plan

Relevant policies from each general plan are presented in Section 3.1.2.1, the regulatory setting for the consistency with plans and policies analysis. In addition, regional transportation planning for the corridor is generally conducted by the Metropolitan Transportation Commission (MTC) in conjunction with STA.

3.1.1.2 Affected Environment

Existing Land Uses

Within Solano County, the corridor crosses through Vacaville, Fairfield, and Suisun City. Figure 3.1-1 shows the corridor and the city boundaries, as well as future land uses planned for the area. This section describes existing land uses in the corridor. Solano County contains both highly urbanized lands

and rural lands. Approximately 16 percent of the County is urbanized, 75 percent is rural, and nine percent consists of bodies of water.¹

Most of the County's urban land is concentrated along the I-80 corridor and near the I-680/I-780 interchange. Elsewhere in the County, land primarily supports rural residential, agricultural, and open space uses. Major land uses within the corridor are varied and include concentrations of residential, commercial, industrial, and agricultural uses. Descriptions of major lands uses adjacent to the project roadways of the build alternatives within the corridor are provided below.

Leisure Town Road in Vacaville from Orange Drive to New Ulatis Creek (Alternatives B, C, and D). Along the western side of Leisure Town Road in this segment, major land uses include a storage business and the Green Tree Golf Course. Along the eastern side, land uses include the Casa Grande Mobile Home Park, several rural residences, and agricultural uses.

Leisure Town Road in Vacaville from New Ulatis Creek to Alamo Drive (Alternatives B, C, and D). Land uses along the west side of Leisure Town Road through this segment include the Vaca Valley Christian Life Center, several single-family home subdivisions, and a small industrial park. Land uses along the east side of the roadway are primarily agricultural, with a few rural homes located adjacent to the road north and south of the intersection of Leisure Town Road and Elmira Road.

Leisure Town Road in Vacaville and Unincorporated Solano County from Alamo Drive to Vanden Road (Alternatives B, C, and D). With the exception of the new single-family residential subdivision at the southwest corner of the intersection of Leisure Town Road and Alamo Drive, agricultural uses are adjacent to both sides of the corridor. The Union Pacific Railroad (UPRR) tracks are immediately southeast of Leisure Town Road as the roadway curves southwest to its connection with Vanden Road.

Vanden Road in Unincorporated Solano County from Leisure Town Road to Peabody Road (Alternatives B, C, and D). Land adjacent to most of this portion of the corridor supports agricultural uses. Only the southwest portion, near the intersection of Vanden Road and Peabody Road, is developed with urban uses, including a site used by the Travis Unified School District (TUSD) for meeting and storage space, a business center with three auto-towing businesses, a vehicle storage business, a ready-mix concrete plant, and a trucking business yard.

Cement Hill Road in Fairfield from Peabody Road to Walters Road Extension (Alternative B). Along this portion of the corridor, Cement Hill Road is bordered on the north by industrial and heavy commercial land uses, and on the south by undeveloped grazing lands.

Walters Road Extension and Walters Road in Fairfield from Cement Hill Road to Air Base Parkway (Alternative B). The route of the proposed Walters Road Extension passes through undeveloped grazing lands between Cement Hill Road and the UPRR tracks. The portion of the corridor between the UPRR tracks and Air Base Parkway is bordered on both sides by property owned

¹ Solano County. 2001. Solano County Land Use and Circulation Element: a part of the Solano County General Plan. December 1980 as amended through June 2001. Fairfield, CA: Planning Department.

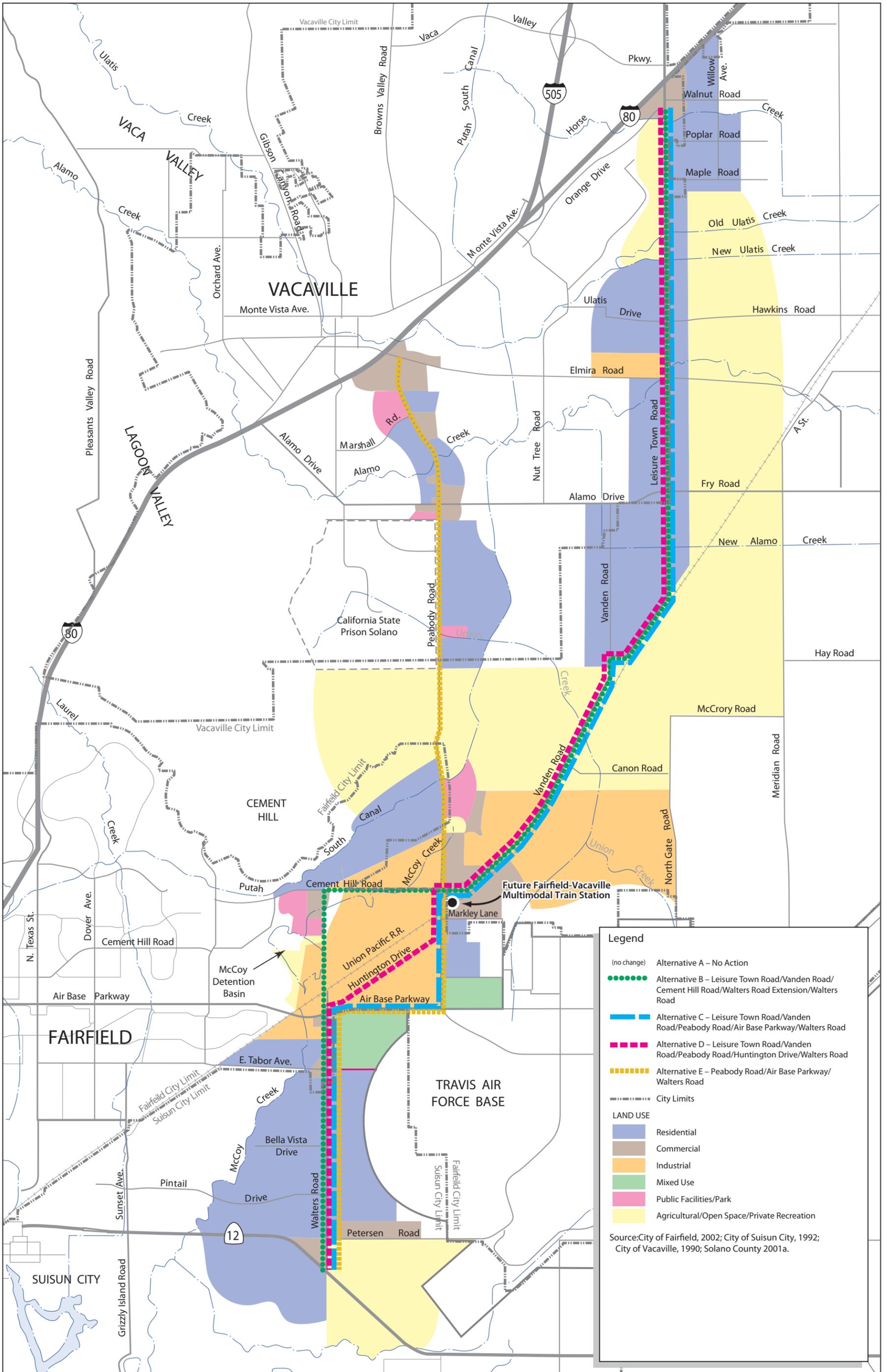


Figure 3.1-1
Generalized General Plan Land Use Designations
Adjacent to the Alternative Jepson Parkway Alignments

by the City of Fairfield. This property is used as a storage yard by Computech Lumber. Between Huntington Drive and Air Base Parkway, Walters Road is bordered by a fast food restaurant to the east and a City of Fairfield fire station to the west.

Walters Road in Fairfield from Air Base Parkway to East Tabor Avenue (Alternatives B, C, D, and E). This portion of Walters Road is generally developed along the west side and partially developed on the east side. Land uses along the west side of the Walters Road include mixed commercial uses (i.e., an electrical supply business, convenience market, and storage facility) and the Dover Mobile Home Park. Open grasslands are located along the northeast part of this portion of the corridor, and an Assembly Hall of Jehovah's Witnesses is situated immediately north of East Tabor Avenue.

Walters Road in Suisun City from East Tabor Avenue to Bella Vista Drive (Alternatives B, C, D, and E). Land uses adjacent to Walters Road through this portion of the corridor include a tavern, a vacant lot, the Tolenas area rural residential subdivision, and a small strawberry field and stand along the western side of the road. Land along the eastern side largely supports low-density residential uses in the Petersen Ranch subdivision, and a vacant commercial area at the southern corner of East Tabor and Walters Road.

Walters Road in Suisun City from Bella Vista Drive to SR 12 (Alternatives B, C, D, and E). Most of this portion of the corridor is urbanized, with single-family-home subdivisions on both sides of Walters Road between Bella Vista Drive and Petersen Road. A convenience market and gas station are located at the northeast corner of the Walters Road/Petersen Road intersection. Between Petersen Road and SR 12 the land is vacant on both sides of the roadway.

Peabody Road in Fairfield from Cement Hill Road/Vanden Road to Huntington Drive (Alternatives C, D, and E). Land uses adjacent to Peabody Road through this portion of the corridor are mixed. A Pacific Gas and Electric (PG&E) electric substation is southwest of the Cement Hill Road/Peabody Road intersection and a Clorox Producing Manufacturing Company facility is northwest of the Peabody Road/Huntington Drive intersection. Between these two facilities, Peabody Road makes an at-grade crossing of the UPRR tracks. Along the east side of Peabody Road, land uses include a warehouse facility, two rural properties, and a residential subdivision.

Peabody Road in Fairfield from Huntington Drive to Air Base Parkway, and Air Base Parkway to Walters Road (Alternatives C, D, and E). The portion of Peabody Road from Huntington Drive to Air Base Parkway is bordered by undeveloped industrial land to the west and by a residential development and parcel of undeveloped industrial park land to the east. A convenience store/gas station is located on the southwest corner of Peabody Road/Huntington Drive, and a large industrial facility is located on the west side between Dobe Lane and Air Base Parkway. The portion of Air Base Parkway between Peabody Road and Walters Road is bordered by undeveloped industrial land to the north and grazing lands to the south, except for an auto glass and transmission business located south of Air Base Parkway, about halfway between Peabody Road and Walters Road.

Huntington Drive in Fairfield from Peabody Road to Walters Road (Alternative D). Huntington Drive traverses the Tolenas Industrial Park, which has developed and undeveloped industrial properties. Developed properties include several large industrial structures on both sides of Huntington Drive. Industrial businesses along this portion of the corridor include the Clorox Products Manufacturing Company, Ball Metal Beverage Container Corporation, Macro Plastics, East Bay Tire Company, Hydra Trucking & Warehousing, and Computech Lumber. Near Walters Road, Huntington Drive intersects both ends of Crocker Circle. Crocker Circle provides access to several industrial properties, including Sunpol Resins & Polymers, Ashland Distribution, Saint-Gobain Containers, and Rexam Beverage Can Americas. A fast food restaurant is located at the southeast corner of the intersection of Huntington Drive and Walters Road.

Peabody Road in Vacaville from Elmira Road to Alamo Drive (Alternative E). This portion of the corridor passes through a heavily urbanized area of Vacaville that includes mixed land uses. Along the west side of Peabody Road, land uses include an auto dealership, a PG&E natural gas fueling station, an athletic field and track that is part of Will C. Wood High School, an apartment complex, a single-family residential subdivision, a senior apartment complex, a series of condominium properties, and a gas station. Along the east side of Peabody Road, land uses include the Fairmont subdivision; a strip commercial center; the 99¢ Only Store commercial center; a KinderCare Learning Center; two apartment complexes; the Gregory Park subdivision; and a commercial center with several businesses, including a supermarket and a real estate office.

Peabody Road in Vacaville from Alamo Drive to Vacaville City Limits (Alternative E). This portion of the corridor traverses a mixed, highly urbanized section of Vacaville. Land uses along the west side of Peabody Road include the Gateway Center, a strip commercial center with several service-oriented businesses; the California Center, a commercial center occupied by medical offices, an animal hospital, and other service-oriented businesses; the future site of Phase II of the Al Patch Memorial Park, a year-round lighted sports field complex; California State Prison, Solano; and the Society for Prevention of Cruelty to Animals of Solano County. Along the west side of Peabody Road, land uses include a fast food restaurant, an assisted living complex for seniors, two residential subdivisions, and Arlington Park.

Peabody Road in Unincorporated Solano County from Vacaville City Limits to Putah South Canal in Fairfield (Alternative E). Through this portion of the corridor, Peabody Road passes through rolling hills. There are several large agricultural properties adjacent to both sides of the road. These properties are primarily used for livestock grazing. A residential development is under construction on the west side of Peabody Road, north of Putah South Canal, in the City of Fairfield.

Peabody Road in Fairfield from Putah South Canal to Vanden Road/Cement Hill Road in Unincorporated Solano County (Alternative E). Along the west side of this portion of the corridor, land uses vary from residential to industrial, including the new Gold Ridge residential subdivision, a storage business, three rural residences on relatively large parcels, a cabinet manufacturing business, a materials recycling business, and a construction materials business. Land uses along the east side of Peabody Road include a large residential development under construction, the North Bay Region Water Treatment Plant property, a trucking business, a landscape supply business, an auto-wrecking yard, a

boat and recreational vehicle storage yard, a construction materials business, and another trucking business.

Development Trends

City of Vacaville

There is little opportunity for infill development within the existing city limits of Vacaville. This suggests that future growth will occur on the city's edges, including the areas east and southeast of the city, in the vicinity of the corridor. Similarly, most of the land adjacent to Leisure Town Road and Peabody Road within the city limits is already developed.²

The only substantial development activity in the Vacaville portion of the corridor is the Southtown project. Vacaville recently annexed the 244-acre area east of Nut Tree Road, extending east to the UPRR tracks near Leisure Town Road. The Southtown development will ultimately include 1,362 housing units. As of 2007, construction has not begun.³

City of Fairfield

Residential development in Fairfield has slowed in recent years, with 896 residential building permits granted by the City in 2005 and 231 permits granted in 2006. Through the first quarter of 2007, 116 residential permits have been granted.⁴ Although no large commercial or industrial projects are currently planned along the corridor, three residential projects are currently under construction:⁵

- Through the third quarter of 2003, 800 single-family home building permits were issued for the Goldridge subdivision development. This project will ultimately result in the development of nearly 1,500 homes west of Peabody Road and north of Cement Hill Road to the northern city limits.
- The Madison project, east of Peabody Road and north of Vanden Road, will include 221 townhouse units at buildout.
- The Villages at Fairfield residential development, north of Air Base Parkway between Claybank Road and Peabody Road, is located on approximately 440 acres. The Villages at Fairfield includes approximately 2,400 housing units, a commercial shopping center, an elementary school, two neighborhood parks, a portion of the Fairfield Linear Park, and associated public facilities, roadways and utilities.

² City of Vacaville Community Development Department. 2007. Maureen Carson, Senior Planner. Vacaville, CA. April 20, 2007—telephone conversation.

³ City of Vacaville Community Development Department. 2007. Maureen Carson, Senior Planner. Vacaville, CA. April 20, 2007—telephone conversation.

⁴ City of Fairfield Community Development Department. 2007. Erin Beavers. Fairfield, CA. June 21, 2007—email communication.

⁵ City of Fairfield. 2007. David Feinstein, Senior Planner. Fairfield, CA. April 19, 2007—email communication.

City of Suisun City

Most of the area within the Suisun City portion of the corridor (i.e., Walters Road) has already been developed with residential uses. The area east of Walters Road between East Tabor Avenue and Bella Vista Drive was recently developed as part of the Petersen Ranch project, a 153-acre low-density residential development.

Solano County

With the exception of a potential annexation for the City of Vacaville (described below), no recent or future development of lands under the jurisdiction of Solano County near the corridor is anticipated.

Developable Land and Future Land Uses

Vacaville

Along the west side of Leisure Town Road in Vacaville (Alternatives B, C, and D), there is very little developable land near the road. With the exception of a vacant parcel designated for general commercial uses at the southwest corner of the intersection of Leisure Town Road and Orange Drive, no developable properties are available on the west side of Leisure Town Road.

Along the east side of Leisure Town Road, two vacant parcels are located north of Horse Creek. Farther south, most of the land between Maple Road and Alamo Drive is undeveloped and in agricultural use. With the exception of a small strip directly adjacent to the east side of Leisure Town Road, Solano County has jurisdiction over these agricultural properties. Vacaville has designated the strip primarily for low-density residential uses with an agricultural buffer zone separating the residential area from the active agriculture areas.

Along Peabody Road (Alternative E) between Elmira Road and Foxboro Parkway, several vacant parcels are adjacent to the roadway. Vacant parcels include a vacant retail commercial lot north of the intersection of Peabody Road and Berryessa Drive, a vacant retail commercial lot on the east side of Peabody Road north of the KinderCare Learning Center, and a vacant commercial lot on the west side of Peabody Road between two commercial centers, the Gateway Center and California Center.

Fairfield

Pockets of vacant land are adjacent to the corridor in sporadic locations, although much of the vacant property is in the process of being developed. Exceptions include a large area of vacant land south of Cement Hill Road and north of the UPRR tracks, on both sides of the proposed Walters Road Extension. This area is designated by the Peabody-Walters Master Plan for office, commercial, and sports center uses (west side of the proposed Walters Road Extension) and limited industrial/service commercial and general industrial uses (east side of the proposed Walters Road Extension).⁶ Additionally, several parcels north and south of Huntington Drive are designated for limited

⁶ City of Fairfield. Peabody-Walters Master Plan, prepared by Creegan & D'Angelo Consulting Engineers, September 6, 1994.

manufacturing uses, and a parcel at the northeast corner of the intersection of Peabody Road and Air Base Parkway is designated for mixed uses are currently vacant.

The site of the future Fairfield-Vacaville Multimodal Train Station and the immediate surrounding area are vacant, near the Vanden Road/Peabody Road intersection in unincorporated Solano County. The City of Fairfield is planning to annex the station site and the surrounding area, and is currently preparing a specific plan to address land uses in this area.

The Fairfield-Vacaville Train Station Specific Plan calls for the development of 2,500 to 3,000 residential housing units within the one-half mile radius of train station along with approximately 14 acres of commercial development (approximately 170,000 square feet) at the Peabody Road/Vanden Road intersection opposite the train station. The Draft Environmental Impact Report (EIR) for the Specific Plan was released in December 2010 with adoption of the plan likely in 2011.

Suisun City

Virtually all land adjacent to and in the immediate vicinity of the corridor through Suisun City is developed or in the process of being developed. A small vacant lot is located slightly northeast of the intersection of Walters Road and Petersen Road and is designated for commercial service use in the Suisun City General Plan. A larger property is located in the triangle formed by Petersen Road, Walters Road, and SR 12. Approximately one-half of this property is developed, while the rest has been approved for commercial development, with construction to begin in 2008.

Immediately east of Walters Road in the unincorporated area bounded by Petersen Road on the north and SR 12 on the south, 550 acres of agricultural land are shown on the Suisun City General Plan land use diagram as a reserve area. Reserve lands are to be considered for development only when they may be needed for urban expansion. The preliminary general plan designations for the reserve area comprise 150 acres for service commercial use and 400 acres for business park/industrial use.⁷

Solano County

Most of the undeveloped land near the corridor is in unincorporated Solano County. The County has designated these undeveloped areas for extensive or intensive agricultural use.

3.1.1.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

Compatibility between a new use, like a roadway, with existing development is dependent on how the new use alters the character of the neighborhood, district, or city. Integral elements of community character include traffic patterns, air quality and noise levels, visual quality, and adequacy of emergency services response. This analysis focuses specifically on land use conflicts. Other aspects of land use compatibility (such as traffic, air quality, noise, visual quality, and public services) are

⁷ City of Suisun City. 1992. City of Suisun City General Plan. Suisun City, CA.

addressed in the corresponding sections of this EIS. This impact analysis here focuses on the compatibility of roadway use with the other existing uses in the corridor.

Summary of Impacts to Land Use

Table 3.1-1 compares each alternative and its respective land use impacts. As shown, none of the alternatives would conflict with existing or planned land uses. In addition, Alternatives A, B, C, and D would not conflict with planned land uses. Alternative E would result in a minor conflict with a planned land use, but overall is considered consistent with planned land uses. Land use impacts are described in detail below.

Impact Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Existing land uses	No Conflict				
Planned land uses	No Conflict	No Conflict	No Conflict	No Conflict	Minor Conflict

Impact LU-1: Would the Alternatives Conflict with Existing Land Uses?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would not be any conflicts with existing land uses.

Alternative B. Under Alternative B, indirect short-term land use conflicts would result from construction activities. The construction of Alternative B roadway improvements would generate temporary air quality impacts (e.g., diesel fumes and dust), noise from heavy equipment operations, and potential glare and lighting impacts from potential nighttime construction activities. Temporary construction impacts could affect residents and businesses immediately adjacent to the entire length of the corridor. The impacts would be most pronounced in the urbanized areas of the corridor, including neighborhoods along Leisure Town Road between Orange Drive and Alamo Drive, the TUSD site, businesses along Vanden Road, and neighborhoods and businesses along Walters Road between Air Base Parkway and Scandia Road. Construction would also temporarily block access to homes and businesses along Leisure Town Road in Vacaville, Vanden Road in unincorporated Solano County, Cement Hill Road in Fairfield, and Walters Road in Fairfield and Suisun City. Construction would cause congestion on these roads and cross streets during the construction period. However, Alternative B would not result in any permanent air quality, noise, or visual effects. With the exception of the Walters Road Extension, Alternative B would only modify existing roads. As such, Alternative B would not divide an established community.

The Walters Road Extension would construct a new roadway in an area that is primarily undeveloped and used as grazing land; the proposed roadway would also pass through a small portion of land currently used as a storage yard for Computech Lumber. The new roadway would not divide a community. These existing uses are not considered sensitive uses and the new roadway would not

create substantial air quality or noise impacts. Therefore, the proposed Walters Road Extension would not conflict with these existing uses.

Alternative C. The effects on existing land uses along roadways common to Alternative B and Alternative C (including Leisure Town Road, Vanden Road, and existing Walters Road) are described above. In addition to the neighborhoods along those portions of the alignment, Alternative C would move the roadway closer to neighborhoods east of Peabody Road between the UPRR tracks and Air Base Parkway. As described for Alternative B, however, the proposed expansion of existing roadways would not result in permanent air quality, noise, or visual impacts or divide a community. Therefore, Alternative C would not conflict with the existing land uses in the corridor.

Alternative D. Under Alternative D, effects on existing land use would be similar to that described above along the roadways shared with Alternatives B and C, including Leisure Town Road, Vanden Road, and existing Walters Road. Alternative D would result in similar air quality, noise, and visual effects to these neighborhoods as Alternatives B and C. The unique portion of Alternative D, Huntington Drive, does not bisect any residential neighborhoods or areas with sensitive uses. Alternative D would construct a median and increase traffic volumes in an active industrial area. Alternative D would not result in any permanent air quality, noise, or visual effects. Therefore, Alternative D would not conflict with the existing land uses in the corridor.

Alternative E. Under Alternative E, short-term air quality and noise impacts would be most pronounced in the urbanized areas of the corridor, including neighborhoods and businesses along Peabody Road, particularly between Elmira Road and California Drive, businesses along Peabody Road near its intersection with Vanden Road/Cement Hill Road, neighborhoods along the east side of Peabody Road between Vanden Road and Air Base Parkway, and neighborhoods and businesses along Walters Road between Air Base Parkway and Scandia Road.

As described for Alternatives B, C, and D, Alternative E would not result in permanent air quality, noise, or visual impacts to these sensitive neighborhoods. In addition, Alternative E does not include any new roadways. Therefore, Alternative E would not conflict with existing land uses.

Impact LU-2: Would the Alternatives Conflict with Planned Land Uses?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would not be any conflict with planned land uses.

Alternative B. Alternative B is not anticipated to result in conflicts with planned land uses in the corridor. Approved projects adjacent to Alternative B have been designed to accommodate the projected right-of-way needs of the project, eliminating potential conflicts. Additionally, the proposed Walters Road Extension, which would traverse an undeveloped portion of Fairfield governed by the Peabody-Walters Master Plan, is consistent with the City of Fairfield's recently adopted land use diagram. Thus, Alternative B would be compatible with future industrial uses in this area. Furthermore, Alternative B would not conflict with the planned Fairfield-Vacaville Multimodal Train

Station, southeast of the Peabody Road/Vanden Road intersection, because roadway widening under Alternative B would avoid direct conflicts with the area designated for the train station development.

Alternative C. The impacts of Alternative C would be similar to those identified above for Alternative B for their common segments, primarily along Leisure Town Road, Vanden Road, and Walters Road. No conflicts between planned uses are anticipated along these portions of the corridor, shared with Alternative B.

Alternative C is not anticipated to result in conflicts with planned land uses in the corridor, including the future Fairfield-Vacaville Multimodal Train Station. As part of Alternative C, an overcrossing would be constructed carrying Peabody Road over the UPRR tracks just south of the intersection of Peabody Road and Cement Hill Road/Vanden Road. The overcrossing would be designed to facilitate automobile access to the proposed station.

No conflicts are anticipated between Alternative C and the residential subdivision being constructed along the east side of Peabody Road south of Markley Lane. Based on field observations, the homes being constructed appear to be set back from Peabody Road, and a soundwall has been constructed between the future homes and the roadway. On the northeast corner of the Peabody Road/Whitney Drive intersection, Alternative C would take a strip of land from a parcel soon to be developed as an ARCO service station. The narrow acquisition from this parcel should have no adverse effect on the usability of the parcel.

Alternative D. The impacts of Alternative D would be similar to those identified above for Alternatives B and C for their common segments, primarily along Leisure Town Road, Vanden Road, and Walters Road. No conflicts between planned uses are anticipated along these portions of the corridor, shared with Alternatives B and C.

Alternative D is not anticipated to result in conflicts with planned land uses in the corridor. Alternative D would displace portions of vacant industrial properties in the Tolenas Industrial Park, but there are no proposals pending to develop these parcels.⁸ As described previously for Alternative C, Alternative D is not anticipated to result in conflicts with the future Fairfield-Vacaville Multimodal Train Station. Similarly, based on field observations, no conflicts are anticipated with the residential subdivision being constructed along the east side of Peabody Road or the ARCO service station planned for the northeast corner of Peabody Road and Whitney Drive.

Alternative E. Based on a review of current projects in Vacaville and Fairfield and a field review of the corridor,⁹ Alternative E would avoid conflicts with most planned land uses along the corridor, including planned uses along Peabody Road from Vanden Road to Air Base Parkway and along Walters Road from Air Base Parkway to Bella Vista Drive. Along Peabody Road at the southwest corner of the intersection of California Drive and Peabody Road in Vacaville, Alternative E would displace a strip of land on a parcel planned for development with 120 parking spaces (out of a total of 680 spaces) under

⁸ FDPD 2004.

⁹ City of Vacaville Community Development Department. 2004. Maureen Carson, Senior Planner. Vacaville, CA. March 24, 2004—telephone conversation.

Phase II of the City of Vacaville’s development plans for Al Patch Park. In the context of the entire corridor, impacts to Al Patch Park are considered minor; therefore, Alternative E is consistent with planned land uses.

Impact LU-3: Would the Alternatives, in Combination with Other Development, Result in Cumulative Land Use Effects?

Land use conflicts, as described above, are characterized by a number of factors, including noise levels, air quality emissions, safety factors, etc. Land use conflicts are unique to the specific area in which a project is proposed, and as such, they do not combine with other land use conflicts. The land use impacts of the proposed project, including direct conflicts with existing land uses within the proposed right-of-way and impacts on planned land uses would not combine with the effects of other projects since the project’s impacts are limited to resources that are specifically located within the proposed right-of-way or immediately adjacent to the right-of-way. As described above, the project would not substantially conflict with planned development in the corridor. Additional cumulative development would not combine with the project to result in land use conflicts.

3.1.1.4 Avoidance, Minimization, and/or Mitigation Measures

None of the alternatives substantially conflict with existing or future land uses; therefore no mitigation measures are needed.

3.1.2 Consistency with State, Regional, and Local Plans and Programs

3.1.2.1 Regulatory Setting

Land use and transportation planning in the corridor are guided by various planning documents at the State, regional, and local level. The applicable policies from each local jurisdiction’s general plan are identified in Table 3.1-2, below. In addition to these local general plans, relevant regional transportation plans and programs, regional growth plans, and habitat conservation plans are listed below. The corridor is not within a Coastal Zone or near any wild and scenic river; therefore, these plans are not described.

Transportation Plans and Programs

MTC Regional Transportation Plan, Transportation 2035 Plan for the San Francisco Bay Area (2009)

The 2035 Regional Transportation Plan (RTP) specifies investments and strategies to maintain, manage, and improve surface transportation throughout the nine-county Bay Area until 2035. The RTP is updated every three years to reflect new planning priorities and changing projections of growth and travel demand. The RTP includes the Jepson Parkway Project as a Strategic Expansion within Solano County.

**Table 3.1-2
Consistency with General Plan Policies**

Policy	Alternative A	Build Alternatives (B, C, D, and E)
Solano County General Plan		
Circulation and Transportation Policy 2: Develop the transportation system to promote the planned pattern of land uses; limit transportation improvements to those necessary to serve existing and planned future land uses.	N/A	Consistent. The project is designed to serve existing and planned future land uses. It would not provide access to unincorporated parts of the corridor beyond access already provided by County roads. Alternative B would provide access to a currently undeveloped area within the City of Fairfield.
Streets and Roads Policy 1: Plan and design a street and road system to serve areas where growth is desired and anticipated as shown on the General Plan while minimizing growth-inducing impacts on agricultural and open space areas.	Inconsistent	Consistent. The project would not provide new access to agricultural and open space lands within the unincorporated parts of the corridor. Within the incorporated areas, the project would extend access through undeveloped open space. The increased roadway capacity provided by the project could, however, create pressure for growth in agricultural and open space areas along the corridor. Existing growth control measures in effect in Vacaville, Fairfield, and Solano County are considered strong enough to substantially limit the growth-inducing impacts of the project.
Non-Motorized Facilities Policy 1: Develop a trail and bikeway system along selected routes to provide intercity and intercounty access.	N/A	Consistent. Each of the build alternatives would provide a bikeway along the length of the corridor that would tie into the existing network of bicycle routes within the project vicinity.
City of Vacaville General Plan		
Policy 2.1-G5: Design aesthetically pleasing roadways, including a loop street system lined with trees or other appropriate landscaping, that connect Vacaville neighborhoods and serve planned development. Streets alone should not be used to set the outer limits of urbanization.	N/A	Consistent. Each of the build alternatives incorporates landscaping and other features to improve the aesthetic qualities of the roadway.
Policy 2.2-G5: Plan for and carry out improvements to the city's infrastructure, consistent with the General Plan, to preserve economic vitality, accommodate new housing, increase the City's revenue base, enhance mobility and economic opportunity, and correct deficiencies.	Inconsistent	Consistent. The build alternatives improve transportation infrastructure, thereby enhancing mobility and correcting deficiencies.
Policy 6.1-I2: Implement, to the extent feasible, transportation element improvements summarized in General Plan Table 6-1 (Roadway: Leisure Town Road between City limits and I-80; Alamo Drive and City limits—widen from two to four lanes).	Inconsistent	Consistent. Alternatives B, C, and D would widen Leisure Town Road from two lanes to four lanes. Alternative E would not widen any portion of Leisure Town Road.
Policy 6.2-G2: Coordinate, to the extent feasible, transportation system improvements with neighboring jurisdictions.	N/A	Consistent. The project is being coordinated with Vacaville, Fairfield, Suisun City, and Solano County.
Policy 6.5-G1: Establish a comprehensive network of on- and off-roadway bike routes to encourage the use of bikes for commute, recreational, and other trips.	N/A	Consistent. Each of the build alternatives would provide a bikeway along the length of the corridor that would tie into the existing network of bicycle routes in the project vicinity.

**Table 3.1-2
Consistency with General Plan Policies**

Policy	Alternative A	Build Alternatives (B, C, D, and E)
City of Fairfield General Plan		
Policy CI 1.1: Develop a network of roads that is compatible with the general land use patterns of the City.	N/A	Consistent. Each of the build alternatives would be consistent with roadway improvements identified by the Fairfield General Plan. Impact LU-1 and Impact LU-2 found each of the build alternatives to be compatible with the general land use patterns of the city.
Policy CI 2.1: Local circulation system improvements shall be consistent with the goals and objectives stated in the MTC's RTP.	Inconsistent	Consistent. MTC's <i>Bay Area Freeway Reliever Routes Phase II Evaluation Report</i> concluded that the corridor would be a beneficial element of an overall program for corridor traffic management for the Bay Area and that the project should proceed. MTC's <i>Interstate 80 Corridor Study</i> recommended an I-80 reliever route in Solano County. The project would be consistent with MTC goals and objectives.
Policy CI 2.4: Work with Caltrans and adjacent jurisdictions to improve the operational performance of I-80, I-680, and SR 12 as regional facilities.	Inconsistent	Consistent. The project would improve the operational performance of I-80 by accommodating a portion of local traffic currently using I-80 to access local areas.
City of Suisun City General Plan		
Community Character and Design Policy 19: The City will require that arterial and collector streets contain sufficient widths to allow for landscaping along the right-of-way, such as landscaped strips between street and sidewalk, landscaped medians, and landscaping along soundwalls and entry walls. Landscape setbacks vary depending on the character, function, and location of streets. The Development Guidelines and the Downtown/Waterfront Specific Plan specify appropriate landscaping widths and setbacks.	N/A	Consistent. The build alternatives include a landscaped strip separating the roadway from a paved Class I bicycle path along the east side of Walters Road between East Tabor Avenue and Bella Vista Drive. The Petersen Ranch development also includes a soundwall between the bike path and the new residences east of Walters Road. Trees would also be planted in the center median at regularly spaced intervals with an understory of low shrubs, native grasses, and groundcover or decomposed granite. Along Walters Road from Bella Vista Drive to SR 12, median landscaping would be installed at various locations consistent with the urban landscaping concept described in the Concept Plan.
Circulation and Transportation Policy 23: The bicycle route system shall reinforce the purposes of bicycle travel: to provide a safe and relatively direct means of reaching schools, parks, places of employment, and other destinations by bicycle; and to provide bicycling opportunities along scenic areas.	N/A	Consistent. The build alternatives include paved Class I bicycle paths.

MTC Transportation Improvement Program

The federally-required Transportation Improvement Program, or TIP, is a comprehensive listing of all Bay Area transportation projects that receive federal funds or that are subject to a federally-required action, such as a review for impacts on air quality. The TIP sets forth MTC's investment priorities for transit and transit-related improvements, highways and roadways, transit, and other surface transportation improvements in the nine-county Bay Area. MTC prepares and adopts the TIP every two years. By law, the TIP must cover at least a three-year period and contain a priority list of projects grouped by year. The Jepson Parkway Project is included in the 2011 TIP, identification number SOL110003 - 110006.

Solano Comprehensive Transportation Plan (CTP 2030) (2005)

The STA's Comprehensive Transportation Plan (CTP 2030) envisions, directs, and prioritizes the transportation needs of Solano County through the year 2030. The CTP incorporates various STA studies and plans into a 25-year planning document. Three CTP 2030 Elements incorporate their respective studies and plans into the CTP 2030; the Arterials, Highways and Freeways Element, Transit Element, and Alternative Modes Element. The Jepson Parkway Project is included in the Arterials, Highways and Freeways Element of the CTP.

Solano Congestion Management Program (CMP) (2001)

The CMP is a mobility monitoring and planning tool for California counties that contain an urbanized area with a population of 200,000 or more. STA is the Congestion Management Agency for Solano County. The major goal of STA's 2005 CMP is to maintain mobility on Solano County's streets and highways and conform to MTC's Transportation 2035 Plan and the Metropolitan Transportation System (MTS). The Solano County CMP aims to maintain a high level of transportation system operations by requiring analysis of the effects of land use decisions on the transportation system and coordinating mitigation of the impacts to the system on an area-wide and multi-jurisdictional basis.

Regional Growth Plans

Growth in the Solano County region is governed by a number of plans and mechanisms, including the City of Fairfield Measure L, City of Vacaville Planned Growth Ordinance and Comprehensive Annexation Plan, Solano County Orderly Growth Initiative, Solano Irrigation District Master Agreement, and Solano County Local Agency Formation Commission policies. Each of these mechanisms is described in detail in Section 3.2, Growth. The Jepson Parkway Project would be consistent with these plans.

Solano County Multi Species Habitat Conservation Plan (MSHCP) (Version 2.2 Final Administrative Draft)

The MSHCP will establish a framework for complying with State and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing

operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Plan Participants within Solano County over the next 50 years. The Jepson Parkway Project would comply with all requirements of the MSHCP. Section 3.15, Biology, describes specific requirements of the MSHCP with respect to the project.

3.1.2.2 Affected Environment

The corridor crosses through four jurisdictions: Vacaville, Fairfield, Suisun City, and unincorporated Solano County (Figure 3.1-1). The existing land use characteristics of the affected environment are presented above in Section 3.1.1.2 on page 3.1-1.

3.1.2.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

This section evaluates the general consistency of each alternative with the adopted Vacaville, Fairfield, Suisun City, and Solano County General Plans and relevant policies.

Summary of Consistency with Plans and Policies

Table 3.1-2 compares each alternative and its consistency with specific policies from each general plan. Each of the build alternatives would be generally consistent with all of the listed policies. As such, the build alternatives have been combined into one column in the table. Alternative A, however, would be inconsistent with certain policies, as described in more detail below.

In addition to consistency with specific policies, Alternatives B and C are consistent with the roadway designations identified in each jurisdiction's general plan. However, specific improvements identified as part of Alternatives D and E are not consistent with the Fairfield and Vacaville General Plans, respectively. These inconsistencies are not considered substantial, however.

Impact LU-4: Would the Alternatives be Consistent with Local and Regional Plans and Policies?

Alternative A. Alternative A is inconsistent with the local and regional general plans. Under Alternative A, the proposed roadway improvements would not be constructed. However, Peabody Road from Air Base Parkway to Cement Hill Road/Vanden Road would still be widened from two lanes to four lanes including an overcrossing of the UPRR tracks. All of the general plans address the need for the proposed improvements to existing roadways to accommodate traffic demands. Therefore, Alternative A is inconsistent with local plans and policies.

Alternative B. Alternative B is generally consistent with the local and regional general plans, as described below. Consistency with specific policies is presented in Table 3.1-2.

Solano County. According to the land use and circulation element of the Solano County General Plan, rapid growth of the County over the past four decades has occurred mainly because of accessibility to

the San Francisco Bay Area and Sacramento metropolitan area, the location of government employment centers such as Travis AFB, and moderate housing costs. The General Plan assumes that Solano County would continue to grow in the future and roadway improvements are needed to accommodate this growth.

City of Vacaville. The Vacaville General Plan indicates that Leisure Town Road should be widened from two lanes to four lanes between Orange Drive and the city limits. The widening of Leisure Town Road is scheduled to meet existing traffic demands and potential growth in the area. Alternative B would be consistent with the roadway improvements identified in the General Plan.

City of Fairfield. The Fairfield General Plan identifies improvements planned along the Alternative B alignment. The General Plan conceptually shows Vanden Road as needing “roadway improvements” to accommodate planned growth. Within the corridor, Vanden Road travels through an area designated in the general plan for a 800-acre technology park, an area to be reserved for expansion of Travis AFB, and open space/agricultural uses. Additional road improvements identified in the General Plan include widening Walters Road to four lanes from East Tabor Avenue to the UPRR crossing, constructing a new four-lane Walters Road extension from the crossing to Cement Hill Road, and widening Vanden Road to four lanes from Peabody Road to the city limits. Alternative B would be consistent with these improvements.

The 2002 General Plan also calls for Walters Road to be constructed as a four-lane facility between the UPRR crossing and Cement Hill Road. Alternative B would be consistent with this improvement.

City of Suisun City. The Suisun City General Plan shows Walters Road as a four-lane arterial with a median and 104-foot right-of-way, which includes Class I (segregated) bicycle and pedestrian facilities. Walters Road is currently a four-lane arterial with Class I bicycle and pedestrian facilities, except for a portion between Bella Vista Drive and East Tabor Avenue, which is a two-lane arterial. A 1996 EIR on the 153-acre Petersen Ranch development, adjacent to Walters Road between Bella Vista Drive and East Tabor Avenue, indicates that four lanes would be needed to accommodate traffic generated by the single- and multi-family houses, commercial uses, parks, and school. Roadway improvements under Alternative B would be consistent with improvements indicated by the General Plan.

Alternative C. Under Alternative C, all roadway improvements in Vacaville, Suisun City, and Solano County would be the same as Alternative B. As shown in Table 3.1-2, Alternative C would be consistent with relevant policies contained in the respective general plans. Consistency with the Fairfield General Plan is discussed below.

City of Fairfield. As described for Alternative B, the Fairfield General Plan identifies several of the improvements planned along the Alternative C alignment. Alternative C would be consistent with most of the improvements identified in the General Plan. However, Alternative C does not include the Walters Road Extension, which is identified as an improvement in the General Plan and Peabody-Walters Master Plan. Eventual construction of the extension would not be precluded by implementation of Alternative C.

Alternative D. Under Alternative D, all roadway improvements in Vacaville, Suisun City, and Solano County would be the same as Alternative B. As shown in Table 3.1-2, Alternative D would be consistent with relevant policies contained in the respective general plans. Consistency with the Fairfield General Plan is discussed below.

City of Fairfield. As described for Alternatives B and C, the Fairfield General Plan identifies several of the improvements planned along the portions of the Alternative D alignment shared with Alternatives B and C. Alternative D, however, would also widen Huntington Drive. This widening is not included as one of the roadway improvements identified in the General Plan. However, this widening would not represent a conflict with the General Plan because the General Plan does not specifically identify an ultimate configuration for Huntington Drive.

Alternative E. The portions of the Alternative E alignment in Suisun City that are shared with Alternative B would be consistent with the Suisun City General Plan, as described above for Alternative B. General consistency with the Vacaville and Fairfield General Plans is described below. Alternative E would also be consistent with relevant general plan policies, as shown in Table 3.1-2.

City of Vacaville. The Vacaville General Plan identifies Peabody Road as a four-lane road. Peabody Road was previously identified for widening to six lanes; however, the City adopted a general plan amendment to redesignate the roadway because of constraints posed by commercial and residential development along this roadway since 1990. Under Alternative E, Peabody Road would be widened from four lanes to six lanes between Elmira Road and the Vacaville city limits south of Foxboro Parkway. Therefore, Alternative E would be inconsistent with roadway improvements identified in the General Plan. If Alternative E is identified as the preferred alternative, the City of Vacaville would amend its General Plan to designate Peabody Road as a six lane roadway.

City of Fairfield. The Fairfield General Plan conceptually shows Peabody Road as needing “roadway improvements” to accommodate planned growth. Peabody Road travels through areas identified for open space/agricultural uses and technology, as well as residential and commercial areas and stream crossings identified as conservation areas. Additional road improvements identified in the General Plan include widening Peabody Road to four lanes from Air Base Parkway to the city limits. Alternative E would be consistent with these improvements.

Impact LU-5: Would the Alternatives, in Combination with Other Development, Result in Cumulative Effects Related to Plans and Policies?

Consistency with plans and policies is generally project-specific and does not combine with potential inconsistencies of other projects in the planning area. As described above, the build alternatives would not result in substantial conflicts with any adopted plans or policies. Therefore, there would be no cumulative impact related to consistency with plans and policies.

3.1.2.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

3.1.3 Parks and Recreational Facilities

3.1.3.1 Regulatory Setting

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 USC 303, declares that “it 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 the 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 an 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:

- there is no prudent and feasible alternative to using that land; and
- 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 that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

In the first substantive revision to Section 4(f) since its enactment, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amended the law to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). This revision provides that once the U.S. Department of Transportation (DOT) determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete. Responsibility for compliance with Section 4(f) have been assigned to the Caltrans pursuant to the MOUs under SAFETEA-LU Sections 6004 and 6005, including determinations and approval of Section 4(f) evaluations as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

De minimis impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not "adversely affect the activities, features and attributes" of the Section 4(f) resource.

3.1.3.2 Affected Environment

The corridor crosses through four jurisdictions: Vacaville, Fairfield, Suisun City, and unincorporated Solano County (Figure 3.1-1). The portions of Suisun City and unincorporated Solano County crossed

by the corridor do not have parks or recreation facilities, and no future facilities are planned at this time. Existing and planned parks along the corridor in Vacaville and Fairfield are described below.

Vacaville

Alamo Creek Bicycle Path

The Alamo Creek Bicycle Path is a paved Class I bicycle path that runs along Alamo Creek from Nut Tree Road to Marshall Road in Vacaville, and crosses Peabody Road near Southwood Drive.¹⁰ The City of Vacaville owns and has jurisdiction over the bicycle path. The Alamo Creek Bicycle Path can be accessed from Nut Tree Road, Peabody Road, Alamo Drive, and Marshall Road.

Al Patch Park

Al Patch Park is at the southwest corner of the Peabody Road/California Drive intersection. The western half of the park includes three lighted softball fields, a concession/restroom facility, an all-weather track, a lighted football/soccer field, and 150 parking spaces. Future facilities planned for the eastern half of the park include two additional softball fields, batting cages, additional track facilities (shot put, high jump, and discus), a play area for children, picnic areas, and additional parking.

Arlington Park

Arlington Park is the second largest community park in the City of Vacaville. The park is on the northeastern corner of the Foxboro Parkway/Peabody Road intersection. The 18-acre park includes group picnic areas, a soccer field, a playground, four backstops, four baseball fields, two flag football fields, a youth recreation center, restrooms, and a concession building. There is off-street parking for 200 vehicles. The park is accessed from Foxboro Parkway.

Will C. Wood High School

Will C. Wood High School is at the northwest corner of the Marshall Road/Peabody Road intersection and can be accessed from Marshall Road, just west of the outdoor track. An outdoor athletic field is adjacent to Peabody Road. The athletic facilities include a baseball field, two football practice fields, and four to six basketball courts. Open space is used for general physical education classes.

Fairfield

Linear Park

The City of Fairfield's 1994 Peabody-Walters Master Plan designates an extension of the City's linear park within the abandoned Sacramento Northern Railroad right-of-way. Peabody-Walters Master Plan Open Space, Conservation, and Recreation Policy 2d states that the "linear park will be used as a major link in tying Peabody-Walters open spaces, parks, and pedestrian/bicycle circulation into an integrated area-wide network".

¹⁰ A Class I bicycle path is a dedicated exclusive bicycle path intended for bicycle and pedestrian traffic.

3.1.3.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

This section provides a summary of the Section 4(f) Evaluation. The Section 4(f) Evaluation is provided in Appendix A.

Summary of Impacts to Parks and Recreational Facilities

Table 3.1-3 compares each alternative and its impacts to parks along the corridor. As shown, Alternatives A, B, C, and D would not adversely affect parks. Alternative E, however, would require the direct use of a portion of Al Patch Park and Will C. Wood High School. Impacts of each alternative are described in detail below.

**Table 3.1-3
Summary of Impacts to Parks and Recreational Facilities**

Impact Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Al Patch Park	No Impact	No Impact	No Impact	No Impact	Adverse Effect
Arlington Park	No Impact				
Will C. Wood High School	No Impact	No Impact	No Impact	No Impact	Adverse Effect
Alamo Creek Bicycle Path	No Impact	No Impact	No Impact	No Impact	Minor Impact
Proposed Linear Park	No Impact				

Impact LU-6: Would the Alternatives Result in Impacts to Parks and Recreational Facilities?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would not be any impact to parks.

Alternative B. Alternative B would have no impact on any of the parks along the alignment.

Alternative C. Alternative C would have no impact on any of the parks along the alignment.

Alternative D. Alternative D would have no impact on any of the parks along the alignment.

Alternative E. The Alternative E alignment would be adjacent to Arlington Park, Will C. Wood High School, Al Patch Park, and Alamo Creek Bicycle Path. Potential impacts to each of these facilities are identified below.

Al Patch Park. Alternative E would require the permanent use of land from Al Patch Park. The land that would be required fronts the western side of Peabody Road. It is estimated that the proposed right-of-way for Alternative E would extend into the property approximately 60 feet, affecting approximately 1.7 acres. The area required for the proposed right-of-way would displace approximately 120 of the

proposed 680 parking spaces planned for Phase II of the park, as well as the proposed landscaped buffer between Peabody Road and the proposed parking.

The City of Vacaville has indicated that the parking is needed to meet City parking standards for parks and that the Phase II park plans cannot be reconfigured to accommodate the 120 potentially displaced parking spaces. Furthermore, the City has indicated that it would not be feasible to lease additional land from the California Medical Facility based on previous negotiations with the State of California. Therefore, Alternative E would result in an adverse effect to Al Patch Park.

Arlington Park. Alternative E would not require the permanent use of land from Arlington Park. However, because Arlington Park is directly adjacent to the Alternative E alignment, the Section 4(f) Evaluation analyzed potential proximity impacts. The evaluation concluded that there would be no adverse noise, aesthetic, accessibility, vibration, or ecological impacts at Arlington Park. However, the increased traffic volumes resulting from a widened Peabody Road could increase traffic conflicts with park users accessing the park. Mitigation Measure LU-2, which would provide fencing at Arlington Park, would reduce this effect.

Will C. Wood High Athletic Field. Alternative E would require permanent use of a section of the northeast corner of the Will C. Wood High School. The amount of land that would need to be acquired as right-of-way for Alternative E is approximately 1.2 acres. The acquisition of this land would adversely impact the athletic field. The facilities at the field could not be reconfigured on the primary property without making the facilities smaller. Such a reduction in size would not meet the needs of the school district's physical education and athletic programs, as they would not meet California Scholastic Federation Standards of the facilities currently provided at the athletic field.

Alamo Creek Bicycle Path. The Alamo Creek Bicycle Path intersects Peabody Road south of Beelard Drive. Alternative E would displace short sections of the bicycle path on both sides of Peabody Road to conform the bicycle path to the new road right-of-way. These sections of the bicycle path would be reconstructed to the same standards as the existing facility and permanent access to the bicycle path would not be affected. Construction of Alternative E at this location would take approximately three months. Therefore, Alternative E would have a minor, temporary, effect on Alamo Creek Bicycle Path. Mitigation Measure LU-3, which would maintain access to the bicycle path, would reduce this effect.

Impact LU-7: Would the Alternatives, in Combination with Other Development, Result in Cumulative Effects to Parks and Recreational Facilities?

Cumulative development, as identified in the adopted general plans of Vacaville and Fairfield, would increase the use of parks and recreation facilities in the corridor. The build alternatives would not contribute to the increased number of park users, as no increase in population would result from the project. There are no cumulative transportation projects that would require land from the park facilities that would be affected by the proposed build alternatives. As such, there would be no cumulative effect to park and recreational facilities.

3.1.4 Avoidance, Minimization, and/or Mitigation Measures

Avoidance

Of the build alternatives, Alternatives C and D would avoid all effects on parks in the corridor. Also, as noted in above, Alternative B would not adversely impact the function or value of any parks. Therefore, the potential options for avoidance alternatives consist of the following:

- Identifying Alternative A (No Action);
- Identifying Alternative B, C, or D; or
- Modifying Alternative E to avoid use of park resources.

Alternative E requires the direct use of land from Al Patch Park and Will C. Wood High School. Shifting the right-of-way for Alternative E to the east to avoid the park and the school would increase residential and nonresidential displacements and related relocations throughout this highly urbanized section of Vacaville. As described in Section 3.4, Community Impacts, Alternative E could displace 26 single-family homes, ten multi-family homes, four commercial structures, and one industrial structure. Nearly all of the potential displacements would occur on the eastern side of the alignment. The potential displacement of the 26 single-family homes would result from strip acquisitions that could, at the least, displace fencing and backyard landscaping.

Shifting the alignment of Alternative E further to the east would further encroach on the 26 single-family homes already displaced under this alternative and potentially result in the displacement of the structures. It would also potentially displace an additional 21 single-family homes because of strip acquisitions and structural displacements. The number of multi-family units displaced would be increased by shifting the alignment because of additional structural displacements and increased loss of parking. The alignment shift's impacts on the two commercial structures would include additional loss of parking, additional loss of landscaping, and increased potential to displace the structures. Also, an additional five commercial properties would be potentially impacted by shifting the alignment to the east. Shifting the Alternative E alignment to the east would also result in a direct use of another Section 4(f) resource, Arlington Park.

The Section 4(f) Evaluation found the modified Alternative E alignment to be imprudent because it would result in severe residential and commercial displacement, reduction of community cohesion, and parking impacts, and it would impact another Section 4(f) park resource.

Minimization and/or Mitigation

Al Patch Park. There is no feasible mitigation for Alternative E's displacement of the planned parking and landscaped buffer at Al Patch Park since the Phase II park plans cannot be reconfigured.

Will C. Wood High School. Relocation of the athletic field onsite or onto a site across an existing street from the school is not considered acceptable by the school district since it would pose a safety hazard for students and the public to cross a street in order to reach these facilities from the school site.

Mitigation Measure LU-1: Provide Fencing at Arlington Park. Implementation of some type of fencing or other positive barrier along the Peabody Road perimeter of Arlington Park would minimize potential conflicts between increased traffic volumes on the roadway and park users.

Mitigation Measure LU-2: Maintain Use of Alamo Creek Bicycle Path During Construction. During the proposed three-month construction period, the bicycle path shall remain open. This use could be accomplished by a minor detour of the bicycle path near the construction zone.

Summary of Project Effects to Section 4(f) Resources

Table 3.1-4 summarizes the amount of property required of the Section 4(f) resources by each alternative.

**Table 3.1-4
Summary of Use of Section 4(f) Resources by Alternative**

Alternative	Al Patch Park, City of Vacaville	Arlington Park, City of Vacaville	Will C. Wood High School, City of Vacaville	Alamo Creek Bicycle Path, City of Vacaville	Proposed Linear Park, City of Fairfield
Alternative A	No use	No use	No use	No use	No use
Alternative B	No use	No use	No use	No use	No use
Alternative C	No use	No use	No use	No use	No use
Alternative D	No use	No use	No use	No use	No use
Alternative E	Use of approx. 1.7 acres and displacement of 120 planned parking spaces and landscaped buffer.	No use	Use of approx. 1.2 acres affecting outdoor athletic facilities.	Use during the approximately 3- month construction period.	No use

Alternatives A, B, C and D would avoid use of the Section 4(f) resources identified. Alternative E uses land from Section 4(f) resources, as described above. Therefore, the potential options for avoidance alternatives consist of the following:

- Identifying Alternative A (No Action);
- Identifying Alternative B, C, or D (build alternatives that avoid Section 4[f] resources).

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3.2 Growth

This section presents the methods and results of an analysis of the effects of the project on growth in the corridor. The information below is summarized from the Community Impact Assessment (CIA) prepared for the project. The CIA is incorporated by reference and is available for public review at the Solano Transportation Authority's (STA's) and Caltrans' offices.

3.2.1 Regulatory Setting

Under NEPA, a federal agency must evaluate the direct and indirect effects of a proposed action. Indirect effects are those that are caused by the proposed action but will occur later in time or further removed in distance, but are still reasonably foreseeable. Indirect effects may include “growth inducing effects” and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on environmental resources.

CEQ NEPA regulations, 40 CFR 1508.8, define indirect effects including those that are growth related.

In addition to these growth management mechanisms, the following plans, policies, and agreements would serve to control growth potentially induced by the roadway improvements associated with the alternatives:

- **City of Fairfield Measure L.** This initiative, which was passed by Fairfield voters in 2003, bars the Fairfield City Council from changing major portions of the Fairfield General Plan without specific approval from the city's voters until 2020. Unless voters approve changes to the Fairfield General Plan, no unplanned growth would occur in the area north of Travis Air Force Base (AFB) that would have access to an improved Vanden Road or in the portion of the Fairfield planning area adjacent to Vanden Road that is designated for a greenbelt between Vacaville and Fairfield.
- **City of Vacaville Planned Growth Ordinance and Comprehensive Annexation Plan.** To a large extent, the City of Vacaville's Planned Growth Ordinance and *Comprehensive Annexation Plan* control the rate and location of growth in Vacaville. The rate of residential development in the city is controlled by the Planned Growth Ordinance, which sets a development limit of 750 residential units per year, although the actual development of residential units over the past year has averaged closer to 500 units per year. The *Comprehensive Annexation Plan*, which would largely control the location of future growth in Vacaville, identifies near- and long-term annexation areas. Within the corridor, the area east of Leisure Town Road and the area generally bound by New Alamo Creek, Nut Tree Road, and Leisure Town Road are considered potential long-term annexation areas. Any future development of these areas would be approved with phases controlling how many homes would be built per year.¹

¹ City of Vacaville Community Development Department. 2002. Maureen Carson, Senior Planner. Vacaville, CA. May 15, 2002—telephone conversation.

- **Solano County Orderly Growth Initiative (Proposition A).** Since it was passed by voters in 1984 and subsequently adopted by the Solano County Board of Supervisors in 1994, Solano County’s Orderly Growth Initiative has largely controlled growth in the unincorporated area of the County, including lands designated for agricultural uses adjacent to the east side of Leisure Town Road and adjacent to both sides of Vanden Road between Vacaville and Fairfield. This initiative, which was extended through 2028 by Measure T in November 2008, amended the Solano County General Plan to restrict redesignations of lands designated for agriculture or open space on the general plan land use map. Additionally, the initiative amended the General Plan to restrict the density of residential and other development on lands designated for agriculture and open space uses, preventing large-scale residential or mixed-use developments outside municipal areas. In essence, any development proposal for land designated as agricultural or open space must be approved by the voters unless the land is first annexed to a city.² In the unincorporated portions of the corridor, the initiative substantially restricts the amount of growth that is likely to occur outside areas that are already planned for future annexation by Vacaville and Fairfield. These restrictions substantially reduce the likelihood that unplanned growth would occur in the Leisure Town Road and Vanden Road areas. The 2008 General Plan for Solano County was adopted in November of 2008. Although a small portion of the land within the County designated for agriculture and open space uses was redesignated as rural residential, no redesignation occurred along the proposed Jepson Parkway.
- **Solano Irrigation District (SID) Master Agreement:** This agreement between the SID and City of Vacaville limits Vacaville’s urban boundary to a line 1,500 feet east of Leisure Town Road south to the UPRR tracks. Any amendment to the Vacaville General Plan for urban uses east of the boundary line requires a joint land use study by the City of Vacaville and the SID to determine the appropriate location for the new line. Furthermore, the Vacaville General Plan contains policies stating that no development can occur east of Leisure Town Road until a decision has been made regarding where easterly development would occur.
- **Solano County Local Agency Formation Commission (LAFCO):** The Solano County LAFCO is responsible for coordinating timely and responsible changes in local government boundaries. LAFCO must define each city and special district’s Sphere of Influence, and strives to provide services while protecting agriculture and open space. LAFCO regulates, through approval or denial, the boundary changes proposed by other public agencies or individuals. LAFCO identified 11 qualitative and quantitative standards by which to evaluate annexation proposals. Six of the standards are mandatory (numbers 1, 2, 3, 4, 5, and 6), while the remaining five standards are discretionary. LAFCO standards include:³
 1. Consistency with Sphere of Influence Boundaries
 2. Changes of Organization and Reorganization of the Sphere of Influence Boundaries

² Solano County Department of Environmental Management. 2002. Harry Englebright, Principal Planner. Fairfield, CA. May 13, 2002—telephone conversation.

³ Solano Local Agency Formation Commission, *Standards and Procedures, Glossary of Terms, Fees and Forms, Meeting Schedule, and Map and Description Requirements*, adopted March 1, 1999, last amended March 3, 2003.

3. Consistency with Appropriate City General Plan, Specific Plan, Area-wide Plan and Zoning Ordinance
4. Consistency with County General Plan
5. Requirement for Pre-approval (the affected agency shall have approved a specific plan, pre-zoning, or equivalent)
6. Effect on Natural Resources
7. Relationship to Established Boundaries, Streets and Road, Lines of Assessment, Remaining Unincorporated Territory; Proximity to Other Populated Areas; Assessed Valuation
8. Likelihood of Significant Growth and Effect on Other Incorporated or Unincorporated Territory
9. Protection of Prime Agricultural Land
10. Provision and Cost of Community Services
11. The Effect of the Proposed Action on Adjacent Areas, Mutual Social and Economic Interests, and on Local Governmental Structure

The legislature provided specific policy direction to LAFCO in the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000. Specifically, LAFCO is directed to:

1. Encourage orderly growth and development ...logical formation and determination of local agency boundaries (Section 56001).
2. Encourage and provide for “Planned, well-ordered, efficient urban development patterns with appropriate consideration of preserving open space lands” (Section 56300).
3. Discouragement of urban sprawl, preserving open space and prime agricultural lands, efficiently providing government services and the encouragement of orderly formation and development of local agencies based upon local conditions and circumstances (Section 56301).

3.2.2 Affected Environment

Demographic characteristics of the corridor, including projected population growth rates, are presented in Section 3.4, Community Impacts. Various local, regional, and national forces that reflect ongoing social, economic, and technological changes influence growth rates and patterns. The rate and location of population growth and economic development that occurs in a specific area is controlled, to some extent, by local and county governments through zoning, land use plans, policies, and decisions regarding development applications. Local governments and other regional, State, and federal agencies also make decisions about infrastructure (e.g., roads, water facilities, and wastewater facilities) that may influence growth rates and the location of future development.

Transportation infrastructure is one component of the overall infrastructure that may serve planned growth. This infrastructure may also hasten or shift planned growth or encourage and intensify unplanned growth in an area. Transportation projects may induce growth when they directly or indirectly promote, hasten, shift, or intensify planned growth or encourage unplanned growth in a

community or region. An example of a growth-inducing transportation project is construction of a new roadway through an undeveloped area, which could promote unplanned growth.

The intent of the Jepson Parkway Project, which recognizes that growth and development in the region would occur, is to increase the capacity of existing roadways through the corridor, provide better linkages between these roadways, and provide a better connection to I-80 and SR 12. Growth outlined in approved local plans is expected to increase traffic congestion along the corridor, and the project is needed to accommodate traffic associated with future planned growth. With the exception of the Walters Road Extension, the project would not introduce a new transportation facility to the corridor or necessarily provide new access to parts of the corridor. The Walters Road Extension would pass through an area designated for future development by the City of Fairfield.

Roadway improvements under this project, however, would increase the capacity of the various roadways proposed to make up Jepson Parkway. Jepson Parkway would also improve access to I-80 and SR 12 by relieving congestion on roadways connecting to these regional facilities. These improvements could create additional pressure to develop areas with good access to Jepson Parkway, potentially hastening planned growth or promoting unplanned growth in and near the corridor. Specific areas of concern to each alternative are discussed below.

3.2.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The analysis of effects related to growth was based on a qualitative assessment that evaluated the compatibility and consistency of the alternatives with applicable plans, programs, and policies described in Section 3.1, Land Use.

Summary of Growth Inducement Impacts

This section compares the growth inducement potential of each alternative. As described in detail below, none of the alternatives are considered growth inducing when the existing regulatory framework is considered. Specifically, growth is anticipated based on approved local planning and growth management mechanisms (such as general plan land use designations and policies, zoning designations, urban limit lines, and a variety of inter-jurisdictional agreements and voter initiatives).

Impact GR-1: Would the Alternatives Induce Growth?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed and subsequently would not expand roadway capacity or increase access within the corridor. Therefore, this alternative would not induce growth in the corridor.

Alternative B. The possibility that roadway capacity and access provided under Alternative B would induce growth is a particular concern because of the large tracts of developable vacant properties and agricultural lands east of Leisure Town Road and east and west of Vanden Road. Additionally,

concerns have been expressed about growth inducement in the area north of Travis AFB that would have access to an improved Vanden Road and in the area adjacent to Vanden Road that is designated for a greenbelt between Vacaville and Fairfield.^{4,5} Planned growth could also be hastened in several other parts of the corridor, including the portion of Vanden Road within the Fairfield planning area northeast of the Vanden Road/Peabody Road intersection, which is designated for future technology park uses, and the area surrounding the proposed Walters Road extension, which is designated for primarily industrial uses.

As stated previously, growth in the corridor is controlled by local planning and growth management mechanisms, including general plan land use designations and policies, zoning designations, and urban limit lines. In addition to these growth management mechanisms, the SID Master Agreement, City of Vacaville Planned Growth Ordinance and Comprehensive Annexation Plan, Solano County Orderly Growth Initiative (Proposition A), and City of Fairfield Measure L, would serve to control growth.

Overall, under Alternative B, the pressure to hasten planned development or allow unplanned growth on agricultural lands in the corridor created by improved access to commute routes would be controlled by the strong regulatory framework that is currently in place to discourage premature and unplanned growth adjacent to and near the corridor. Although these controls are potentially subject to alteration if economic and political pressures encourage local elected officials and voters to modify growth controls, they are considered strong enough to substantially slow, limit, and direct growth that would be induced by the project.

Alternative C. Alternative C would be similar to Alternative B, as described above. As stated for Alternative B, the existing regulatory framework would slow, limit, and direct growth in the corridor.

Alternative D. Alternative D would be similar to Alternatives B and C except that Alternative D does not include the Walters Road Extension. As stated above, existing regulations would control growth in the corridor.

Alternative E. The possibility that roadway capacity and access provided by Alternative E might appear to induce growth is a concern due to the large tracts of developable vacant properties and agricultural lands in unincorporated Solano County located along Peabody Road between Vacaville's southern city limit and the Putah South Canal.

As stated previously, local planning and regulatory structure control growth in the corridor. Specific to Alternative E roadway improvements, the City of Vacaville's Planned Growth Ordinance and Comprehensive Annexation Plan and the Solano County Orderly Growth Initiative (Proposition A) would control growth. Additionally, much of the developable acreage along Peabody Road is within the Vacaville-Fairfield Community Separator/Greenbelt. The Vacaville and Fairfield general plan land use

⁴ City of Fairfield Department of Planning and Development (FDPD). 2002b. Eve Somjen, Assistant Director of Planning. Fairfield, CA. May 13, 2002—telephone conversation.

⁵ Solano County Department of Environmental Management. 2002. Harry Englebright, Principal Planner. Fairfield, CA. May 13, 2002—telephone conversation.

maps recognize limitations on development within the greenbelt area, which is designated by Solano County for extensive agricultural uses.

Impact GR-2: Would the Alternatives, in Combination with Other Development, Result in Cumulative Growth Inducement Effects?

The improved access to commute routes provided by the project would create pressure to hasten planned development or allow unplanned growth on agricultural lands in the corridor. Similarly, several other past, present, and future planned transportation improvement projects would relieve congestion and improve regional access, potentially increasing growth pressures in the Vacaville–Fairfield–Suisun City area. In particular, the recent improvement of the Leisure Town Road overcrossing/interchange and the planned construction of the Fairfield-Vacaville Multimodal Train Station would provide additional transportation access to the corridor, thereby adding to the growth pressure potentially generated by the project.

This pressure, however, would be largely offset and controlled by the strong regulatory framework of policies and development constraints that are currently in place to discourage premature and unplanned growth in the corridor. These measures include the SID Master Water Agreement, the City of Vacaville’s Planned Growth Ordinance and Comprehensive Annexation Plan, the Solano County Orderly Growth Initiative, and Fairfield’s Measure L. Although growth pressures cumulatively generated by the project and similar projects could overcome these growth policies and constraints, potentially resulting in development proposals that could hasten planned growth or lead to unplanned growth, the growth controls already in place are considered strong enough to substantially slow, limit, and direct growth potentially induced by the cumulative effects of these projects.

3.2.4 Avoidance, Minimization, and/or Mitigation Measures

Future growth would be subject to growth controls maintained by Vacaville, Fairfield, Suisun City, and Solano County, as described above. Proposed project improvements would not induce growth because any growth would be subject to local planning and growth management mechanisms. Such mechanisms – general plan amendments and zoning changes – would involve environmental documentation, public notification and involvement, mitigation requirements, and approval by local agencies. Therefore, no specific avoidance, minimization, and/or mitigation measures related to growth have been proposed for the project.

3.3 Farmlands/Agricultural Lands

This section presents the methods and results of an analysis of the effects of the project on farmlands in the corridor. This information is summarized from the Community Impact Assessment (CIA) prepared for the project. The CIA is incorporated by reference and is available for public review at the Solano Transportation Authority's (STA's) and Caltrans offices. There are no timberlands in the corridor; therefore, timberlands are not discussed in this section.

3.3.1 Regulatory Setting

The National Environmental Policy Act (NEPA) and the Farmland Protection Policy Act (FPPA, 7 USC 4201-4209; and its regulations, 7 CFR Ch. VI Part 658) require federal agencies, such as the Department, as assigned by FHWA, to coordinate with the Natural Resources Conservation Service (NRCS) if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

If work is being done on federal land (e.g., Bureau of Land Management or U.S. Forest Service lands), those agencies' regulations and policies regarding protection of timberlands are followed.

3.3.2 Affected Environment

Agricultural Land Use and Production

Solano County produces a variety of agricultural commodities, generating approximately \$1.5 billion in annual sales.¹ Agriculture accounts for 65 percent of the land use in Solano County, with about half of the agricultural acreage in irrigated crops and the remaining acreage in dryland farming and grazing lands. The top agricultural products of the County are tomatoes for processing, nursery stock, alfalfa hay, cattle and calves, wine grapes, sugar beets, field corn, feeder lambs,² wheat, and milk.³

Lands adjacent to much of the northern and middle portions of the corridor are in active agricultural production. These lands include properties in intensive agricultural use (primarily field crops, including wheat, corn, and alfalfa) on the east side of Leisure Town Road from Maple Road south to New Alamo Creek, and along both sides of Leisure Town Road from New Alamo Creek to Vanden Road. Much of the land on both sides of Vanden Road, south to the urban areas northeast of Peabody Road, is in extensive agricultural use (primarily livestock grazing). Similarly, land along both sides of Peabody

¹ Solano Economic Development Corporation. 2002. City economic profiles for Fairfield, Suisun City, and Vacaville. Available: <<http://www.sedcorp.org/>>. Accessed: February 2, 2002.

² A feeder lamb is a lamb that is weaned at 5 to 8 months of age, weighing 60 - 90 lbs., to be sold to a feedlot for further fattening.

³ Solano Economic Development Corporation. 2002. City economic profiles for Fairfield, Suisun City, and Vacaville. Available: <<http://www.sedcorp.org/>>. Accessed: February 2, 2002.

Road between Vacaville and Fairfield is primarily used for livestock grazing, although winter wheat and hay crops may be grown on some properties.⁴

Important Farmland

The FMMP is used to map and analyze impacts to California's agricultural resources. The FMMP rates agricultural land on soil quality and irrigation status; the best quality land is called prime farmland. "Important Farmland" includes prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance. In addition to these important farmland types, the FMMP categorizes the remaining land as grazing land, urban land, other land,⁵ or water.

The mapped portion of Solano County contained approximately 143,211 acres of prime farmland, 7,584 acres of farmland of statewide importance, 13,735 acres of unique farmland, and 201,388 acres of grazing land in 2002.⁶ The corridor traverses both urban and agricultural land uses. Sensitive farmland resources include prime farmlands and other farmlands that are able to support the production of high-value crops. The locations of these farmlands relative to the corridor are shown in Figure 3.3-1.

Williamson Act Contract Lands

In the portion of the corridor that could be affected by property acquisitions, six properties are under active Williamson Act contracts. As shown in Figure 3.3-2, two of the contracts (34 and 36) are southeast of the intersection of Air Base Parkway and Walters Road. The other four active contracts (46, 55, 56, and 508) are adjacent to Peabody Road between Vacaville and the point where Peabody Road is crossed by the Putah South Canal (south of California State Prison, Solano).⁷

⁴ USDA Natural Resources Conservation Service. 2004. Walt Cheechov, District Conservationist. Dixon, CA. February 11, 2004—telephone conversation.

⁵ Other land includes low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres.

⁶ California Department of Conservation. 2004. Solano County important farmland map 2002. Sacramento, CA.

⁷ Solano County. 2001. Solano County land use and circulation element: a part of the Solano County general plan. December 1980 as amended through June 2001. Fairfield, CA: Planning Department.

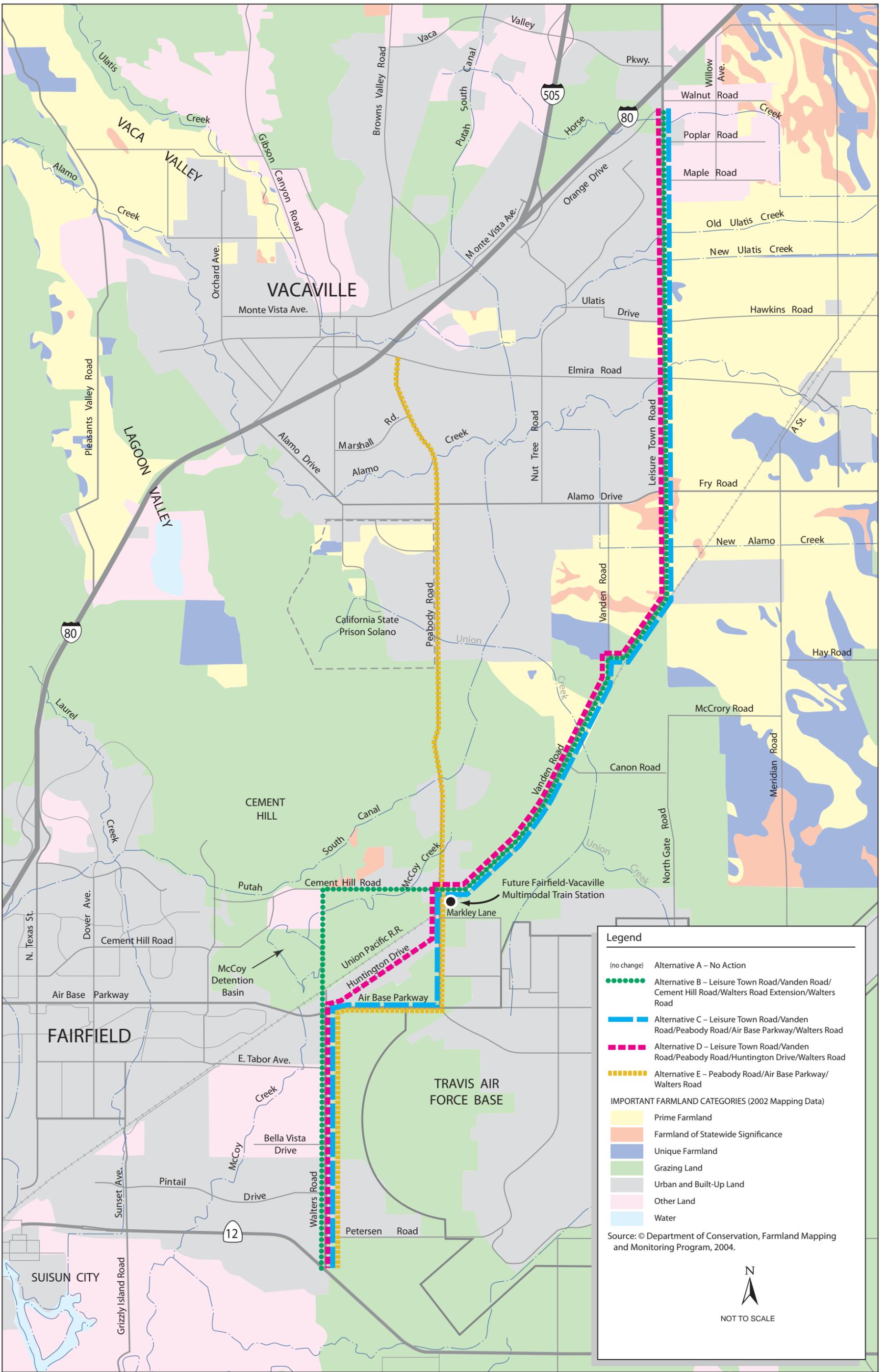
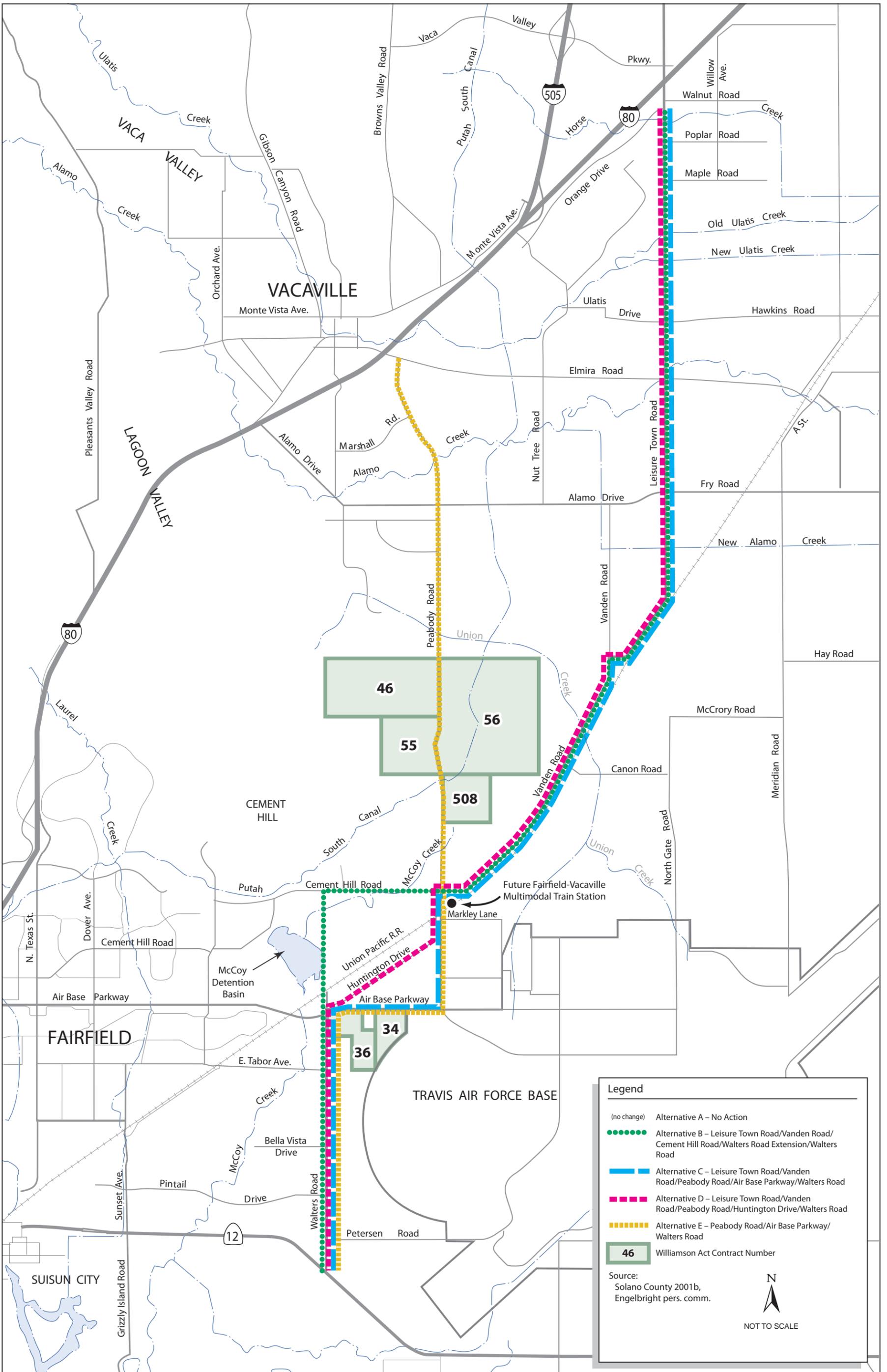


Figure 3.3-1
Important Farmlands Adjacent to the
Alternative Jepson Parkway Alignments



3.3-5

Figure 3.3-2
Active Williamson Act Contracts Adjacent to the
Alternative Jepson Parkway Alignments

3.3.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The analysis of effects related to farmlands and agricultural lands was based on the CIA prepared for the project. Direct effects to farmlands include conversion of farmlands to roadways as a result of right-of-way acquisitions. This analysis focuses on direct impacts because this project would not result in any indirect conversion of important farmlands.

The FPPA requires federal agencies to apply Land Evaluation and Site Assessment (LESA) criteria for activities or responsibilities of the federal government that involve the financing or construction of improvement projects. The LESA system is implemented by completing the Farmland Conversion Impact Rating Form (Form AD-1006). Form AD-1006 was completed for the build alternatives with assistance from the NRCS (see Appendix F). Based on the information provided on the form, a project receives an impact rating, which indicates what kind of consideration (i.e. minimum or maximum) should be given to the protection of agricultural lands being converted as a result of the project. Under the LESA system, project sites receive scores based on various criteria including soil quality and land use. The rating also assesses non-soil related criteria, such as the potential for impact to the local agricultural economy and compatibility with existing agricultural use. The highest score for a site is 260 points. Sites receiving a total score of less than 160 points are given a minimal level of consideration for protection and no alternative sites need to be evaluated for conversions of these lands. Sites with a LESA rating of 160 points or more are to be protected.

Summary of Impacts to Farmlands

Table 3.3-1 summarizes the potential for each alternative to impact farmlands. As shown, Alternative E would convert the least farmland, while Alternative B would convert the most. Conversely, Alternative E would conflict with five Williamson Act contracts, in comparison to one conflict for each of the other build alternatives. A detailed description of farmland impacts for each alternative is presented below.

**Table 3.3-1
Summary of Impacts to Farmlands**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Conversion of Farmlands (acres)	0	75.4	68.6	64.5	29.6
FPPA LESA Conversion Rating	N/A	97.8	103.9	104.6	72.8
Percent of Farmland in County (%)	N/A	0.02	0.02	0.02	<0.01
Williamson Act Contract Conflict (number of parcels)	No	Yes (1)	Yes (2)	Yes (1)	Yes (6)

Note: N/A = Not applicable

Impact FA-1: Would the Alternatives Directly Convert Important Farmlands?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, no important farmlands would be converted.

Alternative B. Alternative B would result in the conversion of an estimated 75.4 acres of farmland used primarily for field crops, irrigated pasture, and nonirrigated grazing adjacent to Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road. This total represents 0.02 percent of both the total farmlands and prime farmlands inventoried in Solano County in 2000.

The acreage of prime farmland, farmland of statewide importance, unique farmland, and grazing land required for implementation of Alternative B is listed in Table 3.3-2. The acquisitions would be in the form of narrow strips of right-of-way along existing roadways. Please refer to the CIA for a breakdown of direct use for each segment of the alternative. In general, most of the prime farmland conversion would occur along the east side of Leisure Town Road (from Maple Road south to Alamo Drive) and on the west side of Leisure Town Road (from Alamo Drive southwest to Vanden Road). Grazing lands would be converted in several areas along the corridor, but conversions would be concentrated in a swath west of Vanden Road between Leisure Town Road and Peabody Road and in the area between Cement Hill Road and Huntington Drive that would be crossed by the Walters Road extension.

The LESA impact rating for Alternative B is 97.8. Since the impact rating is below 160 points, the agricultural land proposed for right-of-way acquisition does not require further consideration. Alternative B would not adversely affect farmlands.

**Table 3.3-2
Estimated Farmland Conversion Impacts of the Build Alternatives**

Alternative	Farmland Converted by the Alternative (acres)				Total
	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Grazing Land	
Alternative B	31.0	2.1	0.2	42.1	75.4
Alternative C	31.0	2.1	0.2	35.3	68.6
Alternative D	31.0	2.1	0.2	31.2	64.5
Alternative E	0.0	0.0	0.0	29.6	29.6

Source: Estimated based on California Department of Conservation (1999) Important Farmland Map for Solano County and project alignment mapping information.

Alternative C. Farmland conversion under Alternative C would total 68.6 acres, slightly less than Alternative B (Table 3.3-2). This acreage would represent 0.02 percent of both the total farmland and prime farmland in Solano County.

Farmland conversions along Leisure Town Road, Vanden Road, and Walters Road would be the same as under Alternative B, totaling an estimated 31.0 acres of prime farmland, 2.1 acres of farmland of statewide importance, 0.2 acres of unique farmland, and 28.6 acres of grazing land. Additionally, acquiring right-of-way for Alternative C would result in the estimated conversion of 6.7 acres of grazing land west of Peabody Road south of Huntington Drive, and south of Air Base Parkway between Peabody Road and Walters Road. These conversions would be in narrow strips ranging in width from 25 feet to 70 feet along the existing roadways.

The LESA impact rating for Alternative C is 103.9. Since the impact rating is below 160 points, the agricultural land proposed for right-of-way acquisition does not require further consideration. Alternative C would not adversely affect farmlands.

Alternative D. Farmland conversion under Alternative D would total 64.5 acres, slightly less than under Alternatives B and C (Table 3.3-2). This acreage would represent 0.02 percent of both the total farmland and prime farmland inventoried in Solano County in 2000.

Farmland conversions along Leisure Town Road, Vanden Road, and Walters Road would be the same as under Alternatives B and C. Additionally, acquiring right-of-way for Alternative D would result in the estimated conversion of 2.6 acres of land mapped as grazing land south of Huntington Drive. This conversion would be in narrow strips, ranging in width from an estimated 30 feet to 50 feet, along the existing roadway.

The LESA impact rating for Alternative D is 104.6. Since the impact rating is below 160 points, the agricultural land proposed for right-of-way acquisition does not require further consideration. Alternative D would not adversely affect farmlands.

Alternative E. Farmland conversion under Alternative E would total 29.6 acres; unlike conversions required for Alternatives B, C, and D, Alternative E would not convert any prime farmland (Table 3.3-2). The acreage converted under Alternative E would represent less than 0.01 percent of the total farmland inventoried in Solano County in 2000.

Farmland conversions would include lands along Walters Road south of Air Base Parkway, along Peabody Road between Huntington Drive and Air Base Parkway, and along Air Base Parkway between Peabody Road and Walters Road. These conversions, which include only farmlands mapped as grazing land, would total an estimated 16.0 acres. Additionally, acquiring right-of-way for Alternative E would result in the estimated conversion of 13.6 acres of grazing land along both sides of Peabody Road between Vacaville and Fairfield. These conversions would be in narrow strips, ranging in width up to an estimated 70 feet, along the existing roadway.

The LESA impact rating for Alternative E is 72.8. Since the impact rating is below 160 points, the agricultural land proposed for right-of-way acquisition does not require further consideration. Alternative E would not adversely affect farmlands.

Impact FA-2: Would the Alternatives Conflict with Williamson Act Contract Lands?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, Williamson Act contract lands would not be affected.

Alternative B. Within the portion of the corridor adjacent to the Alternative B route, one property (Contract 36) is currently under an active Williamson Act contract. As shown in Figure 3.3-2, this property is southeast of the intersection of Air Base Parkway and Walters Road. Construction of Alternative B, including right-of-way acquisition, would conflict with the contract governing this property.

Acquiring the contracted land could not be avoided under this Alternative, because widening Walters Road to the west, to avoid displacing the land under contract, would displace mixed commercial uses and the Dover Mobile Home Park located across the road, resulting in substantial relocation impacts. This alternative would require the termination of Williamson Act contract protections for the contracted land acquired; however, contract protections would remain in place for the remainder of the parcel. Under Alternative B, a 30-foot-wide strip along the Walters Road side of the parcel would be acquired, resulting in the termination of the contract governing an estimated 0.45 acres of the 65-acre property. This acquisition would not substantially reduce the agricultural viability of the property, which is used for livestock grazing. The project sponsor would comply with the requirements of the Williamson Act in acquiring the strip of contracted land.

Alternative C. The Alternative C alignment is adjacent to two parcels enrolled in Williamson Act contracts (Contract 34 and Contract 36). Impacts to Contract 36 would be similar to those identified above for Alternative B. However, impacts to Contract 36 would also include the acquisition of a 15-foot wide strip of land along Air Base Parkway resulting in the termination of the contract governing an estimated 0.32 acres for a total of 0.77 acres from Contract 36. This additional acquisition would not substantially reduce the agricultural viability of the property. The project sponsor would comply with the requirements of the Williamson Act in acquiring both strips of contracted land.

Impacts to Contract 34 would consist of the acquisition of a 12-foot wide strip of land adjacent to Air Base Parkway. The total area to be acquired from Contract 34 would be approximately 0.16 acres from the 39.4-acre site. This acquisition would not substantially reduce the agricultural viability of the property. The project sponsor would comply with the requirements of the Williamson Act in acquiring the strip of contracted land.

Alternative D. The only active Williamson Act contract adjacent to the Alternative D alignment is Contract 36, described above under Alternative B. Impacts for Alternative D would be identical to those identified above under Alternative B; 0.45 acres of the contract would be terminated. However, this acquisition would not affect the continued viability of the parcel.

Alternative E. The alignment for Alternative E is adjacent to six Williamson Act contracts. Under Alternative E, right-of-way would be needed from six properties under active Williamson Act

contracts. These properties, shown in Figure 3.3-2, include the property under Contract 36, as described previously for Alternatives B, C, and D. The remaining four properties are adjacent to Peabody Road south of Vacaville. Construction of Alternative E, including right-of-way acquisition, would conflict with the contracts governing these properties.

Under Alternative E, acquisition of property under Williamson Act contracts, requiring contract termination for acquired portions, would include the following:

- An estimated 0.77-acres strip of grazing land from the 65-acre parcel under Contract 36 (Walters Road).
- Approximately 0.16 acres from the 39.4-acre parcel under Contract 34 (Air Base Parkway).
- An estimated 4.2-acre strip of grazing land from the 304.3-acre property under Contract 46 (Peabody Road).
- An estimated 2.1-acre strip of grazing land from the 68.2-acre property under Contract 55 (Peabody Road).
- An estimated 8.1-ac strip of grazing land from the 147.2-acre property under Contract 56 (Peabody Road).
- An estimated 4.2-acre strip of grazing land from the 58.5-acre property under Contract 508 (Peabody Road).

Acquisition of right-of-way from these properties and construction of project improvements would be incompatible with the Williamson Act. Conversion to right-of-way would require the contracts to be terminated for the portions of the contracted lands acquired for the alignment; however, the contracts would remain in effect for the remainder of the affected parcels. Under Alternative E, acquiring contracted land cannot be easily avoided along Peabody Road because contracted lands are adjacent to both sides of Peabody Road (Figure 3.3-2). Therefore, shifting the corridor in either direction would still result in conversions of lands under Williamson Act contracts.

The acquisitions from these properties are not expected to substantially reduce the agricultural viability of the properties, all of which are used for livestock grazing. The project sponsor would comply with the requirements of the Williamson Act in acquiring the strip of contracted land.

Impact FA-3: Would the Alternatives, in Combination with Other Development, Result in the Cumulative Conversion of Farmland?

Several transportation projects included in this cumulative analysis would convert farmland in Solano County. Specifically, roadway widening and interchange improvement projects would convert farmland adjacent to existing facilities. As described above, the growth potentially encouraged by the improved roadway would be limited by the annexation process of each jurisdiction. Within the Vacaville, Fairfield, and Suisun City area, various development projects would also convert farmland. Large-scale development projects either under construction, approved, proposed, or planned include, but are not limited to, the future 800-acre technology park planned along Vanden Road in Fairfield; the Fairfield-Vacaville multimodal train station planned for the intersection of Peabody Road and Vanden Road in

Fairfield; the planned Travis AFB expansion; Vacaville's large mixed-use Southtown, Lagoon Valley, and North Valley projects; and Fairfield's Goldridge subdivision project.

Based on a review of the Important Farmland Map for Solano County (2004), much of the farmland converted by these projects would consist of lower-quality grazing lands; however, prime farmlands would also be converted in several locations. These conversions would add to the relatively small amounts of farmland that would be converted by the project. Cumulatively, farmland converted in Solano County by these projects would be unavoidable and could be substantial. However, the project's contribution to the conversion of farmland (less than 0.02 percent of farmland in the County) is not considered substantial. Therefore, the cumulative impact to farmland would not be adverse.

3.3.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the LESA evaluation criteria, the project's impacts to agricultural land are considered minor, as relatively small amounts of farmland would be acquired. Therefore, no mitigation measures are required.

3.4 Community Impacts

The information below is summarized from the Community Impact Assessment (CIA) and Relocation Impact Report (RIR) prepared for the project. These reports are incorporated by reference and are available for public review at the Solano Transportation Authority's (STA's) and Caltrans offices. The majority of the demographic characteristics were obtained from the 2000 U.S. Census. Where possible, the demographic characteristics have been updated with State or local sources for this environmental document. This section addresses community impacts related to community character and cohesion, relocations, and environmental justice.

3.4.1 Community Character and Cohesion

3.4.1.1 Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA), established that the federal government use all practicable means to ensure that all Americans have safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). The Federal Highway Administration in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

3.4.1.2 Affected Environment

Community impacts are evaluated in an area that encompasses all or portions of 12 census tracts spanning areas within the jurisdictions of Vacaville, Fairfield, Suisun City, and Solano County.¹ This area is referred to as the "study area" in this section. As depicted in Figure 3.4-1, the study area is substantially larger than the area directly affected by project construction, right-of-way-acquisitions, and displacements, although this analysis focuses primarily on the portion of the study area that is within and immediately adjacent to the corridor.

Community/Neighborhood Characteristics

The corridor extends along commercial and residential developments interspersed with agricultural and vacant lands. Defined neighborhoods exist along the project alignment in Vacaville, Fairfield, and Suisun City.

¹ Census tracts fully or partially within the study area are 2523.09, 2527.05, 2527.06, 2527.07, 2529.02, 2529.04, 2529.07, 2529.09, 2529.10, 2531.05, 2531.06, and 2531.07.

In Vacaville, the Casa Grande Mobile Home Park, a defined community of mobile-home residents, is east of Leisure Town Road between Horse Creek and Poplar Road in census tract 2529.04. Immediately south of the mobile home park, between Poplar Road and Maple Road, lies a strip of rural homes with no sidewalks and only a loose neighborhood affiliation. West of Leisure Town Road, between Ulatis Creek and Ulatis Drive in census tract 2529.02, a defined neighborhood of large single-family homes on standard lots is situated just north of a new development of single-family homes. Farther south, straddling census tracts 2529.09 and 2529.10, an older subdivision of single-family homes is located between Elmira Road and Alamo Drive.

Along Peabody Road in Vacaville, several subdivisions of various ages are adjacent to both sides of the roadway. In census tract 2531.07, a cohesive neighborhood of single-family homes is west of Peabody Road between Marshall Road and Alamo Creek. Farther south, a neighborhood of older condominiums is on the west side of Peabody Road between Southwood Drive and Alamo Drive. In census tract 2531.05, the Fairmont subdivision is a neighborhood of single-family homes constructed in the early 1960s along the east side of Peabody Road between Berryessa Drive and Marshall Road. On the east side of Peabody Road, south of Beelard Drive, there is a defined neighborhood of 1970s-era single-family homes called Gregory Park. Newer subdivisions of larger homes are in census tract 2529.07, on the east side of Peabody Road between California Drive and Foxboro Parkway and south of Foxboro Parkway.

In Fairfield, the Gold Ridge subdivision of single-family homes is on the west side of Peabody Road, both north and south of Putah South Canal. A defined neighborhood of single-family homes is on the east side of Peabody Road between Whitney Drive and Dobe Lane (census tract 2523.09). The Dover Mobile Home Park, a large community of mobile-home residents, is between Walters Court and East Tabor Avenue on the west side of Walters Road (census tract 2527.07).

The Rancho Tolenas rural subdivision is on the west side of Walters Road in a pocket of unincorporated land between East Tabor Avenue and Bella Vista Drive (census tract 2527.07). This community is differentiated from neighboring subdivisions by its large lots (2- to 6-acres), deep setbacks, lack of sidewalks, and rural character.

In Suisun City, older, established subdivisions of single-family homes are adjacent to both sides of Walters Road between Bella Vista Drive and Scandia Road. A newer subdivision, Petersen Ranch, is on the east side of Walters Road between East Tabor Avenue and Bella Vista Drive.

Demographic Characteristics

Existing and Projected Population

The population of Solano County has grown at a moderate, steady pace in recent years. As shown in Table 3.4-1, the County's population grew at an average rate of 1.4 percent between 2000 and 2006, reaching a population of 422,848. This growth rate was slightly lower than the statewide rate of 1.9 percent over the same period. The California Department of Finance (DOF) projects that the County's growth rate will accelerate over the next 20 years, with growth projected to annually average approximately 2.6 percent through 2030. This growth rate would result in a countywide population exceeding 675,000 by 2020.

**Table 3.4-1
Population Characteristics of the Study Area (2000) and Surrounding Jurisdictions (2006)**

Category	Study Area ^a	Vacaville	Fairfield	Suisun City	Solano County
Total population (persons)	72,902	96,395	105,601	27,748	422,848
Growth rate, 2000-2006	N/A	1.7%	2.0%	1.2%	1.4%
Number of households	24,922	86,843	101,914	27,654	406,572
Average household size (persons)	2.93	2.77	2.91	3.19	2.84

Source: Census, 2000; Department of Finance, 2006.

Note:

- a. Population characteristics for the study area are from the 2000 Census. A new population estimate for the study area will not be available until the 2010 Census.

Over the past six years, the growth rates of Fairfield and Vacaville have exceeded the countywide rate, while Suisun City's growth rate has been similar to the County's. Together, the three cities represent the County's largest population center, collectively accounting for 54 percent of the countywide population.

Taking in portions of all three cities, the study area contained approximately 72,902 persons in 2000, or 18 percent of Solano County's population in 2000. Based on census tract population data, an estimated 65 percent of the study area's population resides in Vacaville, with the remainder residing in Fairfield (20 percent), Suisun City (12 percent), and unincorporated areas of Solano County (three percent).

Household Composition

The household characteristics of the study area and Vacaville, Fairfield, Suisun City, and Solano County are summarized in Table 3.4-1. The study area contained about 24,900 households in 2000, accounting for 19 percent of the households in Solano County at that time. The average household size in the study area was 2.93 persons per household in 2000, which was higher than Vacaville, Fairfield, and Solano County, but lower than Suisun City.

Ethnic Composition

Ethnically, the study area's population is less diverse than the populations of Fairfield, Suisun City, and Solano County, but similar in composition to the population of Vacaville. As Table 3.4-2 shows, nonwhite people make up nearly 40 percent of the study area's total population, with Hispanics or Latinos, Blacks or African Americans, and Asians accounting for the largest shares of the minority populations. This ethnic mix is similar to the composition of Vacaville's population, with nonwhites composing 37 percent of the population. In Fairfield, Suisun City, and Solano County as a whole, nonwhites make up the largest share of the populations, accounting for 51 percent of the populations of both Fairfield and Solano County and 61 percent of the population of Suisun City. In all jurisdictions, Hispanics and Blacks/African Americans account for the largest proportions of the nonwhite population, with population shares ranging from 10 to 19 percent.

**Table 3.4-2
Ethnic Composition and Income of the Study Area and
Surrounding Jurisdictions: 2000**

Category	Study Area	Vacaville	Fairfield	Suisun City	Solano County
Race or Ethnicity (percent)					
White alone	59.7	63.2	49.0	38.6	49.2
Black or African American alone	10.6	9.8	14.7	18.8	14.6
Hispanic or Latino	15.2	17.9	18.8	17.8	17.6
American Indian and Alaska Native alone	0.5	0.7	0.5	0.5	0.6
Asian alone	8.3	4.0	10.7	17.3	12.5
Native Hawaiian and Other Pacific Islander alone	0.7	0.4	0.9	1.0	0.7
Some other race alone	0.2	0.2	0.3	0.3	0.2
Two or more races	4.8	3.8	5.1	5.7	4.6
Income per capita	\$23,000	\$21,560	\$20,620	\$20,390	\$21,730
Median household income	\$58,550	\$57,670	\$51,150	\$60,850	\$54,100
Percent below poverty level	5.8	6.1	9.3	6.5	8.3

Source: Census, 2000.

In the census tracts comprising the Vacaville portion of the study area, a substantial percentage (59 to 76 percent) of the population are people of white origin. The population of the Fairfield portion of the study area is composed of approximately 47 percent white and 53 percent nonwhite persons. The Suisun City portion of the study area is even more diverse, with 57 percent of the population made up of people of nonwhite origin. Hispanics, Blacks/African Americans, and Asians are the largest ethnic groups residing in the census tracts within Fairfield and Suisun City.

To update the 2000 Census data, additional data was obtained from Claritas, a company specializing in consumer information about population and business data and Census 2000 Summary File 3 (SF3). The Claritas data contained population, ethnicity, household, and poverty estimates for 2007 by the block group, city, and county level. According to the updated data, the population of the Fairfield portion of study area is comprised of approximately 51 percent nonwhite persons and 49 percent white, representing a two percent decline in minority population since 2000. The Suisun City portion of the study area is now 63 percent nonwhite, a six percent increase in minority population from the 2000 Census. Vacaville represents the least diverse portion of the study area, with 34 percent of its population composed of nonwhite residents, and the Solano County portion of the study area has a population equally dispersed between white and nonwhite.

Residential Environment

The residential environment is characterized by the size and tenure (owner- or renter-occupied) of the housing stock, vacancy rates, and housing costs for the study area, Solano County, Vacaville, Fairfield, and Suisun City.

Housing Stock and Tenure

In 2000, the combined housing stock of Vacaville, Fairfield, and Suisun City totaled 68,630 housing units, representing more than 50 percent of the 134,513 housing units in Solano County (Table 3.4-3). The study area contains a large share of the area's housing stock. In 2000, 25,425 housing units were located in the study area (81.7 percent single-family units and 18.3 percent multi-family units), accounting for 37 percent of all units in the encompassing three-city area.

**Table 3.4-3
Housing Characteristics of the Study Area and Surrounding Jurisdictions: 2000**

Characteristic	Study Area	Vacaville	Fairfield	Suisun City	Solano County
Housing units	25,425	28,696	31,792	8,146	134,513
Owner-occupied (percent)	70.5	66.7	59.7	73.6	65.2
Renter-occupied (percent)	29.5	33.3	40.3	26.4	34.8
Single-family ^a (percent)	81.7	79.3	76.6	86.7	79.2
Multi-family (percent)	18.3	20.7	23.4	13.3	20.7
Vacant units	503	591	922	159	4,110
Vacancy rate (percent)	2.0	2.1	2.9	2.0	3.1
Median home price ^b	N/A	\$411,000	\$472,000	\$351,000	\$419,500

Sources: Census, 2000; DataQuick 2007.

Notes:

N/A = not available.

a. Includes single-family detached and attached units, and mobile homes.

b. Median price as of September 2007.

As Table 3.4-3 shows, housing tenure in the three communities bracketed countywide tenure characteristics in 2000. Suisun City and Vacaville contained larger percentages of owner-occupied housing units, at 73.6 percent and 66.7 percent, respectively, than the County as a whole (65.2 percent). Fairfield's percentage of owner-occupied housing (59.7 percent) was slightly lower than the countywide level. Compared to the three cities and the County, the mix of housing in the study area has more owner-occupied housing (70.5 percent) than renter-occupied housing.

Vacancy Rates

In 2000, the housing vacancy rate in the study area was generally lower but similar to the rates countywide and in Vacaville, Fairfield, and Suisun City. As Table 3.4-3 shows, the study area's 2.0 percent vacancy rate was lower than the countywide rate of 3.1 percent. Vacancy rates in the three cities ranged from 2.0 percent in Suisun City to 2.9 percent in Fairfield. These vacancy rates indicate a high demand for housing relative to housing supply in 2000. Since 2000, vacancy rates have remained relatively constant in Vacaville and Suisun City. The vacancy rates in Fairfield and the County, however, have increased to 6.5 percent and 4.0 percent respectively.²

² California Department of Finance. 2006. Table 2: E-5 City/County Population and Housing Estimates, January 1, 2006. Solano County.

Housing Costs

Following the rapid increase in housing prices during the late 1990s, housing prices in much of the nation have fallen or remained steady in recent years. In the San Francisco Bay Area, housing prices have not fallen as drastically as other areas in the nation, but homes are staying on the market for longer periods, and fewer homes are being sold. Certain counties, including Solano County, have experienced a drop in housing prices and the number of homes sold. Housing prices in Solano County more than doubled between 1999 and 2004, but prices are now decreasing. In Solano County, the number of houses sold dropped 41 percent between July 2006 and July 2007. Similarly, the median housing price in Solano County was \$419,500 in July 2007, a 12 percent drop from 2006.³ Housing prices vary within the County, with prices being generally higher in the southern part of the County, where the study area is located, than in the northern part of the County. In 2005, the median rent in the County was \$1,075.⁴

Housing prices also have been decreasing in Vacaville, Fairfield, and Suisun City, with one-year decreases in median prices of 4 percent, 12 percent, and 16 percent, respectively, from mid-2006 to mid-2007.⁵ As Table 3.4-3 shows, median home prices were similar in the three cities in mid-2007, ranging from \$351,000 in Suisun City to \$472,000 in Fairfield.

No recent housing value data are available for the study area; however, median housing prices are probably similar to those found in the three cities encompassing the study area. According to the 2000 Census, the median value of owner-occupied housing for study area census tracts ranged from \$145,700 in census tract 2531.07 west of Peabody Road in Vacaville to \$256,000 in census tract 2529.04 east of Leisure Town Road. Median monthly rents ranged from \$729 in census tract 2531.05 east of Peabody Road in Vacaville to \$1,171 in census tract 2529.09 southeast of the Leisure Town Road/Elmira Road intersection.

Economic Characteristics

Labor Force and Employment

Solano County's civilian labor force has been expanding slowly but steadily in recent years, from 165,500 in 1990 to 197,300 in 2000. Since 2000, the labor force has continued to grow while unemployment rates have risen slightly in the County, and in the cities of Fairfield and Suisun City. In

³ DataQuick Information Systems, Bay Area Home Sales Still Slow, Prices Up, July 18, 2007, <http://www.dqnews.com/RRBay0707.shtm>, accessed on October 28, 2007.

⁴ American Community Survey, 2005, <http://www.bayareacensus.ca.gov/counties/SolanoCounty.htm>, accessed October 28, 2007.

⁵ DataQuick, Bay Area Home Sales Activity September 2007, <http://www.dqnews.com/ZIPSFCS.htm>, accessed on October 28, 2007.

Vacaville, however, the labor force decreased by 37 percent and the unemployment rate also decreased. In 2001, an estimated 4.1 percent of the County’s 201,400-person civilian labor force was unemployed, representing a sharp decline from an 8.0 percent unemployment rate in 1995.⁶ As Table 3.4-4 shows, the civilian labor force residing in Vacaville, Fairfield, and Suisun City totaled an estimated 110,200 persons in 2007, accounting for 52 percent of the countywide labor force.

**Table 3.4-4
Labor Force Characteristics: 2007**

Area	Vacaville	Fairfield	Suisun City	Solano County
Labor force (people)	46,200	49,100	14,900	213,800
Employment (people)	44,500	46,300	14,100	203,000
Unemployment (people)	1,700	2,800	800	10,800
Unemployment rate	3.8%	5.7%	5.3%	5.1%

Source: California Economic Development Department, 2007.

Although Solano County’s job base provides employment opportunities for many County residents, a large portion of residents commute southward to job locations in Alameda County, Contra Costa County, San Francisco County, Santa Clara County, and San Mateo County, as well as eastward to employers in the Sacramento region. Many commuters use I-80 and connecting freeways and highways to reach these job sites.

Employment by major industrial sectors within Solano County totaled approximately 121,000 full-time-equivalent jobs in 2001 (Table 3.4-5). Important employment sectors included services (26.0 percent), retail trade (21.6 percent), and government (21.1 percent). Sectors experiencing substantial growth since 1995 include the construction and mining sector, which has averaged 10.7 percent annual growth since 1995; the farm sector (production and services), which has grown annually by 7.3 percent; and the wholesale sector, which has experienced annual growth of 6.2 percent.⁷ The services and trade sectors are expected to experience strong growth in coming years, according to employment projections prepared by the California Employment Development Department (CEDD).

In the study area, employment is provided by retail stores, restaurants, farm operations, and a variety of commercial and industrial businesses. Adjacent to the roadways that would comprise Jepson Parkway, businesses are interspersed with residential uses in many locations. The largest concentration of employers is in the Tolenas Industrial Park, on Huntington Drive in Fairfield. The industrial park includes a number of light and heavy industrial businesses and commercial uses, including Computech Lumber, Clorox Products Manufacturing, Ball Metal Beverage Container Corporation, Macro Plastics, and Rexam Beverage Can Americas. A Burger King restaurant is next to the industrial park. A cross-dock distribution warehouse facility for Saint-Gobain Containers was constructed in September 2006.

⁶ California Employment Development Department. 2002a. Industry employment & labor force—annual average: Solano County. Sacramento, CA.

⁷ California Employment Development Department. Industry employment & labor force—annual average: Solano County. Sacramento, CA.

**Table 3.4-5
Employment by Industry in Solano County: 2001**

Industry	Number of Jobs	Percentage of Total Job Market
Agriculture	2,300	1.9
Construction and mining	11,000	9.1
Manufacturing	11,000	9.1
Transportation and public utilities	4,000	3.3
Wholesale trade	4,800	4.0
Retail trade	26,200	21.6
Finance, insurance, and real estate	4,700	3.9
Services	31,500	26.0
Government	25,500	21.1
Total	121,000	100.0

Source: California Economic Development Department, 2002.

In addition to farming operations adjacent to Leisure Town Road and Vanden Road, employment-generating uses next to the Alternative B, C, and D alignments include the following:

- A storage business and Green Tree Golf Course along the northern portion of Leisure Town Road;
- Maris Industrial Park, a small cluster of businesses, located at the intersection of Leisure Town Road and Elmira Road;
- Vanden Business Center (three auto-towing businesses), a storage business (Sav-On Storage), a ready-mix concrete plant, a trucking firm, and a warehouse on Vanden Road near its intersection with Peabody Road;
- Several industrial and heavy commercial businesses north of Cement Hill Road and immediately west of Peabody Road;
- An auto glass and transmission business south of Air Base Parkway about halfway between Peabody Road and Walters Road;
- An electrical supply business, convenience market, and storage facility on Walters Road immediately south of its intersection with Air Base Parkway; and
- A convenience market and gas station northeast of the Walters Road/Scandia Road intersection.

Adjacent to the Alternative E alignment on Peabody Road, south of Elmira Road in Vacaville, there are several large retail and commercial businesses and shopping centers:

- Vacaville Ford Mercury;
- Marshall Plaza, with 15 commercial tenants;
- The 99¢ Only Store shopping center, including Fairmont Liquors and Mattress Suite;

- The Albertsons shopping center, with several businesses, including 60 Second Tan, Subway, Pet Vet Clinic, Wells Fargo Home Mortgage, and Century 21 Real Estate;
- The Gateway Center, occupied by Gateway Insurance, Safeco, and Home Rentals, among other businesses;
- The California Center, a commercial center with several businesses, including Oak Animal Hospital and Creekside Orthodontics; and
- A Taco Bell and Chevron service station.

Several industrial and commercial businesses are adjacent to both sides of Peabody Road north of Vanden Road. These businesses include a storage business, a recycling business, a cabinet business, two trucking firms, an auto-wrecking yard, and several landscaping and construction materials businesses.

Income

In 1999, Solano County had the ninth-highest household income among California's 58 counties. According to the 2000 Census, the median household income in Solano County was approximately \$54,100. Income per capita in the County was \$21,730. As Table 3.4-2 shows, household income and income per capita in Vacaville, Fairfield, and Suisun City varied in 2000. Median household income ranged from \$51,150 in Fairfield to \$60,850 in Suisun City. Income per capita ranged from \$20,390 in Suisun City to \$21,560 in Vacaville. Median household income in the study area was \$58,550 in 2000, which was higher than household income in Fairfield and Vacaville but lower than in Suisun City. The study area's income per capita of \$23,000 was higher than in any of the three cities.

Based on the percentage of individuals below the federal poverty level in 1999, poverty in the study area was generally lower than in the three communities and countywide (Table 3.4-2). In the study area, only three of the study area's 12 census tracts had poverty levels higher than the countywide rate of 8.3 percent: census tract 2527.07 (8.8 percent) in Suisun City west of Walters Road, census tract 2529.04 (9.3 percent) in unincorporated Solano County east of Leisure Town Road, and census tract 2531.05 (12.1 percent) in Vacaville southeast of the Peabody Road/Elmira Road intersection.

Tax Revenue

Properties in the study area generate property tax revenues that are allocated to the three cities and Solano County, as well as to school districts and special districts. According to the State Board of Equalization, the net assessed value of secured property subject to general property taxes in Solano County was approximately \$22.1 billion in fiscal year 2000–2001. The property tax bases of Vacaville, Fairfield, and Suisun City were approximately \$5.2 billion, \$5.3 billion, and \$1.1 billion, respectively, in fiscal year 2000–2001. In Solano County, cities receive about 13 percent and the County receives about 17 percent of the property tax revenues generated by the one percent tax levy on the value of properties in their jurisdictions.

Some businesses in the study area also generate sales tax revenues for the jurisdiction in which they are located. Few of the existing businesses adjacent to the Alternative B, C, and D alignments are retail sales-oriented businesses; however, several likely generate sales tax revenues through the peripheral purchase and sale of taxable goods. Along Alternative E in Vacaville, several large sales tax-generating businesses are adjacent to Peabody Road, including Vacaville Ford Mercury, the 99¢ Only Store, and Albertsons supermarket.

During fiscal year 2000–2001, jurisdictions encompassing the study area received the following sales tax revenues from the total sale of taxable goods and services: Vacaville received \$10.9 million, Fairfield received \$15.1 million, Suisun City received \$1.0 million, and Solano County received \$1.4 million.⁸

3.4.1.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

Cohesive communities are indicated by specific social characteristics, such as long average lengths of residency, home ownership, frequent personal contact, ethnic homogeneity, high levels of community activity, and shared goals. Transportation projects may divide cohesive neighborhoods when such projects act as physical barriers or are perceived as psychological barriers by residents. A transportation project perceived as a physical or psychological barrier may isolate one portion of a homogeneous neighborhood.⁹

Summary of Impacts to Community Character and Cohesion

Table 3.4-6 summarizes the impact of each alternative on community character and cohesion, including economic impacts. As shown, only Alternative E would result in adverse community cohesion effects. Each of the alternatives would slightly decrease tax revenue as a result of right-of-way acquisition, but these effects are considered minor. Alternative D would eliminate the most jobs if displaced businesses were unable to relocate within the study area. These effects are described in more detail for each alternative below.

**Table 3.4-6
Summary of Impacts to Community Character and Cohesion**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Community Cohesion	No	Minor	Minor	Minor	Adverse
Tax Revenue	No	Minor	Minor	Minor	Minor
Jobs Lost	0	58	40	224	80

⁸ State Board of Equalization. 2002. 2000–01 Annual Report. Sacramento, CA.

⁹ California Department of Transportation. 1997. Caltrans environmental handbook, volume 4, community impact assessment. Sacramento, CA: Environmental Program, Cultural Studies Office.

Impact CI-1: Would the Alternatives Affect Community Cohesion?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would be no community cohesion effects.

Alternative B. Cohesive neighborhoods are present along the roadways that constitute the Alternative B alignment, including neighborhoods along the west side of Leisure Town Road in Vacaville and along both sides of Walters Road in Fairfield and Suisun City. Effects on community cohesion are not expected to be substantial under Alternative B because the roadways that would be widened already separate existing neighborhoods, which currently have few common characteristics.

Widening Leisure Town Road and Vanden Road through Vacaville and unincorporated Solano County could increase the sense of separation between the portions of the community on each side of the roadway. However, any additional sense of separation would be minor because a heavily-traveled roadway already separates these areas. In addition, the proposed roadway would be at-grade and would provide signalized pedestrian crossing points. The character of the community west of Leisure Town Road, which is defined by individual subdivisions, is substantially different from the rural character of residential areas on the east side of Leisure Town Road.

Widening Cement Hill Road through Fairfield would not create a sense of separation in a defined community. This portion of Cement Hill Road is bordered by heavy commercial and industrial uses to the north and open space land to the south. The Walters Road Extension and the overcrossing of the UPRR tracks would cross undeveloped land to connect to Air Base Parkway and would not affect community cohesion.

Widening Walters Road through Fairfield and Suisun City would increase the sense of separation between the portions of the community east and west of Walters Road. This effect would be minor, however, because a busy roadway already separates these areas and no additional widening would occur on the portion of Walters Road that currently separates existing neighborhoods in Suisun City.

Alternative C. The impacts of Alternative C to neighborhoods on Leisure Town Road and Walters Road would be identical to those identified for Alternative B. As explained above, community cohesion effects in these areas would be minor. No additional community cohesion effects would result from Alternative C. Widening Peabody Road between Cement Hill Road/Vanden Road and Air Base Parkway would not separate neighborhoods because they are all on the east side of Peabody Road. Similarly, there are no neighborhoods spanning the north and south sides of the portion of Air Base Parkway that Alternative C would widen. Similar to Alternative B, the Alternative C overcrossing of the UPRR tracks on Peabody Road would occur in an undeveloped area. Any future development in this area would be planned and designed consistent with the overcrossing. Therefore, Alternative C would have only minor community cohesion effects on neighborhoods adjacent to Walters Road.

Alternative D. The effects of Alternative D to neighborhoods on Leisure Town Road and Walters Road would be minor, and identical to those described for Alternative B, above. The effects of the planned overcrossing would be identical to those described for Alternative C, above. No additional community cohesion effects would result from Alternative D. There are no neighborhoods adjacent to Huntington

Drive; therefore Alternative D would have no community cohesion effects in this portion of its alignment.

Alternative E. Cohesive neighborhoods are present throughout the study area along the Alternative E alignment, including neighborhoods on both sides of Peabody Road between Berryessa Drive and the Vacaville city limits, and on both sides of Walters Road in Fairfield and Suisun City.

Widening Walters Road through Fairfield and Suisun City would result in identical community cohesion effects as Alternatives B, C, and D. As described for Alternative B, these effects would be minor. As described for Alternative C, Alternative E would have no community cohesiveness impact along its Air Base Parkway or Peabody Road (between Air Base Parkway and Vanden Road) segments.

However, widening Peabody Road through Vacaville would increase the sense of separation between the portions of the community east and west of Peabody Road. The elementary school, middle school, and high school that serve the community are all currently located on the east side of Peabody Road, and access between these schools could be potentially disrupted due to the expansion of the roadway. These effects would be minor, because the existing four-lane roadway, which is very busy, already separates these areas, and signalized intersections allow easy access to either side of Peabody Road. Residential displacements, however, would disrupt the cohesiveness of two neighborhoods on the east side of Peabody Road, on Tahoe Drive and Greenwood Drive. Recent field observations of these neighborhoods suggest a moderate degree of neighborhood cohesiveness, as indicated by housing and lot similarities, ethnic composition, and distinct physical boundaries.

The potential displacement of up to 12 single-family houses in the neighborhood along Tahoe Drive and 14 single-family houses in the neighborhood along Greenwood Drive would reduce the cohesiveness of these neighborhoods by removing residents who may have formed long-term relationships with others in the neighborhood. Although this effect would be adverse, the neighborhoods would remain largely intact and Alternative E would not divide or separate the remaining homes from the larger neighborhoods in which they are located.

Impact CI-2: Would the Alternatives Affect the Economy?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would be no local tax revenue impacts.

Alternative B. Acquisition of land and structures currently in private ownership would remove properties from property tax rolls, with the revenue loss spread across several government agencies and districts. These effects are considered minor in the context of overall revenue collection.

The fiscal impacts to Vacaville, Fairfield, Suisun City, and Solano County would be adverse, but small, based on the relatively minor amounts of land acquisitions, the absence of physical improvements on all but six of the nonschool properties to be acquired (two of which are owned by the City of Vacaville), and the wide distribution of revenue effects among agencies. Based on the current

assessed value of the private properties that would be fully acquired under Alternative B,¹⁰ assessed valuations would be reduced by \$93,700 in Vacaville, \$862,800 in Solano County, and \$462,300 in Fairfield.¹¹ These reductions in assessed valuation would result in the total loss of \$19,200 in property tax revenue. The lost revenue would be spread across several local agencies, including Vacaville, Fairfield, and Solano County.

Alternative B would also affect sales tax revenues received by the cities and the County, although these effects are expected to be negligible. Of the properties potentially displaced by Alternative B, only the Burger King restaurant in Fairfield likely generates substantial sales tax revenue from direct sales of goods and services. Based on average sales by limited-service eating places in Fairfield, as reported in the 1997 Economic Census, the sales tax revenue lost to Fairfield through the displacement of this business would probably not exceed \$6,000.

Alternative C. The local tax revenue effects resulting from Alternative C associated with the removal of residences and business structures and the acquisition of right-of-way would result in property and sales tax revenue effects on local agencies similar to those described for Alternative B. There are no additional tax revenue effects specific to the Peabody Road and Air Base Parkway components of Alternative C. As described for Alternative B, these effects are expected to be adverse but minor.

Alternative D. The local tax revenue effects of Alternative D would reduce property and sales tax revenue for Vacaville, Suisun City, and Solano County, in a similar fashion as Alternative B. As described for Alternative B, these effects are expected to be adverse but minor.

For Fairfield, however, tax revenue losses would be greater under Alternative D because of the potential displacement of five industrial and commercial properties in the Tolenas Industrial Park. Based on the current assessed value of the properties that would be fully acquired in Fairfield,¹² assessed valuations would be reduced by nearly \$17.6 million, representing approximately 0.3 percent of Fairfield's locally assessed property tax base.¹³ This reduction in assessed valuation would result in the total loss of \$324,100 in property tax revenue, including an estimated loss of \$42,100 for Fairfield. The remaining loss would be spread across several local agencies. Although adverse, the loss in property tax revenue for Fairfield would not be substantial relative to the total property tax revenue received by the city annually.

Alternative E. Under Alternative E, property tax revenue losses would be similar to those described for Alternative B for Fairfield, Suisun City, and Solano County. As described for Alternative B, these effects are expected to be adverse but minor. For Vacaville, however, Alternative E would result in greater revenue losses than Alternative B because Alternative E would fully acquire more properties for right-of-way and would displace more structures.

¹⁰ Assumes full acquisition of all parcels in which there would be structural displacements.

¹¹ Solano County Assessor/Recorder. 2004. On-line property and tax information for fiscal year 2003–2004. Available: <<http://www.solanocounty.com/resources.scips>>. Accessed: April 22, 2004.

¹² Assumes full acquisition of parcels for which a structural displacement would be required.

¹³ Solano County Assessor/Recorder. 2004. On-line property and tax information for fiscal year 2003–2004. Available: <<http://www.solanocounty.com/resources.scips>>. Accessed: April 22, 2004.

Based on the current assessed value of the properties that would be fully acquired in Vacaville, Alternative E would reduce assessed valuations by \$14.4 million, representing approximately 0.3 percent of Vacaville's locally assessed property tax base.¹⁴ This reduction in assessed valuation would result in the total loss of \$161,900 in property tax revenue, including an estimated loss of \$21,000 for Vacaville. The remaining loss would be spread across several local agencies. Although adverse, the loss in property tax revenue for Vacaville would not be substantial relative to the total property tax revenue received by the city annually.

Alternative E would also affect sales tax revenues received by the cities and County, although these effects are expected to be negligible. Of the properties potentially displaced by Alternative E, only the Subway Restaurant in Vacaville potentially generates substantial sales tax revenue from direct sales of goods and services. Based on average sales by limited-service eating places in Vacaville, as reported in the 1997 Economic Census, the sales tax revenue lost to Vacaville by the displacement of this business probably would not exceed \$6,700.

Impact CI-3: Would the Alternatives Affect Businesses?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would be no local and roadside business impacts.

Alternative B. Direct business impacts caused by Alternative B would be associated primarily with displacement of commercial structures, landscaping, and outside storage areas. In summary, eight businesses would be directly affected by this alternative, including five that would be displaced (see Impact CI-7). STA would be required to comply with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, described in Section 3.4.2. Business displacements would result in the loss of an estimated 58 jobs (please refer to the CIA for a detailed estimate of job losses associated with each business displacement). Forty of the 58 jobs that would be displaced are in unincorporated Solano County. For each business, jobs would only be permanently lost if relocation was not possible. In the context of the countywide labor market, the permanent loss of these 58 jobs would not be considered a substantial adverse effect.

Indirect business impacts would be limited to a small number of convenience-oriented retail businesses on the Alternative B route, which would benefit from increased local traffic if the project were built. These effects, however, would be small and limited to the few businesses along the route that rely on local traffic and sales of convenience products.

Alternative C. Similar to Alternative B, Alternative C would adversely affect four businesses along Vanden Road, displacing structures at the Vanden Business Center (three businesses), Sav-On Storage properties, and portions of equipment parking areas at the AR Readymix and Skaggs Trucking properties. In addition, Alternative C would have minor effects (displaced landscaping along the roadway) on the properties occupied by Clorox Products Manufacturing on Huntington Drive and an

¹⁴ Solano County Assessor/Recorder. 2004. On-line property and tax information for fiscal year 2003–2004. Available: <<http://www.solanocounty.com/resources.scips>>. Accessed: April 22, 2004.

auto glass and transmission business on Air Base Parkway. Alternative C would, however, avoid the Burger King restaurant at the corner of Huntington Drive and Walters Road and the Computech Lumber storage yard in the Tolenas Industrial Park. In summary, eight businesses would be directly affected by this alternative, including four businesses that would be displaced. STA would be required to comply with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, described in Section 3.4.2. Business displacements would result in the loss of an estimated 40 jobs, all in unincorporated Solano County. These jobs would only be permanently lost if the displaced businesses are unable to relocate within the study area. As described under Alternative B, the loss of these jobs is not considered substantial in the context of the countywide labor market.

Alternative D. Similar to Alternatives B and C, Alternative D would adversely affect four businesses along Vanden Road. An estimated 40 jobs would be lost as a result of business displacements along Vanden Road. In addition, Alternative D would displace parking and structures at 13 businesses along Huntington Drive and Crocker Circle in Fairfield due to the proposed roadway widening.

In summary, Alternative D would directly affect 17 businesses, including the four businesses along the Vanden Road portion shared with Alternatives B and C. STA would be required to comply with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, described in Section 3.4.2. If these businesses could not be relocated to other onsite or offsite locations in the study area, the displacements would result in the loss of an estimated 224 jobs, including 184 jobs in Fairfield and 40 jobs in unincorporated Solano County. The loss of 224 jobs would be considered a substantial and adverse effect in the context of the local area.

Alternative E. Direct business impacts caused by Alternative E would primarily be associated with displacement of commercial structures, landscaping, and outside storage areas as a result of right-of-way acquisition and roadway widening. In summary, 28 business properties would be directly affected by this alternative. Of the 28 properties affected, only seven businesses on five properties would be displaced. STA would be required to comply with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, described in Section 3.4.2. Business displacements would result in the loss of an estimated 80 jobs, including 54 jobs in Vacaville and 26 in the unincorporated Solano County. As described for Alternative B, the loss of these jobs is not considered substantial in the context of the countywide labor market.

Indirect business impacts would be limited to a small number of convenience-oriented retail businesses along the Alternative E route, which would benefit from increased local traffic under with-project conditions. These effects, however, would be small and limited to the few businesses along the route that rely on local traffic and sales of convenience products.

Impact CI-4: Would Construction of the Alternatives Affect the Economy?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would be no construction-related economic impacts.

Alternative B. Construction of Alternative B would generate a substantial temporary economic activity, including purchases of goods and services and employment of workers required for construction in Solano County and the region. This increased economic activity would also prompt secondary economic activity as construction-related business and employee income is spent in sectors throughout the regional economy.

Based on a preliminary cost estimate for Alternative B, construction of the remaining roadway improvements required for Alternative B would total approximately \$125,135,000.¹⁵ The employment and income effects generated by construction expenditures would be spread over the construction period. The extent of the economic impact of construction expenditures on the economies of Solano County, Vacaville, Fairfield, and Suisun City would depend on the proportion of construction expenditures that would occur in the local and regional area and on the residential locations of persons employed by construction contractors.

Alternative C. The preliminary cost estimate for Alternative C is approximately \$136,782,000. As described for Alternative B, the employment and income effects would be spread throughout the construction period and among the various jurisdictions.

Alternative D. The preliminary cost estimate for Alternative D is approximately \$134,781,000. As described for Alternative B, the employment and income effects would be spread throughout the construction period and among the various jurisdictions.

Alternative E. The preliminary cost estimate for Alternative E is approximately \$122,558,000. As described for Alternative B, the employment and income effects would be spread throughout the construction period and among the various jurisdictions.

Impact CI-5: Would the Alternatives, in Combination with Other Development, Result in Cumulative Tax Revenue Effects?

Right-of-way acquisition required for the project would slightly diminish the property tax bases of Vacaville, Fairfield, and Solano County, resulting in minor losses of property tax revenue. Several other public projects would also result in the acquisition of private property, further diminishing the region's property tax base. These projects include the Elmira Road widening, the Fairfield-Vacaville Multimodal Train Station development, I-80/I-680 interchange improvements, the North Connector improvement, and I-80/I-505 improvements. Individually, none of these projects would result in large acquisitions of private lands, and cumulatively these projects, together with the project, would cause minor losses of property tax revenue for local agencies. Any potential cumulative impact, however, would be moderated by several factors that would soften the fiscal impact on individual agencies. The projects would be started in different years and constructed over several years, thereby spreading the property tax losses resulting from individual projects over several years rather than concentrating effects in a single year. This gradual loss of property tax revenue resulting from public acquisitions of properties would be offset by growth in the property tax base generated by ongoing new development

¹⁵ PBS&J 2007.

in the region, largely masking the adverse fiscal effects of public acquisitions. Finally, cumulative property tax losses would be spread across several agencies, including Solano County, Fairfield, Vacaville, Suisun City, school districts, and special districts. As a result, the cumulative fiscal impacts of public land acquisitions are not anticipated to result in substantial adverse effects on local agencies.

Impact CI-6: Would the Alternatives, in Combination with Other Development, Result in Cumulative Socioeconomic Effects?

Most of the socioeconomic effects potentially resulting from construction and operation of the project are limited to resources that are specifically located within the proposed right-of-way or immediately adjacent to the right-of-way. These site- and project-specific effects include direct conflicts with residential and non-residential land uses within the proposed right-of-way; localized construction-related access, congestion, noise, and air quality effects; and residential and business displacement effects.

As discussed for the project alternatives, right-of-way acquisition required for the Jepson Parkway Project would slightly diminish the property tax bases of Vacaville, Fairfield, and Solano County, resulting in minor losses of property tax revenue. Several other cumulative projects would also result in the acquisition of private property, further diminishing the region's property tax base. These projects include Leisure Town Road overcrossing/interchange improvements, Al Patch Memorial Park development, Elmira Road widening, the Fairfield-Vacaville Multimodal Train Station development, I-80/I-680 interchange improvements, I-80/I-505 improvements, and I-80 lane additions. Individually, none of these projects would result in large acquisitions of private lands, but cumulatively these projects, together with the Jepson Parkway Project, would cause moderate losses of property tax revenue for local agencies. This potential cumulative impact, however, would be moderated by several factors that would soften the fiscal impact on individual agencies. The projects would be started in different years and constructed over several years, thereby spreading the property tax losses resulting from individual projects over several years rather than concentrating effects in a single year. This gradual loss of property tax revenue resulting from public acquisitions of properties would be offset by growth in the property tax base generated by ongoing new development in the region, largely masking the adverse fiscal effects of public acquisitions. Finally, cumulative property tax losses would be spread across several agencies, including Solano County, Fairfield, Vacaville, Suisun City, school districts, and special districts. As a result, the cumulative fiscal impacts of public land acquisitions are not anticipated to result in substantial adverse effects on local agencies.

3.4.1.4 Avoidance, Minimization, and/or Mitigation Measures

In general, the effects of the build alternatives on community cohesion and the local economy would be minor. Alternative D would have a substantial and adverse effect on local businesses. To minimize this impact, STA would comply with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

3.4.2 Relocations

3.4.2.1 Regulatory Setting

The Department's Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.). Please see Appendix C for a copy of the Department's Title VI Policy Statement.

The RAP requires STA to provide relocation advisory assistance to any person, business, farm, or nonprofit organization displaced as a result of acquisition of real property for public use. STA would assist residential displacees in obtaining comparable, decent, safe, and sanitary replacement housing by providing current and continuous information on sale prices and rental rates of available housing. Nonresidential displacees would receive information on comparable properties for lease or purchase. Residential replacement dwellings would be in equal or better neighborhoods, at prices within the financial means of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, displacees would be offered comparable replacement dwellings that are available to all persons consistent with the requirements of Civil Rights Act Title VIII. Relocation assistance would also include supplying information concerning federal and State assisted housing programs, and any other known services being offered by public and private agencies in the area. A local certified public agency designated by STA would carry out the relocation plan to help eligible displaced individuals move with as little inconvenience as possible. Appraisals to determine fair market value would be conducted for each displaced property after an alternative has been selected and the environmental document is complete.

3.4.2.2 Affected Environment

The affected environment for the purposes of the relocation analysis is described in Section 3.4.1.2.

3.4.2.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The evaluation of relocation impacts was based on information provided in the CIA and RIR prepared for the project. The analysis presented below is only a summary of the CIA and RIR. Please refer directly to the technical reports for complete data and descriptions of market conditions and relocation

impacts. Specifically, the RIR includes market data for residential units (sale and rental), industrial space, industrial land, and commercial space.

The analysis below focuses on direct land acquisitions which could require the relocation of the affected home or business. A number of minor right-of-way acquisitions would be required to accommodate each of the build alternatives. These minor acquisitions are fully described in the RIR and CIA.

Summary of Relocation and Population Impacts

Table 3.4-7 presents the number of structural displacements for each alternative. The table also compares the number of residents that would need to be relocated. As shown, Alternative E would displace the most structures and residents. The relocation and population implications of each alternative are described in detail below.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Single-family Homes	0	0	0	0	26
Multi-family Units	0	0	0	0	10
Commercial Structures	0	10	9	11	4
Industrial Structures	0	0	0	4	1
Public Structures	0	2	2	2	0
Residents (persons)	0	0	0	0	105
Total Displacements	0	12	11	17	41
Total Full Parcel Takes	0	4	4	7	32

Source: Estimated based on construction drawings, field observations, aerial photographs, and parcel maps.

Note:

- a. Assumes full acquisition of the following properties: Sav-On Storage property, Travis Unified School District parcels, Burger King, Quickstop market/gas station, Sunpol Resins & Polymers, and Rexam Beverage Can Americas, 60 Second Tan, Subway, and Pet Vet Clinic, Oak Animal Hospital and Creekside Orthodontics, Recycling Zone. Assumes partial acquisition of Vanden Business Center.

Impact CI-7: Would the Alternatives Result in Relocation and Population Impacts?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would be no residential or business displacements or population effects.

Alternative B. Alternative B would displace ten commercial and two public structures.

Residential Displacements. Under Alternative B, no residential units would be displaced. Subsequently, Alternative B would not adversely affect population in the area.

Nonresidential Displacements. Under Alternative B, a commercial building on the Vanden Business Center property, on the west side of Vanden Road between Leisure Town Road and Peabody Road, would be displaced. This property houses three towing businesses (GM Tow Yard, Mike's Road

Service, and Bowman's Towing). Based on an aerial photograph of the parcel, adequate space appears to be available for relocating the structure elsewhere on the parcel without substantially displacing other uses on the parcel, which primarily include yard storage for wrecked cars.

A small office building and seven long corrugated-metal storage buildings on a property occupied by Sav-On Storage would also be displaced along Vanden Road. This business consists of an estimated nine storage buildings and a storage lot for recreational vehicles and other vehicles on a 7.2-acre parcel. The loss of seven buildings is expected to have a detrimental effect on the continued viability of the business. If the displaced storage buildings were relocated to an area on the Sav-On Storage property currently used for outside storage of vehicles, then the business' outside storage area would be greatly reduced. A determination about whether the impacts on this site would require a full parcel acquisition would be determined during the right-of-way acquisition phase of this project.

If offsite relocation is required for these businesses, substantial commercial and industrial space and substantial vacant industrial land would be available for relocation in Vacaville and Fairfield. As of May 2004, 32 vacant properties in Vacaville and 14 properties in Fairfield larger than 6.9 acres were available for sale.

Right-of-way acquisition under Alternative B would completely displace the 0.3-acre parcel occupied by the Burger King restaurant at the corner of the Huntington Drive and Walters Road in Fairfield. Relocating this business would require a parcel with good access and visibility on a street with high traffic volumes. Although substantial vacant commercial space is available in Fairfield, relocation of this business may require construction of a commercial structure that fits the specific needs of a Burger King restaurant. Currently, adequate vacant commercial land appears to be available for relocation of the restaurant, including vacant parcels designated for commercial use at the southwest corner of the Walters Road/Air Base Parkway intersection, at the Walters Road/East Tabor Drive intersection, near the site of the future Fairfield-Vacaville Multimodal Train Station at the corner of the Peabody Road/Vanden Road intersection, and at other locations. Additionally, several parcels of adequate size are available in industrial parks in Fairfield, potentially providing relocation sites.

Roadway widening would also displace the Travis Unified School District (TUSD) properties on Vanden Road. TUSD has been using this site for meeting space and storage since 2004. This site was formerly occupied by the Travis Community Day School, a continuation school. The site consists of two portable buildings; both the buildings would be affected by this alternative. The affected buildings could be relocated elsewhere on the property, but concerns have been expressed that the building could not be moved without causing substantial damage to the structure and that the location of the school's septic system could preclude onsite relocation. A determination about whether the impacts on this site would require a full parcel acquisition would be compiled during the right-of-way acquisition phase of this project. If Alternative B would make the site untenable for continued use by the school district, then portable buildings could be placed at an existing school district site for such use.

Compliance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act would minimize the relocation effect. In addition to compliance with the act, Mitigation Measure CI-1 would minimize minor effects to driveways, fencing, signage, trees, and landscaping associated with

right-of-way acquisition. Mitigation Measure CI-2 specifically addresses relocation of the TUSD facility. Other identified relocation impacts are not considered adverse because substantial numbers of existing businesses would not be displaced and replacement structures would not need to be constructed elsewhere.

Alternative C. Alternative C would displace nine commercial and two public structures; the same structures displaced by Alternative B. In contrast to Alternative B, however, Alternative C would not impact the Burger King restaurant at Huntington Drive and Walters Road. No additional displacement would occur with Alternative C. Mitigation has been identified for the TUSD properties and areas with small right-of-way acquisition (Mitigation Measure CI-1 and Mitigation Measure CI-2). As described for Alternative B, relocation impacts are not considered adverse.

Alternative D. Alternative D would displace 11 commercial, four industrial, and two public structures.

Residential Displacements. Under Alternative D, no residential units would be displaced. Subsequently, Alternative B would not adversely affect population in the area.

Nonresidential Displacements. Several nonresidential structural displacements would occur under Alternative D, including the displacements of the TUSD facilities, Vanden Business Center, Sav-On Storage properties, and Burger King, as described previously for Alternative B. In addition to these displacements, Alternative D would also displace four commercial and industrial businesses along Huntington Drive and Crocker Circle in Fairfield. If the supply of available industrial and commercial space and land at the time of displacement is similar to the current supply, adequate land should be available in the displacement area to relocate these businesses.

- A Quickstop gas station/market structure at the southwest corner of the intersection of Peabody Road and Huntington Drive.
- The corner of a large industrial building housing East Bay Tire Company located on the north side of Huntington Drive.
- An industrial/manufacturing structure used by Sunpol Resins & Polymers on the east side of Crocker Circle.
- A large manufacturing structure occupied by Rexam Beverage Can Americas on the north side of Crocker Circle.

Alternative D would displace the Quickstop gas station/market structure as a result of acquiring a wide swath along the north side of the parcel. Relocation of the Quickstop would require a parcel with good access and visibility on a street with high traffic volumes. Although substantial vacant commercial space is available in Fairfield, relocation of this business may require construction of a commercial structure to fit the specific needs of a gas station/convenience market. Currently, adequate vacant commercial land appears to be available for relocation of the Quickstop, including vacant parcels designated for commercial use at the southwest corner of Walters Road and Air Base Parkway, at the Walters Road and East Tabor Drive intersection, near the site of the future Fairfield-Vacaville

Multimodal Train Station at the corner of Peabody Road and Vanden Road, and at other locations. Additionally, several parcels of adequate size are available in industrial parks in Fairfield.

Alternative D would require right-of-way through the southwest corner of a large industrial building occupied by the East Bay Tire Company. The acquisition of the corner of the industrial building could result in the loss of the entire structure, or it may be possible to redesign the building since most of the structure would be unaffected. If this structure is displaced, relocating the business to a new location would require a replacement commercial property suitable for this type of business. In May 2004, a substantial amount of industrial space in existing buildings was available for lease in Fairfield. However, because of the large size of the structure potentially displaced, options for relocating the East Bay Tire Company to an existing industrial building may be limited. Currently, there are no buildings large enough to accommodate the East Bay Tire Company available in Fairfield, and only three buildings of adequate size are currently available for lease in Vacaville.^{16,17} Consequently, relocation may require construction of an industrial structure large enough to accommodate the East Bay Tire Company. Several industrial parcels of adequate size are available in Fairfield to support construction of a new facility, including parcels in the Tolenas Industrial Park, where the East Bay Tire Company is currently located. Additionally, vacant industrial land is currently available in Fairfield and Vacaville.

Alternative D would displace one of the two onsite industrial/manufacturing structures at the southern end of the Sunpol Resins & Polymers property. The business consists of two structures and outside tanks that hold materials used for industrial purposes. Based on an aerial photograph of the parcel, it is unlikely that the displaced structure could be relocated to a different location onsite. Additionally, relocating this business would likely require new industrial structures to accommodate the specific needs of Sunpol Resins & Polymers. Although the displaced structure is relatively small (estimated at 2,500 square feet), relocation to an existing industrial space may be difficult because of the specific industrial/manufacturing requirements of Sunpol Resins & Polymers. If relocation to an existing building or buildings is feasible, adequate industrial space is available in Fairfield for relocation. If construction of new facilities is required, substantial vacant industrial land is available in Fairfield, including land within the Tolenas Industrial Park.

Alternative D would completely displace the large manufacturing structure occupied by Rexam Beverage Can Americas. Relocating this business would require a large facility capable of accommodating the manufacturing equipment and processes used by this business. Because of the relatively large size of the manufacturing structure, options for relocating Rexam Beverage Can Americas to an existing industrial building may be limited. Currently, only one building large enough to accommodate Rexam is available in Fairfield (located in the Tolenas Industrial Park).¹⁸ In Vacaville,

¹⁶ City of Fairfield. Fairfield properties online. Available: <<http://www.ci.fairfield.ca.us/684.htm>>. Accessed: May 10 and 11, 2004.

¹⁷ City of Vacaville. Location Vacaville: site finder. Available: <http://www.locationvacaville.com/prop_locator.asp>. Accessed: May 10, 2004.

¹⁸ City of Fairfield. 2004a. Fairfield properties online. Available: <<http://www.ci.fairfield.ca.us/684.htm>>. Accessed: May 10 and 11, 2004.

three buildings of adequate size are currently available for lease.¹⁹ Consequently, relocation may require construction of an industrial structure large enough to accommodate the business. As described previously, several industrial parcels of adequate size are available in Fairfield and Vacaville to support construction of a new facility, including parcels in the Tolenas Industrial Park, where Rexam is currently located.

Mitigation has been identified for the TUSD properties and areas with small right-of-way acquisition (Mitigation Measure CI-1 and Mitigation Measure CI-2). As described for Alternative B, relocation impacts are not considered adverse because the number of displaced structures is not considered substantial. In addition, all relocations occurring with Alternative D would comply with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

Alternative E. Alternative E would displace 36 residential, one industrial, and four commercial structures.

Residential Displacements. Under Alternative E, 36 residential displacements would occur on the east side of Peabody Road, between Elmira Road and Alamo Drive. The 36 residential displacements include 26 single-family houses and ten apartment units, as described below:

- An estimated 12 single-family houses would be displaced along Tahoe Drive in the Fairmont subdivision because of widening Peabody Road to the east. All of the potentially displaced houses are south of Berryessa Drive, beginning with the second house south of Berryessa Drive to the house immediately north of Marshall Plaza.
- An estimated 14 single-family houses would be displaced in the Gregory Park subdivision along the east side of Peabody Road, beginning with the second house south of Alamo Creek and continuing to the second house south of Southwood Drive.
- In the Sommerset Apartments complex, immediately northeast of the corner of Peabody Road and Beelard Drive, Alternative E would displace two apartment buildings at the southwest corner of the complex. An estimated eight units (four in each building) would be affected.
- At the southeast corner of the intersection of Peabody Road and Beelard Drive, roadway widening would displace all or part of an older 14-unit, two-story apartment building. Based on the proposed roadway alignment, it appears that Alternative E would displace at least two units at the western end of the building. It was assumed that displacement of these units would not require removal of the entire apartment building and that the remaining 12 units would still be usable.

Based on an average household size of 2.93 persons within the study area, the displacement of 36 housing units would potentially displace an estimated 105 persons residing in Vacaville. This potential change in population would represent 0.1 percent of Vacaville's population.

Virtually all of the single-family homes potentially displaced by Alternative E are three- and four-bedroom homes. Based on 2004 for-sale prices of homes in the displacement neighborhoods, the

¹⁹ City of Vacaville. 2004. Location Vacaville: site finder. Available: <http://www.locationvacaville.com/prop_locator.asp> . Accessed: May 10, 2004.

market value of most of the displaced homes probably ranges from \$300,000 to \$400,000, with the value of specific homes dependent on their age, condition, size, and location.²⁰ In May 2004, 25 homes in this price range were listed for sale by Realtor.com in the 95687 zip code area. An additional 12 homes were listed for sale in the \$400,000 to \$449,999 price range. Although not all homes for sale in this zip code area would be listed for sale on Realtor.com, the data indicates that meeting the housing needs of relocated households in locations in or near their existing neighborhoods is possible but may be difficult. Depending on real estate market conditions existing at the time of displacement and the actual number of single-family homes that would be displaced, sufficient resources may not be available to relocate each household within its immediate neighborhood. Some households may need to relocate to another area of Vacaville, or to Fairfield or Suisun City. According to Realtor.com, in early May 2004, 90 single-family homes were for sale in Vacaville, 321 in Fairfield, and 106 in Suisun City. If the supply of for-sale housing at the time of displacement is similar to the current supply, adequate housing should be available in Vacaville or nearby to relocate the displaced households.

The ten apartment units potentially displaced by Alternative E include eight units in Sommerset Apartments on Peabody Road in Vacaville. Immediately south of Sommerset Apartments, two units could be displaced in an older apartment building at 290 Beelard Drive. No information on rental rates was readily available for apartments in these buildings. Fifty-six apartments were available for rent in Vacaville in November 2007, according to advertisements listed on Craigslist. Assuming the rental housing supply at the time of displacement is similar to the current supply, adequate rental housing should be available in the displacement area to relocate the displaced renter households.

Based on current housing availability in Vacaville and adjacent communities, it does not appear that Alternative E would require housing of last resort.²¹ If sufficient vacant housing is not available in the study area when property is acquired, housing of last resort may be required to accommodate some of the displaced households. Housing of last resort may include new construction. Any new construction would need to meet local policies and standards for residential development.

Nonresidential Displacements. Under Alternative E, commercial business displacements would occur in Vacaville and Fairfield. In Vacaville, Alternative E would displace a commercial structure on a parcel on the east side of Peabody Road, south of Southwood Drive, shared by 60 Second Tan, Subway, and Pet Vet Clinic. The businesses could be relocated to separate or shared space. As of May 2004, substantial commercial space was available for lease in Vacaville, including general, neighborhood, and downtown commercial space. At least 11 of the available properties would be large enough to accommodate each of the displaced businesses. Additional retail space and office/retail space was available for lease in Fairfield.

²⁰ Realtor.com. 2004. Database of homes for sale in the 95687 zip code area. Available: <<http://www.realtor.com>>. Accessed: May 5, 2004.

²¹ Last resort housing, as defined by federal regulations, is part of the federal relocation program designed primarily to cover situations where a displacee cannot be relocated because of lack of available comparable replacement housing or because of financial circumstances. In those situations, agencies are enabled to use additional funds, or other methods, to provide adequate housing within the household's means.

Also in Vacaville, Alternative E would displace Oak Animal Hospital and Creekside Orthodontics in the California Center on the west side of Peabody Road, north of California Drive. Oak Animal Hospital and Creekside Orthodontics occupy two separate commercial buildings. Relocating these businesses would require professional office or general commercial space with adequate customer parking. Substantial commercial space was available for lease in Vacaville as of May 2004. At least six available commercial properties would be able to accommodate the displaced businesses. Additional office/retail and office/commercial space was available in Fairfield.

In Fairfield, a large corrugated metal manufacturing/warehouse building on the west side of Peabody Road, north of Cement Hill Road, would be displaced. The building is occupied by Recycling Zone, a materials manufacturing facility. Based on a review of an aerial photograph of the parcel, onsite relocation of the structure is probably not feasible. Assuming Recycling Zone would require offsite relocation, this business would need an industrial/warehouse-type building on a parcel large enough for outside storage of equipment and recycling materials. Substantial industrial space was available for lease in the Vacaville-Fairfield area in May 2004. At least ten available spaces were as large as or larger than the displaced structure on the Recycling Zone parcel. If an entirely new facility is required to accommodate the business' need for outside storage space and a replacement structure, adequate industrial land appears to be available.

Also in Fairfield, Alternative E would displace a one-story commercial structure on the east side of Peabody Road north of Vanden Road. The relatively small structure is used as a customer-service and administrative office by Tri-City Boat & RV Storage. Based on a review of an aerial photograph of the parcel, adequate space appears to be available for relocating the structure elsewhere on the parcel, which is primarily used for outside boat and recreational vehicle storage. Onsite relocation of the small building would not substantially reduce the total amount of outside storage space available on the parcel. If offsite relocation of this business is required, a large, nearby commercial or industrial property with adequate outside storage space for boats and vehicles would be required. Adequate land should be available in the Vacaville-Fairfield area for relocation of the business.

Assuming the supply of available commercial and industrial space at the time of displacement is similar to the current supply, adequate space should be available in the displacement area to relocate the businesses identified above.

The identified relocation impacts are not considered to be adverse because substantial numbers of existing housing and businesses would not be displaced, and replacement structures would not need to be constructed elsewhere. The project sponsors would comply with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act and implement Mitigation Measure CI-1.

Impact CI-8: Would the Alternatives Impact Parking?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would be no parking impacts.

Alternative B. Construction of Alternative B would displace no public parking in the study area, but off-street parking associated with a few private businesses would be permanently displaced. In most cases, the loss of parking is minor and the parking can be relocated on site or the parking can be permanently lost without affecting the viability of the business. These minor losses of parking are described in detail in the CIA. In other cases, the loss of parking may be substantial:

- Along the northwest side of Vanden Road, Alternative B would displace about six lined parking spaces on the property occupied by the TUSD. The entire facility, including parking, would need to be relocated (see Impact CI-7).
- Immediately south of the Vanden Business Center, an outside storage area currently used to store/park seven to ten recreational vehicles on the Sav-On Storage business property would be displaced. This entire facility, including parking, would need to be relocated.

The two properties with substantial loss of parking would need to be completely relocated under Alternative B. The relocation impacts of the build alternatives and the associated land use impacts are described in Impact CI-7, above. The loss of parking on these relocated lots is not considered substantial.

Alternative C. Alternative C would result in identical parking impacts as described for Alternative B, above. The only parking impacts would be to private parking along Vanden Road.

Alternative D. Under Alternative D, private parking would be displaced at several locations. In addition to the private parking impacts along Vanden Road described above for Alternative B and Alternative C, parking would be displaced at the following businesses along Huntington Drive and Crocker Circle:

- An estimated 21 parking spaces would be displaced along Huntington Road in the parking lot used by Macro Plastics. Field observations and a review of an aerial photograph of this parcel indicate that the loss of the spaces along Huntington Road would substantially reduce the total amount of parking available to this business. The aerial photograph, however, indicates that reconfiguring and restriping the parking lot could recover most of the parking lost as a result of this alternative. Mitigation Measure CI-3 would reduce the impact to the Macro Plastics parking lot.
- An estimated seven parking spaces would be displaced along Crocker Circle in the parking lot used by Sunpol Resins & Polymers. The entire facility, including parking, would need to be relocated.
- An unknown but large amount of parking would be displaced in the parking lot used by Rexam Beverage Can Company. The entire facility, including parking, would need to be relocated.

Mitigation Measure CI-3 would reduce the impact of the loss of parking at Macro Plastics. The two other properties with substantial loss of parking would need to be completely relocated under Alternative D. The relocation impacts of the build alternatives and the associated land use impacts are identified in Impact CI-7, above. The loss of parking on these relocated lots is not considered substantial.

Alternative E. Alternative E would displace no public parking in the study area, but would permanently displace parking associated with several private businesses and an apartment complex. In addition, parking in private lots would be temporarily displaced or made inaccessible for unknown lengths of time by construction activities. Under Alternative E, parking would be displaced at the following locations along Peabody Road:

- An estimated 43 parking spaces would be lost along Peabody Road in the parking lot used by residents of Sommerset Apartments. This loss would substantially reduce the amount of parking available to this 136-unit apartment complex by eliminating overflow tenant parking and visitor parking. Based on a review of an aerial photograph showing developed uses on this parcel, no additional parking could be developed onsite to compensate for the displaced spaces, potentially limiting parking to the covered spaces available to tenants. The lost parking would make continued use and occupancy of several apartments near the front of the complex difficult, if not impossible. Mitigation Measure CI-3 would reduce this effect.
- An estimated 28 parking spaces would be displaced in the California Center parking lot along the west side of Peabody Road. Several businesses use this parking lot, including Oak Animal Hospital, an optometrist, the Mine Safety and Health Administration, and Creekside Orthodontics. Although at least 100 spaces would still be available to customers and employees using the lot at this commercial center, the loss of 28 spaces would substantially reduce the amount of parking available to these businesses. However, Alternative E would displace commercial buildings occupied by Oak Animal Hospital and Creekside Orthodontics, thereby reducing the demand for parking in this lot. Remaining parking should be adequate to serve the remaining businesses. Mitigation Measure CI-3 would further reduce this effect.

Impact CI-9: Would the Alternatives, in Combination with Other Development, Result in Cumulative Relocation and Population Effects?

The relocation and population effects potentially resulting from construction and operation of the project are limited to homes and businesses that are specifically located within the proposed right-of-way or immediately adjacent to the right-of-way. Thus, the Jepson Parkway Project would not combine with other cumulative projects to adversely affect the population.

3.4.2.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of Mitigation Measure CI-1 would further reduce effects associated with acquisition of right-of-way. Mitigation Measure CI-2 specifically addresses the relocation of TUSD facilities.

Mitigation Measure CI-1: Reconstruct Displaced Driveways and Replace Displaced Fencing, Signage, Trees, and Landscaping. The project sponsor shall reconstruct driveways displaced by roadway construction to allow for safe property access and use. Additionally, to the extent possible, fencing, signage, trees, and other landscaping displaced by the project on affected residential, business, and agricultural properties shall be replaced.

Mitigation Measure CI-2: Relocate the Travis Unified School District Facility. If the project would make the TUSD property untenable for continued use as a district meeting and storage facility, the project sponsors shall coordinate with the TUSD to locate and purchase a site for relocation of the facility.

Mitigation Measure CI-3: Replace Displaced Parking with On-site In-Kind Parking. This measure would apply to Alternatives D and E.

- **Alternative D.** The project sponsors shall reduce the right-of-way as much as possible along the Macro Plastics property to reduce the number of spaces affected in the parking lot along Huntington Drive. If eliminating spaces cannot be avoided, the project sponsors shall coordinate with the property owner to develop and implement a plan to reconfigure and restripe the parking lot to regain as much lost parking as possible.
- **Alternative E.** The project sponsor shall reduce the width of the right-of-way as much as possible along the Sommerset Apartments property to reduce the number of spaces affected in the complex's parking lot along Peabody Road. If eliminating spaces cannot be avoided, the project sponsors shall coordinate with the property owner to develop and implement a plan to reconfigure and restripe the parking lot to regain lost parking. The project sponsors shall also coordinate with the property owners of the California Center, Nurich Cabinets, and Tri-City Boat & RV Storage properties to develop and implement plans to reconfigure and restripe the parking lots to replace the parking displaced by Alternative E.

3.4.3 Environmental Justice

3.4.3.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2010, this was \$22,050 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix C of this document.

3.4.3.2 Affected Environment

The demographic characteristics of the affected environment are described in Section 3.4.1.2. Based on these characteristics, and following the methodology described below, nine environmental justice communities were identified. One environmental justice community was identified solely due to poverty, one due to poverty and minority populations, and seven due to minority population alone. Table 3.4-8 identifies each community, by Census block group and the adjacent alignment. Figure 3.4-2 shows the location of the environmental justice communities in the corridor.

**Table 3.4-8
Environmental Justice Communities in the Study Area**

Block Group	Poverty (%)	Minority (%)	Reference Community	Alternative
29043	18.58	*	Solano County	B,C,D
30001	*	44.4	Vacaville	E
31051	14.64	45.6	Vacaville	E
31073	*	46.7	Vacaville	E
23093	*	64.7	Solano County	B,C,D
23092	*	55.0	Solano County	B,C,D,E
27025	*	74.6	Solano County	B,C,D,E
27053	*	61.2	Suisun City	B,C,D,E
27054	*	54.1	Suisun City	B,C,D,E

Source: Claritas, December 2007.

Note:

* does not qualify as EJ population in that category.

All block groups start with 0609525 and are followed by the numbers above. For example, the full Census numbering for the first block group listed in the table is 060952529043.

3.4.3.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The Jepson Parkway Project has been developed in accordance with the Civil Rights Act of 1964, as amended; the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, as amended; and Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations). Environmental justice refers to the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The Council on Environmental Quality's (CEQ's) Draft Guidance for Environmental Justice (May 24, 1996) indicates that environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on minority and low-income populations, or from related social or economic impacts.^{22,23}

²² Council on Environmental Quality. 1996. Draft Guidance for Environmental Justice. May 24, 1996.

Using Geographic Information System (GIS) technology and Claritas data at the block group level, a demographic profile was created for each identified community within the Jepson Parkway corridor. The corridor study area for environmental justice purposes was defined as a quarter-mile on either side of the alignments of the alternatives, based on federal guidelines.

Demographic and income data to determine the presence of environmental justice communities in the corridor were obtained from Claritas, a company specializing in consumer information about population and business data and Census 2000 Summary File 3 (SF3). The Claritas data contained population, ethnicity, household, and poverty estimates for 2007 by block group, city, and county level. Spatial data by block group was acquired from the US Census tiger data. Solano County provided spatial data for the city boundaries and the county boundary.

To estimate the proportion of ethnic minorities, the total number of Black, Indian/Alaskan, Asian, Hawaiian/Pacific Islander, Other, Two-or more and Hispanic persons were divided by the total number of persons per block group. To estimate the proportion of low income households, the total number of households living in poverty was divided by the total number of households for which a poverty level has been determined.

Determination of whether an environmental justice community is present was based on the following criteria:

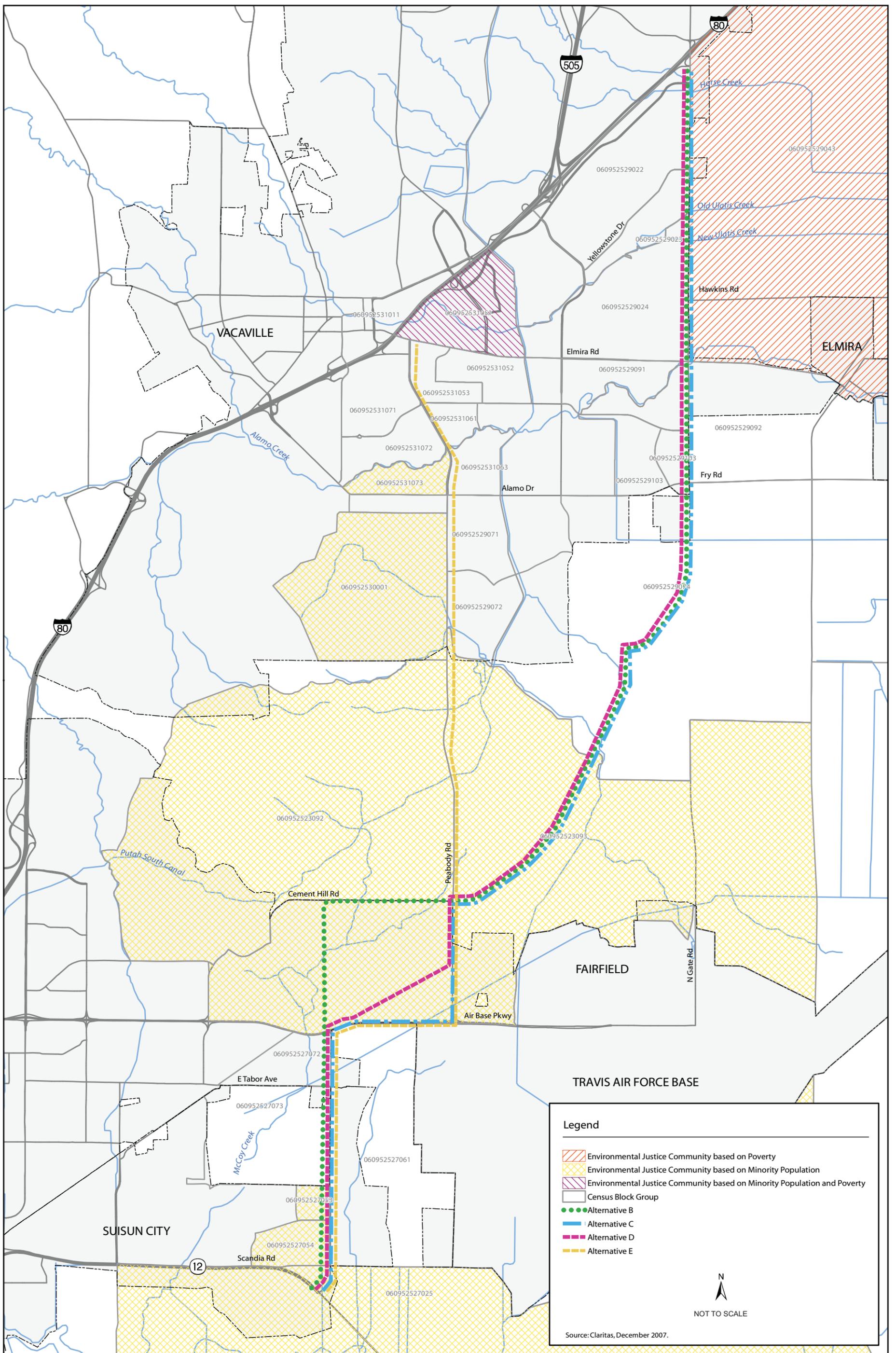
- The minority population in the block group is greater than 50 percent;
- The minority population in the block group is 10+ percent higher than “base” community (the respective city, if within city limits, or Solano County, if outside city limits); or
- The poverty level in the block group is 10+ percent higher than “reference” community.

Table 3.4-9 lists the reference communities in the corridor; the numbers reflect the percentages of families living below the poverty line and the minority population within each respective city and Solano County.

Reference Community	Poverty (%)	Minority (%)
Fairfield	7.10	51.16
Suisun City	5.25	63.31
Vacaville	4.53	34.12
Solano County	6.33	49.89
Study Area	4.64	39.87

Source: Claritas, December 2007.

²³ California Department of Transportation. 1997. Caltrans environmental handbook, volume 4, community impact assessment. Sacramento, CA: Environmental Program, Cultural Studies Office.



Legend

- Environmental Justice Community based on Poverty
- Environmental Justice Community based on Minority Population
- Environmental Justice Community based on Minority Population and Poverty
- Census Block Group
- Alternative B
- Alternative C
- Alternative D
- Alternative E

Source: Claritas, December 2007.

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**Figure 3.4-2
Environmental Justice Communities**

Key Definitions

Ethnic Minority. Ethnic minorities include the total number of Black, Indian/Alaskan, Asian, Hawaiian/Pacific Islander, Other, Two-or more ethnicities, and Hispanic persons. It should be noted that this definition encompasses all Hispanic, including those who responded in the Census that they were White but of Hispanic heritage. As a result, the percentage of ethnic minority is greater here than if the percentage were derived solely on racial background (because the White Hispanics would not be counted as an ethnic minority).

Low Income. According to the Census Bureau, the poverty level varies by the size of the household. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then they are considered “low income” for the purposes of this environmental justice analysis.

Summary of Environmental Justice Impacts

None of the build alternatives would disproportionately affect minority or low-income populations. The environmental justice implications of each alternative are described in detail below.

Impact CI-10: Would the Alternatives Result in Disproportionately High and Adverse Impacts to Minority or Low-Income Communities?

Alternative A

Under Alternative A, the proposed roadway improvements would not be constructed. There would be no environmental justice impacts.

Alternative B

An evaluation of data from Claritas 2007 indicates that the study area generally contains lower percentages of minority populations than Solano County as a whole. As Table 3.4-9 shows, minority persons in the study area also account for a smaller share of the overall population than in Fairfield and Suisun City and only a slightly higher share than in Vacaville. Table 3.4-8 identifies six block groups classified as environmental justice communities adjacent to Alternative B.

The two block groups in Suisun City (27053 and 27054) and block group 27025 in Solano County are in an area where the roadway would not be widened and no residential displacement would occur. Alternative B would widen Cement Hill Road, adjacent to block group 23092 in Solano County. Similarly, Alternative B would widen Vanden Road through block group 23093 and Leisure Town Road adjacent to block group 29043. However, no residences would be displaced in these environmental justice communities, or throughout the Alternative B alignment.

Alternative B would cause short-term impacts (e.g., noise and air quality impacts) from construction and permanent impacts (e.g., vehicle noise) by moving the roadway closer to existing homes. All residents adjacent to Jepson Parkway, however, would share these impacts proportionally. No residential displacement would occur. For these reasons, Alternative B would not cause

disproportionately high and adverse human health and environmental effects on any environmental justice communities.

Alternative C

The characteristics of the environmental justice impacts described under Alternative B apply to Alternative C as well. The same six environmental justice communities are adjacent to the Alternative C alignment. As described above, residents throughout the corridor would share air quality and noise impacts proportionally and no residential displacements would occur under Alternative D. Therefore, Alternative C would not cause disproportionately high and adverse effects on any minority or low-income populations.

Alternative D

The characteristics of the environmental justice impacts described under Alternative B apply to the Alternative D alignment as well. The same six environmental justice communities are adjacent to the Alternative D alignment. As described above, residents throughout the corridor would share air quality and noise impacts proportionally and no residential displacements would occur under Alternative D. Therefore, Alternative D would not cause disproportionately high and adverse effects on any minority or low-income populations.

Alternative E

Seven environmental justice communities were identified adjacent to Alternative E. Three of those block groups, as described for Alternative B, are in areas where no roadway widening would occur. Similarly, on the north end of the Alternative E alignment, no widening activities would occur adjacent to block group 31051. Alternative E would widen Peabody Road adjacent to block groups 23092, 23093, 30001, and 31073 but would not displace residences in this area.

Alternative E would displace 36 residential units on the east side of Peabody Road, between Elmira Road and Alamo Drive, but Alternative E would not displace any residences within the identified environmental justice communities. The short-term construction impacts and permanent impacts caused by moving the roadway closer to existing homes would be shared proportionally by all residents adjacent to the proposed alignment. Therefore, Alternative E would not cause disproportionately high and adverse effects on any minority or low-income populations.

3.4.3.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the build alternatives would not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12898 regarding environmental justice. Therefore, no avoidance, minimization, or mitigation measures are required.

3.5 Utilities/Emergency Services

This section is based on information contained in the project Community Impact Assessment (CIA). This report is incorporated by reference and is available for public review at the Solano Transportation Authority's (STA's) and Caltrans' offices.

3.5.1 Affected Environment

3.5.1.1 Law Enforcement Services

Law enforcement services are provided to residents of the corridor and vicinity by the Solano County Sheriff's Department and the City of Vacaville, the City of Fairfield, and the City of Suisun City Police Departments. In the unincorporated portion of the corridor, the Solano County Sheriff's Department provides primary law enforcement services from its facility at 530 Union Avenue in Fairfield, approximately 3.5 miles west of the SR 12/Walters Road intersection. In Vacaville, the police station is on the north side of I-80 at 630 Merchant Street, approximately 3.5 miles west of Leisure Town Road. The City of Fairfield Police Department is at 1000 Webster Street, approximately 4 miles southwest of the Walters Road intersection with East Tabor Avenue. In Suisun City, the police department is at 701 Civic Center Boulevard, approximately 3 miles west of the SR 12/Walters Road intersection.

3.5.1.2 Fire Protection Services

The City of Vacaville, City of Fairfield, and City of Suisun City Fire Departments provide fire protection services to the corridor and vicinity. In Vacaville, the fire department responses originate from its facility at 2001 Ulatis Drive, approximately 1.5 miles west of Leisure Town Road.¹ In Fairfield, fire response is provided from the station at 1975 Huntington Drive, immediately northwest of the Walters Road/Huntington Drive intersection.² In Suisun City, fire response is provided from 621 Pintail Drive, approximately one mile west of Walters Road.³

3.5.1.3 Emergency Medical Services

Emergency medical services are available to residents of the corridor at VacaValley Hospital in Vacaville, approximately one mile west of Leisure Town Road at 1000 Nut Tree Road, and Northbay Medical Center in Fairfield, approximately four miles west of Walters Road at 1200 B. Gale Wilson Boulevard.

¹ City of Vacaville Fire Department. Jeanie Gonzales. Vacaville, CA. February 7, 2002—telephone conversation.

² City of Fairfield Fire Department. Sherri Cauchi. Fairfield, CA. February 7, 2002—telephone conversation.

³ City of Suisun, City Fire Department. Steve Palatino. Suisun City, CA. February 7, 2002—telephone conversation.

3.5.2 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The evaluation of the effects on utilities and emergency services was based on a qualitative assessment of existing utilities, their service characteristics, and their location within the corridor.

Summary of Utilities/Emergency Services Impacts

This section compares the impacts to emergency service providers and utilities for each alternative. As described in detail below, Alternative A would have no impact to emergency services or utilities. Each of the build alternatives could adversely affect emergency services during construction, but are expected to benefit emergency services upon completion. None of the build alternatives would adversely affect utilities in the corridor.

Impact UT-1: Would the Alternatives Affect Police, Fire, and Emergency Service Providers?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would not be any impacts on police, fire, and emergency service providers.

Alternative B. Potential short-term impacts on police, fire, and emergency services providers (generally referred to herein as emergency service providers) would result from construction and operation of Alternative B. The construction and operational effects to service providers are detailed below.

Alternative B would result in adverse impacts to emergency service providers during construction activities. Potential impacts include increased emergency response times along the entire Alternative B route caused by congestion, temporary lane or road closures, and traffic detours during project construction. If construction-related disruptions occur on roadways included in the Alternative B alignment, emergency service providers would reach calls using alternative routes, but response times would probably increase. Mitigation Measure UT-1 has been identified for this impact.

On a local and community level, roadway improvements under Alternative B would improve access and circulation in the corridor by relieving congestion and improving safety. Public services in the corridor, including police, fire, and emergency services and hospitals, would be largely unaffected by operation of Alternative B because existing access routes to and through the corridor would be maintained and enhanced. Alternative B would not adversely affect police, fire, and emergency vehicle response times to neighborhoods within the corridor, and the roadway improvements and changes would not substantially affect public or school bus routes. After construction is complete, the new roadway would improve access throughout the area, including emergency access.

Alternative C. As described for Alternative B, Alternative C would result in potential temporary effects to emergency service providers during construction activities, but would ultimately improve the

provision of emergency services in the corridor. Mitigation Measure UT-1 has been identified for the temporary construction-related impact.

Alternative D. As described for Alternatives B and C, Alternative D would result in potential temporary effects to emergency service providers during construction activities, but would ultimately improve the provision of emergency services in the corridor. Mitigation Measure UT-1 has been identified for the temporary construction-related impact.

Alternative E. Construction-related impacts under Alternative E would occur along Peabody Road in Vacaville and Fairfield and along Air Base Parkway and Walters Road in Fairfield. As described for Alternative B, construction-related disruptions could cause response times to increase. Mitigation Measure UT-1 has been identified for this impact. Long-term impacts to emergency services providers would be beneficial, as described for Alternative B.

Impact UT-2: Would the Alternatives Affect Utilities?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Therefore, there would not be any impacts to utilities under this alternative.

Alternative B. Construction of Alternative B would result in various effects on utilities within or adjacent to the proposed right-of-way. The utilities within or adjacent to the Alternative B right-of-way are identified for each portion of Alternative B:

- **Leisure Town Road from Orange Drive to Vanden Road (Vacaville and Solano County):** As part of the widening of Leisure Town Road, Alternative B would maintain and span the major drainage courses and patterns using concrete box culverts or pipe culverts. Irrigation facilities would be maintained and extended or reconstructed as required. Alternative B would include a storm drain system to collect and convey drainage along Leisure Town Road where necessary, connecting to Vacaville's existing storm drain lines where possible. The existing double 5-foot by 10-foot box culvert for Old Alamo Creek would be extended approximately 350 feet northeasterly underneath the widened Leisure Town Road and Elmira Road. The existing joint pole line (Pacific Gas and Electric [PG&E], American Telephone and Telegraph [AT&T], and cable) would be relocated where it is in conflict with the proposed alignment. Conduit for future fiber-optic communication cable would be installed along the length of Leisure Town Road from Orange Drive to Vanden Road.
- **Vanden Road from Leisure Town Road to Peabody Road (Solano County):** Alternative B would treat major drainage course, irrigation crossings, and the joint pole line as described for the Leisure Town Road portion of the Alternative B alignment. Conduit for future fiber-optic communication cable would be installed along the length of Vanden Road from Leisure Town Road to Peabody Road.

- **Cement Hill Road from Peabody Road to Walters Road Extension (Solano County and Fairfield):** As part of construction of Cement Hill Road from Peabody Road to Walters Road Extension, major drainage courses would be maintained and spanned using concrete box culverts or pipe culverts. Drainage courses to be spanned include part of McCoy Creek where it crosses Cement Hill Road and a drainage parallel to the road. The existing joint pole line (PG&E, AT&T, and cable) would be relocated where it is in conflict with the proposed alignment. Conduit for future fiber-optic communication cable would be installed along the length of Cement Hill Road from Peabody Road to Walters Road Extension.
- **Walters Road Extension and Walters Road from Cement Hill Road to East Tabor Avenue (Fairfield):** As part of the construction of the Walters Road Extension, major drainage courses would be maintained and spanned using concrete box culverts or pipe culverts. Future details concerning the Union Pacific Railroad (UPRR) overcrossing would determine whether McCoy Creek and the perennial drainage south of the creek would be culverted. A sewer trunk line extending north along the Alternative B alignment between the City of Fairfield pump station north of the UPRR tracks and Huntington Drive would be abandoned as part of the Villages project in Fairfield. Therefore, the line would not be in the Walters Road Extension. The existing joint pole line (PG&E, AT&T, and cable) would be relocated where it is in conflict with the proposed alignment. Conduit for future fiber-optic communication cable would be installed along the length of Walters Road Extension and Walters Road from Cement Hill Road to Air Base Parkway.
- **Walters Road from East Tabor Avenue to Bella Vista Drive (Suisun City):** As part of construction of Walters Road from East Tabor Avenue to Bella Vista Drive, conduit for a future fiber-optic communication cable would be installed along the length of Walters Road from East Tabor Avenue to Bella Vista Drive. Existing overhead utilities would be placed underground.
- **Walters Road from Bella Vista Drive to SR 12 (Suisun City):** The City of Suisun City proposes to install conduit for future fiber-optic communication cable between Bella Vista Drive and SR 12 as part of the construction of Walters Road from Bella Vista Drive to State Route 12.

Based on the proposed treatment of utilities described above, Alternative B would not adversely affect utilities in the corridor.

Alternative C. Construction of Alternative C would result in the same impacts along Leisure Town Road, Vanden Road, and Walters Road from Air Base Parkway to SR 12 as described for Alternative B. In addition to those effects, Alternative C would affect utilities within or adjacent to the proposed right-of-way along Peabody Road from Vanden Road to Air Base Parkway, and Air Base Parkway to Walters Road. Major drainage courses would be maintained and spanned using concrete box culverts or pipe culverts. The existing ditches along Air Base Parkway and Peabody Road would be maintained or relocated as required. Similarly, the existing storm drain system along the east side of Peabody Road between Air Base Parkway and Huntington Drive would be maintained.

Under Alternative C, existing joint pole lines (PG&E, AT&T, and cable) would be relocated as required. The PG&E electric substation on the west side of Peabody Road, just south of Vanden Road,

would not be affected by Alternative C. However, poles carrying overhead electric lines to and from the substation would need to be modified and relocated as required to accommodate project improvements. Conduit for future fiber-optic communication would be installed along the length of Alternative C.

Underground utilities (water, sewer) along Peabody Road, between Air Base Parkway and Huntington Drive, would be relocated where they are in conflict with Alternative C. Water and sewer manholes would be modified as required to accommodate project improvements. Alternative C would widen the UPRR crossing of Peabody Road and install new crossing gates.

Based on the proposed treatment of utilities described above, Alternative C would not adversely affect utilities in the corridor.

Alternative D. Construction under Alternative D would result in the same utility impacts along Leisure Town Road, Vanden Road, and Walters Road from Air Base Parkway to SR 12, as described for Alternative B. In addition to those effects, Alternative D would also affect utilities within or adjacent to the proposed right-of-way along Huntington Drive. Major drainage courses would be maintained and spanned using concrete box culverts or pipe culverts. The existing storm drain system along Huntington Road would be reconstructed as required to accommodate roadway improvements under Alternative D.

Conduit for future fiber-optic communication would be installed along the length of Alternative D. Underground utilities (water, sewer) along Huntington Road would be relocated where they are in conflict with the project. Water and sewer manholes would be modified as required to accommodate project improvements. Alternative D would widen the railroad spur crossing on Huntington Road and install new crossing gates.

Based on the proposed treatment of utilities described above, Alternative D would not adversely affect utilities in the corridor.

Alternative E. Construction under Alternative E would result in the same utility impacts along Walters Road from Air Base Parkway to SR 12, Air Base Parkway, and Peabody Road between Air Base Parkway and Vanden Road, as described for Alternatives B and C. In addition to those effects, Alternative E would affect utilities within or adjacent to the proposed right-of-way along Peabody Road from Elmira Road Vanden Road/Cement Hill Road. Major drainage courses would be maintained and spanned using concrete box culverts or pipe culverts. The existing ditches along Peabody Road would be maintained or relocated as required. The existing storm drain system along the west side of Peabody Road from approximately 0.4 miles to 1.0 miles north of Vanden Road along the residential subdivision frontage in Fairfield would be maintained. The existing storm drain system along Peabody Road within the Vacaville city limits would be reconstructed as required to accommodate project improvements. Alternative E would widen the existing crossing of the Putah South Canal as required to accommodate the proposed alignment. Alternative E would also maintain and extend or reconstruct irrigation facilities as required.

Additionally, Alternative E would relocate the existing joint pole lines (PG&E, AT&T, and cable), and modify and relocate poles carrying overhead electric lines to and from the substation as required to accommodate project improvements. Conduit for future fiber-optic communication would be installed along the length of Alternative E.

Alternative E would relocate underground utilities, such as water and sewer pipes, as needed during the construction phase. The water and sewer manholes would be modified as needed to accommodate the proposed improvements. Alternative E would widen the UPRR crossing of Peabody Road and install new crossing gates.

Based on the proposed treatment of utilities described above, Alternative E would not adversely affect utilities in the corridor.

Impact UT-3: Would the Alternatives, in Combination with Other Development, Result in Cumulative Utilities/Emergency Services Effects?

Most of the effects on utilities and emergency services potentially resulting from construction and operation of the project are limited to resources that are specifically located within the proposed right-of-way or immediately adjacent to the right-of-way. Other cumulative development in the area is not expected to combine with the location-specific roadway effects. In addition, Mitigation Measure UT-1 would reduce the project's impact to emergency services.

3.5.3 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure UT-1: Notify Emergency Service Providers and Allow Emergency Vehicles on Closed Roadways. In the special provisions of the highway contracts, the project sponsor shall require that emergency service providers such as police, fire, and ambulance services be notified at least one week before any streets or intersections are closed during the construction phase. To the extent possible, emergency vehicles shall be allowed through roadway segments temporarily closed for construction purposes. These measures shall also be incorporated into the Transportation Management Plan to be prepared for the project.

3.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

This section summarizes the original Transportation/Circulation Impacts Report (Transportation Report) prepared for the project. The report is incorporated by reference and is available for review at the Solano Transportation Authority's (STA's) and Caltrans's offices. This section also reflects the current availability of the 2030 travel demand model for Solano County.

3.6.1 Regulatory Setting

Caltrans, as assigned by the Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally-assisted programs is governed by the USDOT regulations (49 CFR part 27) implementing Section 504 of the Rehabilitation Act (29 U.S.C. 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

3.6.2 Affected Environment

The study area for the transportation analysis, including roadways and intersections, is shown in Figure 3.6-1. The study area includes all the roadways potentially improved by the project alternatives as well as the I-80 freeway segments from the State Route (SR) 12 interchange to the I-505 interchange.

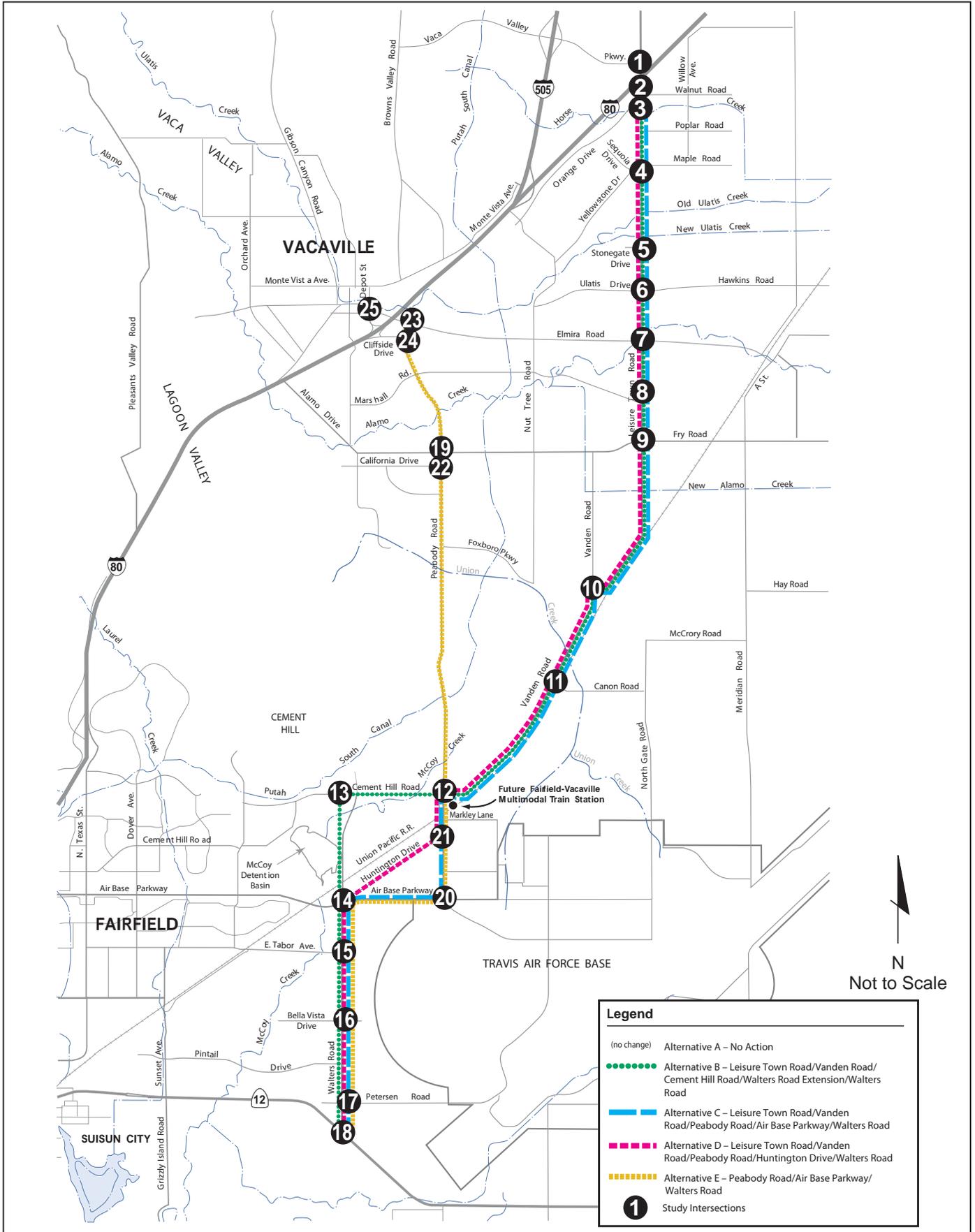


Figure 3.6-1
Project Study Area and Study Intersections

3.6.2.1 Roadway System

The major roadways in the study area are described below:

- I-80 is a major east-west freeway originating in the Bay Area and continuing east toward Sacramento area and beyond. It crosses Fairfield and Vacaville in southwest-northeast direction. Major interchanges that provide access to the study area from I-80 are SR 12, Air Base Parkway, Alamo Drive, Elmira Road, and Leisure Town Road. Within Solano County, I-80 is a three-to four-lane freeway.
- Leisure Town Road is a north-south road that begins just south of the Vacaville city limits at Vanden Road, extends north through Vacaville, and ends in Allendale. Through most of its length, it is a two-lane rural road with paved shoulders and a speed limit of 55 miles per hour (mph).
- Vanden Road is a two-lane rural roadway with limited access that begins at Peabody Road in Fairfield and extends northeast to Alamo Drive in Vacaville. The speed limit ranges between 45 and 50 mph.
- Cement Hill Road is an east-west road in Fairfield that connects to Peabody Road and extends west to Dover Avenue. It is a narrow two-lane road with a posted 45-mph speed limit, no sidewalks, and no shoulders.
- Walters Road is a north-south four-lane road that connects Air Base Parkway in Fairfield with Rio Vista Road (SR 12) in Suisun City. It has a posted speed limit of 45 mph, and paved shoulders and sidewalks are provided along most of the road.
- Peabody Road is a north-south road between Air Base Parkway in Fairfield and Elmira Road in Vacaville. In Solano County, it is mostly a two-lane rural roadway with a speed limit of 45 mph. In Fairfield, the roadway is primarily urban with two to four lanes. In Vacaville, it is located in residential and commercial areas. The urban portion of the road is four to six lanes with a speed limit of 35 mph.
- Huntington Drive is a northeast-southwest roadway with a railroad crossing in Fairfield that connects Walters Road and Peabody Road and runs parallel to the UPRR tracks. It is in a primarily light industrial area with no parking and few sidewalks. It is two lanes with a posted speed limit of 45 mph.

3.6.2.2 Intersections

The transportation analysis also studied 25 major intersections in the corridor that would be influenced by the project. These intersections are listed in Table 3.6-1, and their locations are shown on Figure 3.6-1 by the intersection numbers identified in the table.

**Table 3.6-1
2002 Intersection Level of Service**

Intersection	Traffic Control ^a	LOS Standard ^b	AM Peak Hour		PM Peak Hour	
			Delay ^c	LOS ^d	Delay ^c	LOS ^d
1. Leisure Town Road/I-80 Westbound Ramps	Signal	D	42.5	D	> 100	F
2. Leisure Town Road/I-80 Eastbound Ramps	Signal	D	21.7	C	26.9	C
3. Leisure Town Road/Orange Drive	SSS	C	29.0 ^e	D	> 100 ^e	F
4. Leisure Town Road/Sequoia Drive/White Pine Street ^g	SSS	C	24.4 ^e	C	36.0 ^e	E
5. Leisure Town Road/Stonegate Drive	SSS	C	24.2 ^e	C	24.4 ^e	C
6. Leisure Town Road/Ulatis Drive/Hawkins Road	SSS	C	21.3 ^e	C	24.6 ^e	C
7. Leisure Town Road/Elmira Road	AWS	C	21.9	C	26.4	D
8. Leisure Town Road/Marshall Road	SSS	C	18.9 ^e	C	21.0 ^e	C
9. Leisure Town Road/Alamo Drive	Signal	C	17.8	B	21.4	C
10. Leisure Town Road/Vanden Road	Signal	C	9.9	A	5.5	A
11. Vanden Road/Canon Road	SSS	C	11.6 ^f	B	24.1 ^f	C
12. Cement Hill Road/Peabody Road	Signal	D	49.4	D	15.6	B
13. Walters Road Extension/Cement Hill Road ^h	-	D	-	-	-	-
14. Walters Road/Air Base Parkway	Signal	D	39.4	D	34.0	C
15. Walters Road/East Tabor Avenue	AWS	D	29.2	D	47.4	E
16. Walters Road/Bella Vista Road	Signal	C	23.7	C	12.5	B
17. Walters Road/Peterson Road	AWS	C	10.8	B	12.0	B
18. Walters Road/SR 12	Signal	C	27.7	C	23.9	C
19. Peabody Road/Alamo Drive	Signal	C	36.5	D	47.1	D
20. Peabody Road/Air Base Parkway	Signal	D	20.9	C	52.0	D
21. Peabody Road/Huntington Drive	Signal	D	30.6	C	50.7	D
22. Peabody Road/California Drive	SSS	C	35.9 ^f	E	> 100 ^e	F
23. Peabody Road/Elmira Road	Signal	C	64.8	E	> 100	F
24. Peabody Road/Cliffside Drive	Signal	D	22.7	C	50.8	D
25. Elmira Road/Depot Street	Signal	D	38.9	D	90.3	F

Notes: Shaded intersections represent intersections exceeding locally adopted LOS standards.

- a. SSS = side street stop, AWS = all-way stop.
- b. See "Performance Standards" section for sources of LOS standards used.
- c. Average control delay is in seconds per vehicle. For the worst approach at side-street stop-controlled intersections, delay is presented with worst approach direction, as indicated by footnote "e" or "f."
- d. LOS based on 2000 HCM methodology.
- e. Eastbound
- f. Westbound
- g. Intersection reconfigured in 2006 with addition of east leg.
- h. Intersection reconfigured in 2004 with addition of north leg.

The analysis of study intersections was conducted using a method documented by the Transportation Research Board (TRB) in the 2000 *Highway Capacity Manual* (HCM).¹ For intersections, level of service (LOS)² is based on control delay, which is the delay directly associated with the traffic control device at the intersection. For side-street stop-controlled intersections, average control delay is calculated for each minor movement controlled by stop signs, but not for the intersection as a whole. Three different software programs were used in the Transportation Report to assess the intersection operations:

Synchro 6.0, TRAFFIX, and VISSIM. Synchro 7.0 was used to update the results of the Transportation Report based on the 2030 model. Additional detail about the application of these software programs is provided in the Transportation Report.

Vehicle turning movements were counted at each study intersection during the morning (AM) peak period (7:00 to 9:00 a.m.) and the evening (PM) peak period (4:00 to 6:00 p.m.) between January and May 2002. In general, the AM peak hour was identified to be from 7:15 to 8:15 a.m., and the PM peak hour was observed to be from 4:30 to 5:30 p.m. Table 3.6-1 summarizes the operation of the study intersections in the AM and PM peak hours under 2002 conditions as described in the Transportation Report. As shown, nine of the intersections (noted by shading) operate at levels worse than the minimum acceptable thresholds established by local or regional policies in either or both the AM or PM peak hours.

3.6.2.3 Freeways

In the Transportation Report, I-80 freeway segments from SR 12 to I-505 were analyzed using existing traffic volumes published by Caltrans and the HCM methodologies for basic freeway segments. Table 3.6-2 presents the 2002 AM and PM peak hour LOS results for the I-80 mainline segments. Two of the freeway segments, Eastbound I-80 west of the SR 12 Junction and Eastbound I-80 between Travis Boulevard and Air Base Parkway, listed in the table are shown to operate at levels worse than the minimum acceptable thresholds established by local or regional policies. Additionally, just west of these segments, I-80 has junctions with SR 12 and I-680, which may reduce the effective capacity of these segments. Therefore, queues along I-80 from the bottlenecks at SR 12 and I-680 may affect the levels of congestion along the I-80 study freeway segments.

¹ Transportation Research Board. 2000. *Highway Capacity Manual*. Washington, D.C.

² Traffic operations at intersections are typically described in terms of LOS, a qualitative measure of the effect of several factors on traffic conditions, including speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, and convenience. LOS is generally measured quantitatively in terms of vehicular delay and described using a scale that ranges from A to F. LOS A represents essentially free-flow conditions, and LOS F indicates overcapacity conditions with substantial congestion and delay.

**Table 3.6-2
2002 Freeway Level of Service Summary**

Freeway Segment	LOS Standard ^a	AM Peak Hour		PM Peak Hour	
		Density ^b	LOS ^c	Density ^b	LOS ^c
Eastbound I-80					
1. West of SR 12 Junction	D	12.7	B	44.9	E
2. SR 12 Junction to West Texas Street	D	11.4	B	34.8	D
3. West Texas Street to Travis Boulevard	D	10.7	A	31.3	D
4. Travis Boulevard to Air Base Parkway	D	11.5	B	35.6	E
5. Air Base Parkway to North Texas Street	D	9.9	A	27.9	D
6. North Texas Street to Pleasants Valley Road	D	10.3	A	29.5	D
7. Pleasants Valley Road to Alamo Drive	D	10.3	A	29.2	D
8. Alamo Drive to Davis Street	D	9.1	A	24.8	C
9. Davis Street to Monte Vista Avenue	D	8.8	A	23.9	C
10. Monte Vista Avenue to I-505 North Junction	D	8.0	A	21.5	C
11. East of I-505 North Junction	D	6.5	A	17.5	B
Westbound I-80					
1. East of I-505 North Junction	D	15.2	B	11.7	B
2. I-505 North Junction to Monte Vista Avenue	D	18.6	C	14.3	B
3. Monte Vista Avenue to Davis Street	D	20.5	C	15.7	B
4. Davis Street to Alamo Drive	D	21.2	C	16.2	B
5. Alamo Drive to Pleasants Valley Road	D	24.3	C	18.4	C
6. Pleasants Valley Road to North Texas Street	D	24.5	C	18.5	C
7. North Texas Street to Air Base Parkway	D	23.4	C	17.8	B
8. Air Base Parkway to Travis Boulevard	D	28.2	D	20.7	C
9. Travis Boulevard to West Texas Street	D	25.6	C	19.2	C
10. West Texas Street to SR 12 Junction	D	27.8	D	20.5	C
11. West of SR 12 Junction	D	32.9	D	23.0	C

Notes:

- a. Freeway LOS performance standard per Caltrans threshold for acceptable freeway operations.
- b. Density expressed as passenger cars per mile per lane.
- c. LOS based on 2000 HCM methodology.

3.6.2.4 Transit System

According to the Transportation Report, public transit service in Solano County consists of fixed-route and demand-responsive transit (paratransit) services. Fixed-route public transit service in the corridor is primarily provided by Vacaville City Coach in Vacaville and Fairfield/Suisun Transit System in Fairfield and Suisun City. Vallejo Transit provides express service between Vacaville, Fairfield, and Suisun City and the Vallejo Ferry Terminal and the San Francisco Bay Area Rapid Transit District (BART) El Cerrito del Norte Station and operates Vallejo Run About which provides paratransit service primarily for disabled riders in the southern part of the county. STA manages Solano Paratransit, which provides paratransit service primarily for disabled riders in the northern part of the county, and two express bus route services (Routes 30 and 90). Regional rail service is provided by Amtrak Capitol Corridor, which connects the Suisun-Fairfield Station to the Bay Area, Sacramento, and beyond. The Transportation Report contains additional detail about the existing transit system.

3.6.2.5 Bicycle and Pedestrian Facilities

In the study area, Class II bicycle facilities (striped on-street bicycle lanes) exist on Peabody Road in Vacaville between the southern city limits and Elmira Road; along Air Base Parkway; and on Elmira Road (eastbound only). Portions of Peabody Road, Walters Road, and Leisure Town Road also provide shoulders that are wide enough for bicycle use, although they are not designated as bicycle facilities. Study roadways within developed areas provide sidewalks on at least one side of the roadway. The roadways in the rural parts of the study area (i.e., unincorporated Solano County) often have no curbs, gutters, or sidewalks and are not suitable for pedestrian traffic.

3.6.3 Impacts (including Permanent, Temporary, Direct, and Indirect)

3.6.3.1 Methodology

The Transportation Report used forecast study years of 2005 and 2025. However, STA recently developed a more up-to-date 2030 travel demand model. In order to determine the impact that the newer 2030 model would have on the results of the Transportation Report, further comparisons and analyses were performed. Furthermore, the 2005 opening year volumes have been revised to reflect the now-anticipated 2013 construction year of the Jepson Parkway.

Travel Demand Forecasting

Traffic volume forecasts for 2000, 2005, 2025, and 2030 were developed based on travel demand models and data collected in 2002. The models were developed based on land use development assumptions regarding likely development in the region for the given timeframes, and on reasonably foreseeable roadway improvement projects. The 2025 model was built using the TRANPLAN software platform (by the City of Fairfield) and the 2030 model was built using CUBE software platform (by a consultant for STA); however both models have some differences. The 2025 model is a fiscally constrained model and only includes funded roadway network additions. The 2030 model has a

separate network for high occupancy vehicle (HOV) lanes and assumes full buildout of the I-80/I-680 interchange. The 2025 model includes I-80 from the I-680 interchange in the west to SR 113 (Vic Fazio Highway) interchange in the east; while the 2030 model includes I-80 from its terminus in the City of San Francisco in the west to the City of Sacramento in the east. One of the important conclusions of the 2030 model is that the I-80 PM peak hour traffic between Fairfield and Vacaville interchanges exceeds capacity, which was not shown in the 2025 model.

This information and a comparison of the volumes for the two models were presented to STA. After review of the model information, STA concluded that the 2030 model is the more accurate model due to availability of updated land use data. It was also concluded that the 2030 model numbers should be used for future planning purposes and in the update of the I-80/I-680 corridor study.

STA considered updating the 2002 traffic information, but decided to retain the existing 2002 data as contained in the Draft and Final Environmental Impact Statement (EIS) and the August 2007 Transportation/Circulation Impacts Report, for the following reasons:

- Traffic deficiencies on the existing roadway system are readily apparent. The study roadways are mostly two-lane with numerous unsignalized intersections and no turn lanes. Level of service conditions would likely have deteriorated between 2002 and 2008. More current data on existing conditions would not change the project purpose and need, elements of the project description, or the definition of alternatives.
- Updating existing conditions data also would not result in the inclusion of additional or different intersections in the analysis. Because the analysis was performed for 2030 conditions with updated traffic information from the vetted 2030 model STA is confident that the project, with signalization and other modifications as identified in the Final EIS, will operate acceptably into the design year.

While updating the existing conditions information to 2008 or 2009 would not improve project inputs, analysis, or conclusions, it would potentially cause serious project delays, due to the level of data to be collected through on-site traffic counts.

Figure 3.6-2 depicts traffic volumes for 2000 that were obtained from the model as presented in the Transportation Report. Traffic volumes for 2010 were interpolated from the 2030 traffic volumes and the most recent existing turning movement counts available for each intersection and are depicted in Figure 3.6-3. Figure 3.6-4 depicts estimated traffic volumes for each alternative based on the 2030 travel demand model. As shown in these figures, the roadways are expected to experience an increase in traffic volumes between 2000 and 2030.

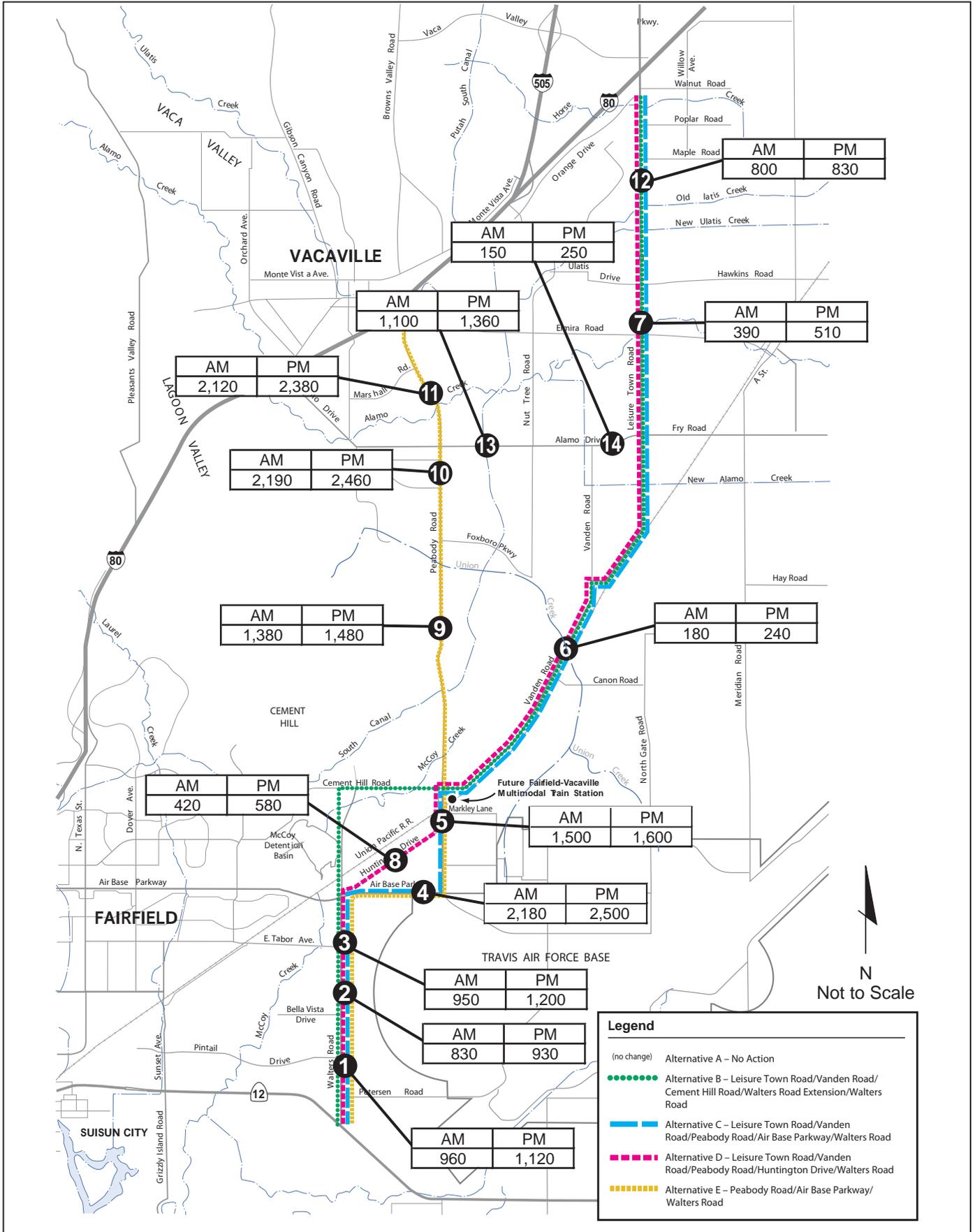


Figure 3.6-2
2000 Peak Hour Model Volumes (Two-way)

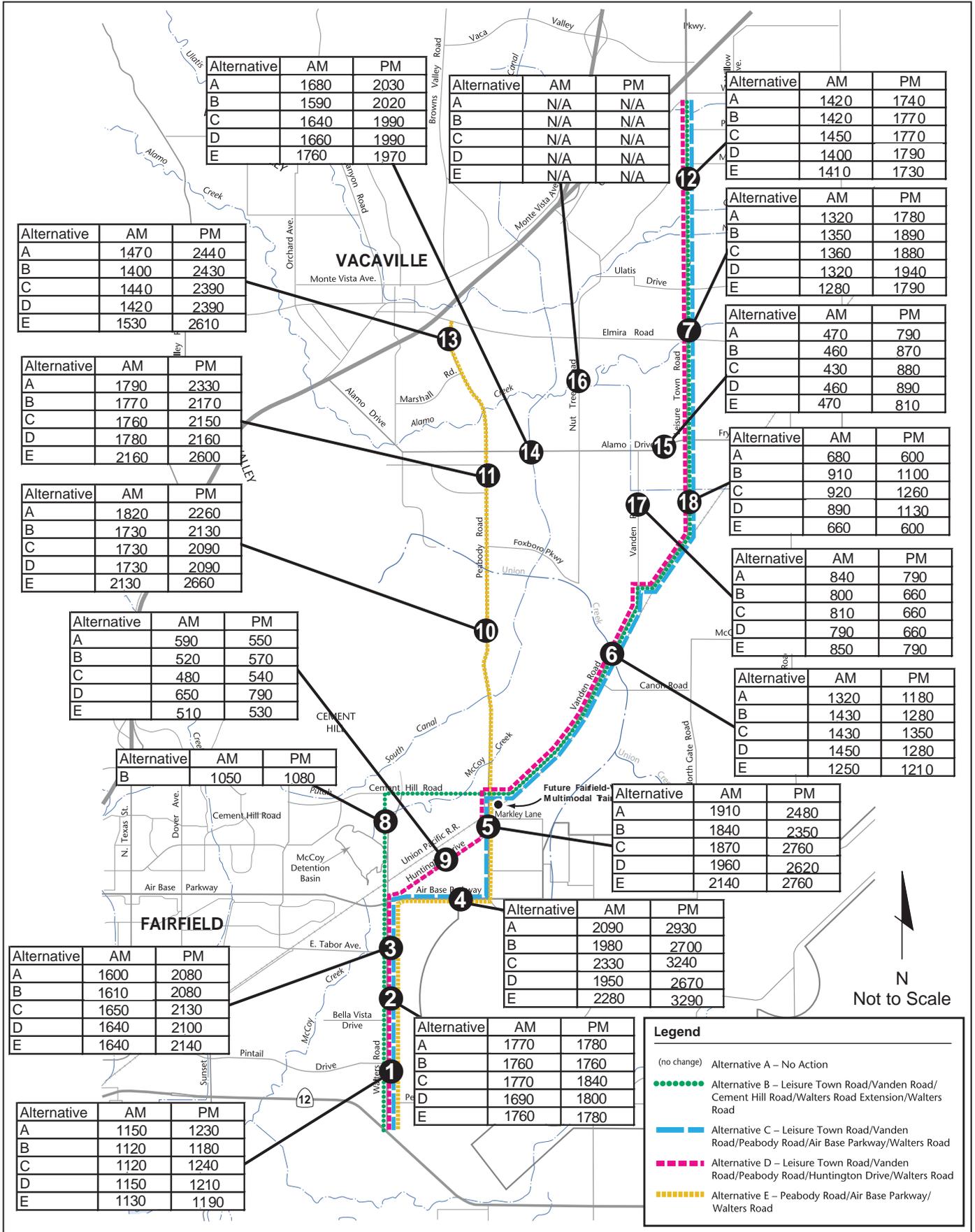


Figure 3.6-3
2010 Peak Hour Model Volumes (Two-way)

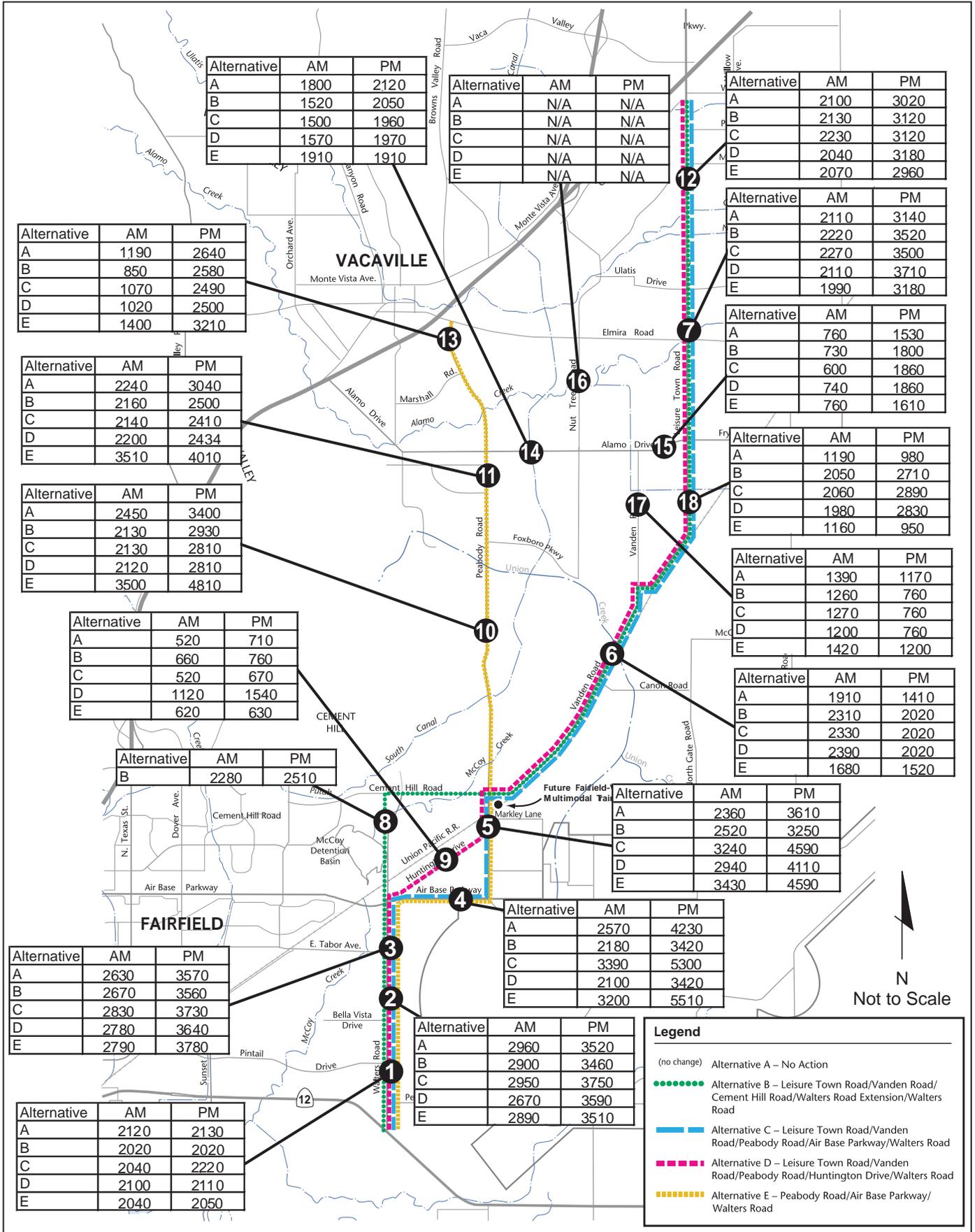


Figure 3.6-4
2030 Peak Hour Model Volumes (Two-way)

Transportation System Analysis

The transportation impact analysis focused on AM and PM peak hour traffic intersection operations at the study intersections under each alternative, but also considered the potential effects on transit, bicycle, and pedestrian travel. Intersections were analyzed using the methods proscribed by the HCM. In the Transportation Report, intersection operations for 2005 and 2025 conditions were compared to existing conditions. Intersection operations for the 2010 adjusted volumes and 2030 model volumes were also considered to determine potential impacts and additional improvements to intersection lane configurations needed to meet the local LOS standards described below. Transit, bicycle, and pedestrian facilities were evaluated for consistency with local and regional plans and adopted design standards.

The proposed intersection lane geometrics for each alternative, along with other programmed (fully funded) roadway improvements in the area, were used in conjunction with the intersection turning movement volume forecasts to assess intersection LOS under future scenarios. According to the Transportation Report, the following projects have been identified as being fully funded and are assumed to be in place under all project alternatives, including Alternative A:

- Walters Road: Widen to four lanes from Rio Vista Road (SR 12) to Air Base Parkway (project complete)
- Leisure Town Road: Widen I-80 interchange to six lanes from Orange Drive (northern terminus of Jepson Parkway) to Vaca Valley Parkway (project complete)
- Peabody Road: Widen to four lanes between Air Base Parkway and Huntington Road (project complete)

Each of these improvements was completed before construction of the Jepson Parkway Project. The resulting levels of service were compared to the performance standard criteria discussed in the Transportation Report to identify scenarios in which these performance standards would not be met.

The City of Vacaville recently approved the Southtown development project in southeastern Vacaville near Leisure Town Road and Vanden Road. As part of the Southtown project, the Southtown developer would extend Foxboro Parkway from its current terminus at Nut Tree Parkway to the intersection of Vanden Road and Leisure Town Road. The exact timing of this extension is not known, however, it is anticipated that it will be complete by 2030. As described in Section 2, Project Description, the Jepson Parkway Project does not include the extension of Foxboro Parkway. However, under Alternatives B, C, and D, the west approach of the intersection of Vanden Road and Leisure Town Road would be constructed to allow for a connection to the future Foxboro Parkway.

Local Agency Performance Standards

Transportation system performance standards, adopted by local agencies, set thresholds for what each agency considers acceptable conditions. The appropriate application of these standards, as discussed in the Transportation Report, to the project is described below:

- A signalized intersection should not exceed a LOS standard established by the county congestion management agency or local jurisdictions for designated roads or highways. Each jurisdiction has identified specific LOS standards, as described below.
 - **Solano Transportation Authority.** In the Solano Congestion Management Program, STA has set the minimum LOS standard on all State routes in Solano County, including freeway segments, at LOS E, except those locations where the initial LOS measurement (calculated for the 1991 CMP) was already at LOS F.
 - **City of Fairfield.** Fairfield General Plan Objective CI 3 establishes the PM peak hour LOS standard on local streets as LOS B; collector streets as LOS C; and arterials as LOS D. All study intersections are on arterials and therefore, the LOS standard for all intersections in Fairfield is LOS D.
 - **City of Suisun City.** Suisun City General Plan Circulation and Transportation Element Objective 2 establishes the LOS standard for the city’s circulation system as LOS C.
 - **City of Vacaville.** Vacaville General Plan Guiding Policy 6.1-G 1 establishes LOS C as the minimum standard at all intersections, interchanges, and road links. However, Guiding Policies 6.1-G 2 and 6.1-G 3 allow LOS D, E, or F under special circumstances and with prior public hearings and approval by the City Council.
 - **Solano County.** Solano County Road Improvement Standards and Land Development Requirements Section 1-4 establishes LOS C as the standard for all roads and intersections. All projects shall be designed to maintain a LOS of C, except where the existing LOS is already below C.
- An unsignalized intersection should not exceed the level of service criteria described above at locations where expected peak-hour traffic volumes would warrant installation of a traffic signal. All local jurisdictions base their determination on whether a traffic signal should be installed on warrants (i.e., criteria) described in the Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD is the guiding national document for the selection, design, installation, operation, and maintenance of all types of traffic control devices, including traffic signals. Its purpose is to provide uniformity in traffic control devices across the country. FHWA is responsible for the MUTCD. The MUTCD contains eight warrants. The peak-hour signal warrant is evaluated in this report because the peak-hour traffic data is the only data available to provide a comparable analysis for existing and future conditions. The analysis of unsignalized intersections is intended to examine the need to install new traffic signals. The analysis should not serve as the only basis for deciding whether and when to install a signal; the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Regular monitoring of actual traffic conditions and accident data should be undertaken by the jurisdiction responsible for implementation to prioritize and program intersections for signalization.

- Adopted policies, plans, or programs supporting transit and nonmotorized transportation (e.g., bus turnouts, bicycle lanes) should be followed, and the proposed action shall provide for pedestrian, bicycle, or transit travel demand that would not be accommodated by current pedestrian facilities, bicycle development plans, or long-range transit plans.

Intersections

Since a 2030 travel demand model has been recently developed and determined to have more current, generally accepted assumptions, an analysis was performed to determine the potential impacts the newer model would have on the results of the Transportation Report. In order to determine the potential impacts, the following procedure was followed:

- First, the volumes of the base 2025 travel demand model and the base 2030 travel demand model were compared to determine the percent change between the two.
- Second, the volumes in the 2025 Synchro files used to develop the Transportation Report (Alternatives A through E) were adjusted proportional to the increase or decrease observed in the 2025 and 2030 base models. The growth factors for each approach of each intersection were adjusted accordingly in order to maintain similar turning movement proportions used in the Transportation Report. After these adjustments, volumes were balanced where necessary.
- Additionally, the 2010 volumes were interpolated from the most current existing turning movement counts and the newly calculated 2030 turning movement volumes.
- Once the volumes were adjusted, the signal timings were optimized to determine the projected intersection delay and LOS for the 2010 and 2030 conditions.
- The next step was to determine if any additional improvements would be necessary to meet the local LOS standards at each intersection.

As a result, new proposed intersection lane configurations were developed. Figures 3.6-5a and 3.6-5b identify the intersection lane configurations necessary to meet local LOS standards in both 2010 and 2030. The resulting intersection delay and level of service for the 2010 conditions with the proposed 2010 intersection lane configurations are presented in Table 3.6-3. The resulting intersection delay and level of service for the 2030 conditions with the proposed 2030 intersection lane configurations are presented in Table 3.6-4. As shown in Table 3.6-3, most of the unsignalized intersections in 2010 do not meet the LOS standards. However, the addition of a signal (if warranted and deemed necessary) at these unsignalized intersections would likely improve the level of service at these intersections to acceptable levels. Further analysis would be required to determine if a signal would be warranted at these intersections in 2010. As shown in Table 3.6-4, a signal at these intersections is assumed by 2030 to improve operations. Any improvements to the Walters Road/SR 12 intersection will require close coordination with Caltrans prior to and during project construction to avoid adverse impacts to SR 12.

Table 4 (Page 1 of 2)
Proposed Intersection Lane Configurations and Peak Hour LOS Summary

Intersection	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Standard*
1 : WB I-80 Ramps/ Leisure Town Rd						D
2 : EB I-80 Ramps/ Leisure Town Rd						D
3 : Orange Dr/ Leisure Town Rd						C
4 : Sequoia Dr/ Leisure Town Rd / White Pine St						C
5 : Stonegate Dr/ Leisure Town Rd						C
6 : Ulatis Dr/ Leisure Town Rd						C
7 : Elmira Rd/ Leisure Town Rd						C
8 : Marshall Rd/ Leisure Town Rd						C
9 : Alamo Dr/ Leisure Town Rd						C
10 : Leisure Town Rd/ Vanden Rd						C
10A : Leisure Town Rd/ Vanden Rd/Foxboro Pkwy (Alternative)						C
11 : Canon Rd/ Vanden Rd						C
12 : Vanden Rd/ Peabody Rd						D

↑ Project lane configuration in 2010 (meets LOS standards)
 Additional improvement needed by 2030 to meet LOS standard
 * LOS Standard
 Improvements at this intersection are not part of this Alternative; however, improvements may be needed to meet local LOS standards.

Figure 3.6-5a
2010 and 2030 Intersection Lane Configuration Summary

Table 4 (Page 2 of 2)
2010 and 2030 Intersection Lane Configuration Summary

Intersection	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Standard*
13: Cement Hill Rd/ Walters Rd	N/A	A	MA	MA	MA	D
14: Air Base Pkwy/ Walters Rd	F	D	D	D	D	D
15: E Tabor Ave/ Walters Rd	C	C	D	C	D	D
16: Bella Vista Dr/ Walters Rd	C	C	B	C	C	C
17: Petersen Rd/ Walters Rd	A	A	A	B	A	C
18: SR-12/ Walters Rd	D	C	C	C	C	C
19: Alamo Dr/ Peabody Rd	C	C	C	C	C	C
20: Air Base Pkwy/ Peabody Rd	D	B	B Fly over	B	B Fly over	D
21: Huntington Dr/ Peabody Rd	D	B	D	D	D	D
22: California Dr/ Peabody Rd	D	C	C	C	C	C
23: Elmira Rd/ Peabody Rd	E	C	C	C	C	C
24: Cliffside Dr/ Peabody Rd	D	B	B	B	D	D
25: Elmira Rd/ Depot St	D	B	B	B	D	D

↑ Project lane configuration in 2010 (meets LOS standards)
 ↑ Additional improvement needed by 2030 to meet LOS standard
 * LOS Standard



Figure 3.6-5b
2010 and 2030 Intersection Lane Configuration Summary

Table 3.6-3
Intersection Delay (Seconds per Vehicle) and LOS Summary,^a 2010 Conditions with Proposed Intersection Lane Configurations

Intersection	Standard LOS ^b	Alt A		Alt B		Alt C		Alt D		Alt E	
		AM	PM								
1. Leisure Town Road/I-80 WB Ramps	D	10.3/B	9.3/A	8.1/A	9.1/A	5.8/A	7.2/A	5.7/A	7.2/A	5.6/A	7.3/A
2. Leisure Town Road/I-80 EB Ramps	D	6.3/A	8.3/A	5.8/A	7.4/A	6.4/A	8.3/A	6.4/A	8.4/A	6.4/A	8.3/A
3. Leisure Town Road/Orange Drive	C	7.5/A	13.8/B	7.9/A	13.7/B	8.2/A	17.8/B	8.2/A	14.7/B	7.8/A	15.0/B
4. Leisure Town Road/Sequoia Drive/White Pine Street	C	9.1/A	27.9/C	8.3/A	11.7/B	7.8/A	11.4/B	8.3/A	11.3/B	8.9/A	11.5/B
5. Leisure Town Road/Stonegate Drive	C	59.8/F ^c	>100/F ^c	25.6/D ^c	56.9/F ^c	25.3/D ^c	61.7/F ^c	24.1/C ^c	62.1/F ^c	62.2/F ^c	>100/F ^c
6. Leisure Town Road/Ulatis Drive	C	76.8/F ^c	>100/F ^c	33.9/D ^c	>100/F ^c	35.0/D ^c	>100/F ^c	33.6/D ^c	>100/F ^c	52.3/F ^c	>100/F ^c
7. Leisure Town Road/Elmira Road	C	28.9/C	43.3/D	20.3/C	26.1/C	20.1/C	25.5/C	26.2/C	26.7/C	27.0/C	24.8/C
8. Leisure Town Road/Marshall Road	C	48.4/E ^c	80.9/F ^c	31.2/D ^c	48.8/E ^c	31.1/D ^c	59.6/F ^c	29.8/D ^c	59.2/F ^c	48.1/E ^c	68.7/F ^c
9. Leisure Town Road/Alamo Drive	C	19.4/B	23.2/C	16.7/B	19.7/B	16.5/B	19.7/B	16.4/B	19.9/B	20.2/C	31.3/C
10. Leisure Town Road/Vanden Road	C	14.8/B	12.2/B	18.3/B	7.4/A	18.5/B	7.4/A	18.5/B	7.8/A	15.0/B	8.5/A
11. Vanden Road/Canon Road	C	>100/F ^c	31.2/D ^c	7.8/A	14.0/B	7.1/A	10.4/B	7.1/A	18.7/B	72.2/F ^c	42.2/E ^c
12. Cement Hill Road/Peabody Road	D	54.7/D	25.1/C	31.4/C	23.5/C	36.8/D	23.6/C	39.2/D	23.7/C	42.1/D	28.8/C
13. Walters Road Ext/Cement Hill Road	D	6.3/A	4.7/A	8.8/A	9.4/A	6.3/A	4.7/A	6.3/A	4.7/A	6.3/A	4.7/A
14. Walters Road/Air Base Pkwy	D	34.2/C	34.2/C	41.7/D	35.8/D	46.5/D	51.0/D	42.8/D	39.5/D	35.7/D	39.7/D
15. Walters Road/East Tabor Ave	D	10.3/B	11.7/B	19.4/B	18.5/B	19.8/C	22.3/C	19.8/B	19.0/B	19.9/B	20.4/C
16. Walters Road/Bella Vista Road	C	19.3/B	12.4/B	24.1/C	19.7/B	24.1/C	19.6/B	24.0/C	19.8/B	24.1/C	19.8/B
17. Walters Road/Peterson Road	C	2.5/A	2.9/A	5.1/A	6.5/A	6.1/A	6.5/A	7.0/A	6.5/A	6.0/A	6.9/A
18. Walters Road/SR 12	C	20.2/C	16.0/B	21.4/C	20.9/C	21.1/C	19.7/B	21.7/C	30.6/C	21.1/C	19.2/B
19. Peabody Road/Alamo Drive	C	40.5/D	40.2/D	23.8/C	29.3/C	23.9/C	29.0/C	29.5/C	29.0/C	28.8/C	33.5/C
20. Peabody Road/Air Base Pkwy	D	18.0/B	27.6/C	14.9/B	32.7/C	6.7/A	9.4/A	15.1/B	28.2/C	6.8/A	9.1/A
21. Peabody Road/Huntington Drive	D	23.5/C	22.9/C	21.3/C	21.8/C	18.4/B	20.5/C	25.4/C	25.2/C	19.4/B	19.7/B
22. Peabody Road/California Drive	C	15.5/B	18.4/B	13.8/B	16.4/B	14.1/B	16.6/B	14.8/B	16.6/B	24.3/C	21.6/C
23. Peabody Road/Elmira Road	C	31.7/C	63.2/E	23.1/C	30.4/C	30.8/C	31.1/C	25.0/C	31.2/C	23.7/C	26.7/C
24. Peabody Road/Cliffside Drive	D	49.8/D	46.5/D	20.5/C	36.9/D	21.0/C	36.0/D	20.4/C	36.4/D	22.5/C	36.0/D
25. Elmira Road/Depot Street	D	25.7/C	47.9/D	25.9/C	40.7/D	25.4/C	44.2/D	25.7/C	39.6/D	25.6/C	43.7/D

Notes: Shaded cells indicate intersections expected to exceed local LOS performance thresholds.

- a. LOS based on 2000 HCM methodology.
- b. LOS standard as reported in the Transportation Report.
- c. Unsignalized control - installation of traffic signals would allow intersections to meet LOS standard in 2010.

**Table 3.6-4
Intersection Delay (Seconds per Vehicle) and LOS Summary 2030 Conditions with Proposed Intersection Lane Configurations**

Intersection	Standard LOS ^b	Alt A		Alt B		Alt C		Alt D		Alt E	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Leisure Town Road/I-80 WB Ramps	D	4.5/A	8.8/A	4.8/A	8.7/A	3.7/A	8.8/A	3.6/A	8.8/A	3.8/A	8.9/A
2. Leisure Town Road/I-80 EB Ramps	D	10.8/B	27.6/C	9.5/A	28.2/C	9.8/A	27.7/C	10.0/A	28.3/C	9.5/A	27.2/C
3. Leisure Town Road/Orange Drive	C	16.6/B	19.8/B	14.5/B	30.9/C	13.9/B	31.0/C	14.6/B	33.2/C	13.1/B	31.0/C
4. Leisure Town Road/Sequoia Drive/White Pine Street	C	13.9/B	> 100/F	12.9/B	24.9/C	13.1/B	24.7/C	13.3/B	25.5/C	14.7/B	26.8/C
5. Leisure Town Road/Stonegate Drive	C	> 100/F ^c	> 100/F ^c	3.7/A	5.5/A	3.7/A	5.5/A	3.6/A	5.5/A	12.8/B	6.1/A
6. Leisure Town Road/Ulatis Drive	C	> 100/F ^c	> 100/F ^c	8.3/A	25.8/C	8.4/A	22.6/C	8.1/A	23.9/C	8.5/A	10.6/B
7. Leisure Town Road/Elmira Road	C	84.5/F	> 100/F	12.8/B	34.3/C	14.4/B	32.2/C	12.7/B	34.1/C	15.6/B	24.4/C
8. Leisure Town Road/Marshall Road	C	> 100/F ^c	> 100/F ^c	5.3/A	5.8/A	5.4/A	5.7/A	5.2/A	5.3/A	8.7/A	11.1/B
9. Leisure Town Road/Alamo Drive	C	40.5/D	> 100/F	23.4/C	21.0/C	20.3/C	27.0/C	20.6/C	25.8/C	19.3/B	20.5/C
10. Leisure Town Road/Vanden Road	C	73.5/E	> 100/F	34.2/C	7.8/A	34.8/C	8.6/A	32.1/C	7.7/A	25.1/C	13.6/B
10A. Leisure Town Road/Vanden Road/Foxboro Parkway ^d	C	45.9/D	17.1/B	31.5/C	14.6/B	31.5/C	14.6/B	31.5/C	14.6/B	45.9/D	17.1/B
11. Vanden Road/Canon Road	C	> 100/F ^c	42.0/E ^c	13.6/B	13.2/B	10.7/B	11.4/B	13.3/B	9.3/A	20.1/C	17.1/B
12. Cement Hill Road/Peabody Road	D	> 100/F	> 100/F	28.6/C	30.1/C	43.7/D	40.0/D	39.9/D	38.8/D	37.1/D	53.2/D
13. Walters Road Ext/Cement Hill Road	D	7.4/A	48.2/D	13.0/B	22.9/C	7.4/A	48.2/D	7.4/A	48.2/D	7.4/A	48.2/D
14. Walters Road/Air Base Pkwy	D	74.7/E	81.2/F	36.5/D	47.0/D	32.5/C	54.0/D	35.6/D	46.3/D	43.8/D	52.9/D
15. Walters Road/East Tabor Ave	D	21.9/C	28.0/C	26.6/C	29.3/C	32.1/C	40.0/D	20.2/C	25.8/C	30.5/C	47.5/D
16. Walters Road/Bella Vista Road	C	21.3/C	13.3/B	18.2/B	23.1/C	18.9/B	15.3/B	24.0/C	24.0/C	26.1/C	24.0/C
17. Walters Road/Peterson Road	C	2.8/A	3.9/A	6.0/A	9.0/A	8.9/A	8.0/A	10.2/B	4.2/A	9.0/A	9.9/A
18. Walters Road/SR 12	C	55.0/D	44.8/D	29.1/C	34.4/C	31.8/C	29.7/C	25.9/C	34.5/C	25.2/C	30.7/C
19. Peabody Road/Alamo Drive	C	28.3/C	34.9/C	25.3/C	28.9/C	24.6/C	28.2/C	27.0/C	27.8/C	26.4/C	29.1/C
20. Peabody Road/Air Base Pkwy	D	20.5/C	54.0/D	12.1/B	17.1/B	10.1/B	8.2/A	12.2/B	17.1/B	6.6/A	10.4/B
21. Peabody Road/Huntington Drive	D	19.5/B	47.6/D	26.4/C	43.3/D	22.8/C	53.9/D	20.4/C	52.3/D	27.6/C	51.4/D
22. Peabody Road/California Drive	C	37.5/D	27.6/C	23.7/C	20.8/C	23.9/C	17.9/B	30.0/C	18.2/B	32.4/C	23.5/C
23. Peabody Road/Elmira Road	C	21.4/C	77.1/E	19.0/B	34.0/C	18.1/B	25.2/C	19.8/B	31.6/C	14.9/B	22.8/C
24. Peabody Road/Cliffside Drive	D	20.8/C	36.6/D	21.7/C	38.4/D	27.2/C	35.6/D	22.1/C	37.0/D	21.0/C	43.1/D
25. Elmira Road/Depot Street	D	26.7/C	36.9/D	26.1/C	53.0/D	48.6/D	30.9/C	38.9/D	47.9/D	46.0/D	50.1/D

Notes: Shaded cells indicate intersections expected to exceed local LOS performance thresholds.

- a. LOS based on 2000 HCM methodology.
- b. LOS standard as reported in the Transportation Report.
- c. Unsignalized control - installation of traffic signals would allow intersections to meet LOS standard in 2010.
- d. The future extension of Foxboro Parkway to Leisure Town Road/Vanden Road is not part of the Jepson Parkway Project.

The operation of the Vanden Road/Leisure Town Road intersection was also analyzed with the potential future extension of Foxboro Parkway from Nut Tree Parkway to Vanden Road/Leisure Town Road, described above. This potential future intersection is designated 10A in Table 3.6-4 and on Figure 3.6-5a. Implementation of the Southtown project and the extension of Foxboro Parkway would redistribute traffic along Vanden Road so that the majority of traffic that currently uses Vanden Road north of Leisure Town Road would use the future Foxboro Parkway extension. Because the extension of Foxboro Parkway is not included in the Solano County 2030 model, a qualitative analysis based on the redistribution of traffic associated with the Southtown project was performed. Due to the redistribution of traffic, this intersection could be configured to meet acceptable LOS standards, as shown in Table 3.6-4 and on Figure 3.6-5a.

3.6.3.2 Summary of Traffic and Transportation/Pedestrian and Bicycle Facility Impacts

Implementation of any of the four build alternatives would result in substantially improved operation of study intersections in the corridor. As shown in Table 3.6-5, many of the study intersections would operate at below local LOS standards in both 2010 (7 of 25 intersections) and 2030 (13 of 25 intersections) under Alternative A. With implementation of Alternative B, C, D, or E, none of study intersections would operate below local LOS standards in 2030.

Implementation of any of the build alternatives would also result in improved bicycle and pedestrian circulation in the corridor as well as improved transit service.

Each of these potential effects on traffic, pedestrian, and bicycle facilities, and parking are more fully discussed below.

**Table 3.6-5
Summary of 2010 and 2030 Intersection Operations by Alternative**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Number of Study Intersections Operating Below Local LOS Standards in 2010	7	3	3	3	4
Number of Study Intersections Operating Below Local LOS Standards in 2030	13	0	0	0	0

Impact TRA-1: Would the Alternatives Result in a Change in 2010 Peak Hour Intersection Level of Service?

Alternative A. As shown in Table 3.6-3, under Alternative A conditions in 2010, seven of the study intersections would operate at conditions below local LOS standards in either the AM peak hour, the PM peak hour, or during both peak hours.

Alternatives B, C, and D. Implementation of Alternative B, C, or D would result in an improvement in the level of service at most of the study intersections in the corridor. As shown in Table 3.6-3, all but three of the study intersections would operate at or above local LOS standard. The three intersections that would continue to operate at below local LOS standards during the AM and/or PM peak hours include Leisure Town Road/Stonegate Drive; Leisure Town Road/Ulatis Drive; and Leisure Town Road/Marshall Road. Each of these three intersections is unsignalized. Mitigation is available for this impact (Mitigation Measure TRA-1).

Alternative E. Implementation of Alternative E would have a similar effect on study intersections as Alternatives B, C, and D. Similar to the other build alternatives, implementation of Alternative E would result in improved operating conditions at most study intersections, with most study intersections operating at or above local LOS standards. However, as shown in Table 3.6-3, the Leisure Town Road/Stonegate Drive; Leisure Town Road/Ulatis Drive; Leisure Town Road/Marshall Road; and Vanden Road/Canon Road intersections would operate at below local LOS standards in the AM and PM peak hours. Mitigation is available for this impact (Mitigation Measure TRA-1).

Impact TRA-2: Would the Alternatives Change Truck Egress Capacities along Huntington Drive?

In addition to the isolated intersection analysis, Huntington Drive between Air Base Parkway and Peabody Road was evaluated as an arterial system. Additional attention was placed on this arterial segment in the Transportation Report because of the relatively high level of heavy-vehicle traffic generated by the adjacent industrial area.

Alternatives A, B, C, and E. Implementation of Alternatives A, B, C, or E would not include improvements to Huntington Drive. Therefore, none of these alternatives would have an effect on roadway operations along Huntington Drive.

Alternative D. Construction of roadway improvements along Huntington Drive with implementation of Alternative D could affect numerous industrial land uses along the Huntington Drive segment. These industrial uses are characterized by relatively high amounts of truck traffic. Alternative D improvements along Huntington Drive would include a median with left-turn lanes only at key intersections, limiting access to the driveways on this roadway to right turns in and out. This limitation may result in truck traffic making more circuitous trips to and from their destinations along Huntington Drive. In addition, Alternative D would result in an increase in traffic volumes along Huntington Drive. This increase may reduce the ability for trucks to enter and exit driveways.

In addition to a review of intersection operations along Huntington Drive, the Transportation Report evaluated the effect of vehicle “platooning” (due to signals at the endpoints of Huntington Drive) would have on trucks entering the roadway from the industrial driveways along the roadway. VISSIM models were used to conduct this analysis for the study years 2005 and 2025. The truck egress capacities for 2010 and 2030 were estimated using linear extrapolation based on the traffic volumes along Huntington Drive for Alternative D. Those traffic volumes and the resulting truck egress capacities are shown in Table 3.6-6.

**Table 3.6-6
Truck Egress Capacities along Huntington Drive under 2010 and 2030 Conditions**

Year	AM Peak Hour				PM Peak Hour			
	Northeast		Southwest		Northeast		Southwest	
	Traffic Volume	Egress Capacity						
2010	253	132	394	146	391	168	396	133
2030	330	127	786	118	755	132	783	120

Based on the Transportation Report, Alternative D would cause a major reduction in the number of gaps in through traffic on Huntington Drive, thereby impeding access to industrial parcels. In addition, Alternative D could cause a noticeable speed differential between faster through-traffic on Huntington Drive and slower trucks accessing industrial parcel driveways along Huntington Drive. This speed difference would result in potential safety conflicts. Because the many businesses that have driveways along this roadway must use this street to enter the transportation network, no alternative access exists that could be implemented on this roadway segment. However, this is not expected to be an adverse effect.

2010 Conditions: For 2010 conditions, only minor queuing is expected to occur along Huntington Drive in the AM peak hour. The southbound queue from the Air Base Parkway/Huntington Drive/Walters Road intersection may occasionally block the Huntington Court intersection, which is only 165 feet from the signalized intersection. However, these queues are expected to clear every signal cycle, providing sufficient gaps for traffic to access Huntington Drive.

2030 Conditions: For 2030 conditions, queues for southbound Huntington Drive at Air Base Parkway would be similar to those under 2010 conditions, with occasional blockage of the Huntington Court intersection. This blockage is not expected to last for long periods and is expected to clear with each cycle of the signal, resulting in no adverse effect.

Eastbound queues on Huntington Drive at the Huntington Drive/Peabody Road intersection are expected to be as long as 0.5 mile during the PM peak hour, which would sometimes block the Huntington Drive/Stanford Court intersection. This blockage would prevent access to the southern leg of Stanford Court for brief periods of time. Again, this is not anticipated to be an adverse effect.

Impact TRA-3: Would the Alternatives Have an Effect on Pedestrians and Bicyclists in the Corridor?

Alternative A. The availability of nonmotorized transportation modes would not be affected by Alternative A. The bicycle and pedestrian facilities that would be in place under Alternative A would consist of existing facilities and those that are part of other approved projects that have previously undergone appropriate environmental review

Alternatives B, C, D, and E. All of the build alternatives include the addition of an off-street paved bicycle path along the length of the corridor as well as “activity nodes” at strategic locations to encourage bicycle and pedestrian use for both recreation and transportation purposes. This would be a beneficial impact of the build alternatives. Each build alternative would include connections to bicycle and pedestrian facilities that meet ADA requirements, and all intersections would have curb ramps and pedestrian cross walks and signals that meet current ADA guidelines.

For portions of Alternatives B, C, D, and E, the proposed bicycle path along sections of existing Walters Road would require an exception to the design criteria in the Caltrans Highway Design Manual (HDM). According to HDM design guidelines, a Class I bicycle facility should be separated from a roadway by a minimum of five feet. The proposed facility would not provide the required separation on sections of Walters Road and would not meet HDM design criteria. This would not, however, be considered an adverse effect. Other design constraints and provisions for adequate signage would need to be considered as part of final design.

Impact TRA-4: Would the Alternatives Have an Effect on Transit Service in the Corridor?

Alternative A. The availability of existing transit modes would not be affected by Alternative A.

Alternatives B, C, D, and E. All of the build alternatives include the operation of two new bus routes to provide future transit service along the corridor. This would be a beneficial impact of the project.

Impact TRA-5: Would the Alternatives Result in Short-Term Construction-Related Changes in Circulation and Local Traffic Patterns?

Alternative A. No project-related construction would occur under Alternative A. Therefore, Alternative A would not result in short-term construction-related changes in circulation and local traffic patterns.

Alternatives B, C, D, and E. Construction of any of the build alternatives would cause short-term disruptions in existing circulation patterns, including the use of temporary detours and temporary roads. Temporary construction impacts could affect residents and businesses along the entire length of the project alternative. Mitigation has been identified for this impact (Mitigation Measure TRA-2).

Impact TRA-6: Would the Alternatives Impact Parking in the Corridor?

Please refer to Impact CI-8 in Section 3.4, Community Impacts, for a discussion of parking impacts.

3.6.3.3 Cumulative Impacts

Impact TRA-7: Would the Alternatives Result in a Change in 2030 Cumulative Peak Hour Intersection Level of Service?

Alternative A. Under Alternative A, no roadway or intersection improvements beyond those described above would be implemented in the corridor. As shown in Table 3.6-4, the majority of the study

intersections in the corridor (13 of 24)³ would operate at below LOS standards in either the AM peak hour, the PM peak hour, or both peak hours.

Alternative B. The cumulative analysis for Alternative B assumes all unsignalized study intersections would be signalized by 2030. As shown in Table 3.6-4, implementation of Alternative B would result in improved levels of service at all of the study intersections along the Alternative B alignment. All of the study intersections would operate at or above local LOS standards.

Alternative C. The cumulative analysis for Alternative C assumes all unsignalized study intersections would be signalized by 2030. As shown in Table 3.6-4, implementation of Alternative C would result in improved levels of service at all of the study intersections along the Alternative C alignment. All of the study intersections would operate at or above the LOS standard for the respective intersection.

Alternative D. The cumulative analysis for Alternative D assumes all unsignalized study intersections would be signalized by 2030. As shown in Table 3.6-4, implementation of Alternative D would result in improved levels of service at all of the study intersections along the Alternative D alignment. All of the study intersections would operate at or above the LOS standard for the respective intersection.

Alternative E. The cumulative analysis for Alternative E assumes all unsignalized study intersections would be signalized by 2030. Similar to the other build alternatives, as shown in Table 3.6-4, implementation of Alternative E would result in improved levels of service at all of the study intersections along the Alternative E alignment. All of the study intersections would operate at or above the LOS standard for the respective intersection.

3.6.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure TRA-1: Evaluate Unsignalized Study Intersections in the Corridor for Signal Warrants. A full set of warrants for unsignalized study intersections in the corridor shall be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer under the direction of STA or the local jurisdiction. Regular monitoring of actual traffic conditions and accident data shall be undertaken by the jurisdiction responsible for implementation to prioritize and program intersections for signalization where warrants are met.

Mitigation Measure TRA-2: Implement Transportation Management Plan during Construction. The project sponsors shall prepare and implement a construction phasing plan and Transportation Management Plan (TMP) that defines how traffic operations would be managed and maintained during each phase of construction. The plan shall be developed with the direct participation of the appropriate jurisdiction (Fairfield, Vacaville, Suisun City, and/or Solano County). At least one lane in each direction of the alignment shall be available at all times during the construction process. All cross-traffic lanes shall be kept open during construction except for during temporary non-peak-hour closures. At least one lane under flagger control shall be provided at all times during temporary intersection closures. In addition, the property owners of all businesses adjacent to the construction areas shall be consulted. To the maximum practical extent, the plan shall:

³ The Walters Road/Cement Hill intersection would not be built under Alternative A.

- Identify the locations for temporary detours and temporary roads to facilitate local traffic patterns and through-traffic requirements. If temporary roadway or intersection closures are required for construction purposes, the TMP shall specify off-peak timeframes for closures.
- Detail how access shall be maintained to individual businesses, residences, and farmlands where construction activities may interfere with ingress and egress. Any driveway closures shall take place during non-business hours.
- Notify affected businesses and residents at least two weeks in advance of lane or roadway closures or impacts related to access. Personnel of emergency response services such as fire and police protection shall also be notified one to two weeks in advance of any lane or road closures so that alternate routes can be taken.
- Specify predetermined haul routes from staging areas to construction sites and to disposal areas of agreement with the appropriate jurisdiction(s) prior to construction. The routes shall follow streets and highways that provide the safest route, minimize truck traffic impacts to sensitive receptors, and have the least impact on traffic.
- Require the contractor to provide information to the public using signs, press releases, and other media tools of traffic closures, detours, or temporary displacement of left-turn lanes.
- Identify a single phone number that property owners and businesses can call for construction scheduling, phasing, and duration information, as well as for complaints.
- Identify construction activities that must take place during off-peak traffic hours or result in temporary road closures due to concerns regarding traffic safety or traffic congestion. Any road closures shall be done at night under ordinary circumstances. If unforeseen circumstances require road closing during the day, the appropriate jurisdiction(s) shall be consulted.

3.7 Visual/Aesthetics

The information in this section is summarized from the Visual Impact Assessment (VIA) prepared for the project. The VIA is incorporated by reference and is available for public review at the Solano Transportation Authority's (STA's) and Caltrans' offices. The approach for the visual assessment is adapted from Federal Highway Administration's (FHWA) visual impact assessment system.¹

Background on Visual Analysis

Descriptions of visual character and quality used in the VIA and summarized in this Environmental Impact Statement (EIS) rely on the following standard terms:

- **Vividness:** The visual power or memorability of landscape components as they combine in striking or distinctive visual patterns.
- **Intactness:** The visual integrity of the natural and artificial landscape and its freedom from encroaching elements. Intactness can be present in well-kept urban and rural landscapes, as well as in natural settings.
- **Unity:** The visual coherence and compositional harmony of the landscape considered as a whole. Unity frequently attests to the careful design of individual components in the artificial landscape.

Vividness, intactness, and unity are the basic components used to describe visual character and quality for most visual assessments. In addition to their use as descriptors, vividness, unity, and intactness are used more objectively as part of a rating system to assess a landscape's visual quality. Vividness, intactness, and unity are evaluated independently; each quality is assigned a rating from 1 to 7. On this scale, 1 is very low, 4 is average/moderate, and 7 is very high. The overall rating for visual quality follows the same 1 to 7 range. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, relative elevation of viewers to the visual resource, frequency and duration of views, number of viewers, and types and expectations of individuals and viewer groups.

The criteria for identifying the importance of views is related in part to the position of the viewer relative to the resource. An area of the landscape that is visible from a particular location, such as an overlook, or series of points, such as a road or trail, is defined as a viewshed. To identify the importance of views of a resource, a viewshed may be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in viewsheds may vary between different geographic regions or types of terrain, a commonly used set of criteria identifies the following:

¹ Federal Highway Administration. 1983. Visual impact assessment for highway projects. (Contract DOT-FH-11-9694). Washington, DC.

- The foreground extends 0.25 miles to 0.5 miles from the viewer.
- The middleground extends from the foreground zone to 3 miles to 5 miles from the viewer.
- The background extends past the middleground zone to infinity.

Visual sensitivity also depends on the number and type of viewers, and the frequency and duration of views. Generally, visual sensitivity increases with an increase in total numbers of viewers, frequency of viewing, and duration of views. Also, visual sensitivity is higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking, or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work. Views from recreation trails and areas, scenic highways, and scenic overlooks are generally assessed as having high visual sensitivity.

3.7.1 Regulatory Setting

The National Environmental Policy Act of 1969 as amended (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 USC 4331(b)(2)). To further emphasize this point, the Department, as assigned by FHWA, in its implementation of NEPA (23 USC 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.

Local plans and ordinances that apply to visual and scenic resources in the corridor are described below.

3.7.1.1 Solano County

General Plan

The following policy from the Solano County General Plan is applicable to the project.

Scenic Roadways Element (Solano County 1977)

The Scenic Roadways Element identifies SR 12 as a scenic roadway within the County.

3.7.1.2 City of Suisun City

General Plan

The following policy from the City of Suisun City General Plan may be applicable to the project.

Community Character and Design

Policy 13. Preservation of Existing Trees. The City will generally require that existing trees of minimum height and diameter be preserved and integrated into new

development. Specific requirements for tree preservation will be included in the City's Development Guidelines.

This policy does not specifically identify the minimum height and diameter of trees to be preserved. According to the City of Suisun, the policy is applied to trees on a case-by-case basis.

3.7.1.3 City of Vacaville

General Plan

The following policy from the Vacaville General Plan is applicable to the project.

Land Use Element

2.1-G5 Design aesthetically pleasing roadways, including a loop street system lined with trees or other appropriate landscaping, that connect Vacaville neighborhoods and serves planned development. Streets alone should not be used to set the outer limits of urbanization.

Tree Preservation Ordinance

Chapter 14.09.131 of the Vacaville Land Use Development Code established regulations controlling the preservation and removal of trees on private and public property within the City. For the purposes of the chapter, tree means any live woody plant having one or more well defined perennial stems with an aggregate circumference of 31 inches or more, when measured at 4-1/2 feet above ground level. The Tree Preservation Ordinance includes the following:

Except as otherwise specified in this chapter, no person shall cut down, remove, or destroy any tree on any public or private property except in accordance with the conditions of a tree removal permit issued by the City.

A. Application Required. Prior to cutting down, removing, or destroying one or more trees on any property in the City, the property owner or the owner's authorized representative shall submit an application for a tree removal permit on a form specified by the Director.

B. Prior to the issuance of a tree removal permit, the Director shall review the application, investigate the site, and examine the tree or trees in question. The Director shall then determine whether to issue the permit.

3.7.1.4 City of Fairfield

General Plan

The following policies, from the City of Fairfield General Plan are applicable to the project.

Circulation Element

Policy CI 11.2 Route roadways in careful relationship to adjoining land uses to minimize noise, visual, and other impacts.

Urban Design Element

Policy UD 4.5 Screen negative views through site planning, architectural, and landscape devices.

Policy UD 6.1 Preserve existing “significant trees” and extensively plant new trees where appropriate.

Neither Policy UD 6.1 nor the City’s Urban Design Element provides a definition of “significant trees”. According to the City of Fairfield Planning Department, the City’s interpretation of the term is site specific in that “significant trees” are defined on a case by case basis as each project is reviewed.

Tree Ordinance

Section 25.36 of the Fairfield Zoning Code regulates tree conservation within the city limits. This ordinance regulates the removal of protected trees and describes the requirements of Tree Removal Permits and the mitigation requirements for removal of trees during development. The Tree Ordinance states the following:

It is the policy of the City to encourage the replacement of protected trees on an inch-for-inch basis. However, staff shall review the specific mitigation program for each project on a case-by-case basis. To determine the number of replacement inches, the applicant should use the diameter or caliper of the tree proposed for removal, measured at breast height (4-1/2 feet above the normal surface). Inches of replacement may be translated into standard nursery planting sizes using the following formulas:

- 24-inch boxed tree = 3 replacement inches
- 15-gallon tree = 1 replacement inch
- 5-gallon tree = 1/2 replacement inch

Protected trees include:

- A. All trees on public property.
- B. Trees planted or preserved on private property or within the public right of way which were:

1. Required by the City as a condition of the project; or
 2. Shown on a landscape drawing or plan for a project approved by the City.
- C. The following species of trees located on undeveloped private property which exceed six inches in caliper or diameter at breast height.
1. Native Oaks
 2. Bay Laurel
 3. Madrone
 4. Buckeye
- D. Trees or groups of trees having one or more of the following characteristics, as determined by the City during project review or through special studies:
1. Demonstrated habitat value
 2. Historical or cultural value, as documented by published sources
 3. Important aesthetic value
 4. Uniqueness or rarity
 5. Unusual size or age

This ordinance recommends that the diameter of the trunk at breast height of the tree intended for removal should be measured to determine how it will be replaced. For example, a tree with a seven-inch diameter could be replaced with seven 15-gallon trees or with a combination of two 24-inch boxed trees and one 15-gallon tree from a nursery. Fairfield's ordinance allows for on- and off-site mitigation, subject to certain conditions.

3.7.2 Affected Environment

The project is located within Solano County (Figure 3.7-1). The project region (background), as discussed in this section, is considered the area within a 30-mile radius of the corridor. The corridor (middleground) extends along the project roadways from the City of Vacaville in the north, through unincorporated Solano County and the City of Fairfield, to the City of Suisun City in the south. The project location (foreground) is defined as the area proposed for any ground-disturbing activities, such as construction activities, construction staging areas, and construction access.

Regional Character

A mix of agricultural, developed, and natural landscapes characterize the project region. Much of the project region is rural, characterized by agriculture (livestock grazing, row crops, and fallow agricultural lands), low-density residential uses, scattered commercial and industrial facilities, Travis Air Force Base, and California State Prison, Solano. These rural land uses provide a separation between the urbanized Cities of Vacaville, Suisun City, and Fairfield; however, development is rapidly occurring at the outskirts of these cities. Within the cities, medium-density residential, commercial, industrial, and institutional uses (schools and churches) are common elements.

The variable terrain and land uses allow for a range of views within the project region. General views range from that of agricultural fields (grazing land, row crops, and orchards), rolling hills and

marshlands, and to urban views of developed cities consisting of commercial and industrial uses, schools, and residences. Background views are limited in most of the project region because of the flat topography. However, the rolling hills of the Vaca Mountains in the northwest and the San Francisco Bay Delta and Mount Diablo to the south can be seen from various locations within the region.

Water features in the project region include Horse Creek, Old Ulatris Creek, New Ulatris Creek, Alamo Creek, Union Creek, Putah South Canal, McCoy Creek, Suisun Marsh, Suisun Bay, Grizzly Bay, and distant views to the San Francisco Bay Delta in the south. The visual quality of the project region ranges from moderately low to moderately high in vividness, intactness, and unity.

Corridor Character

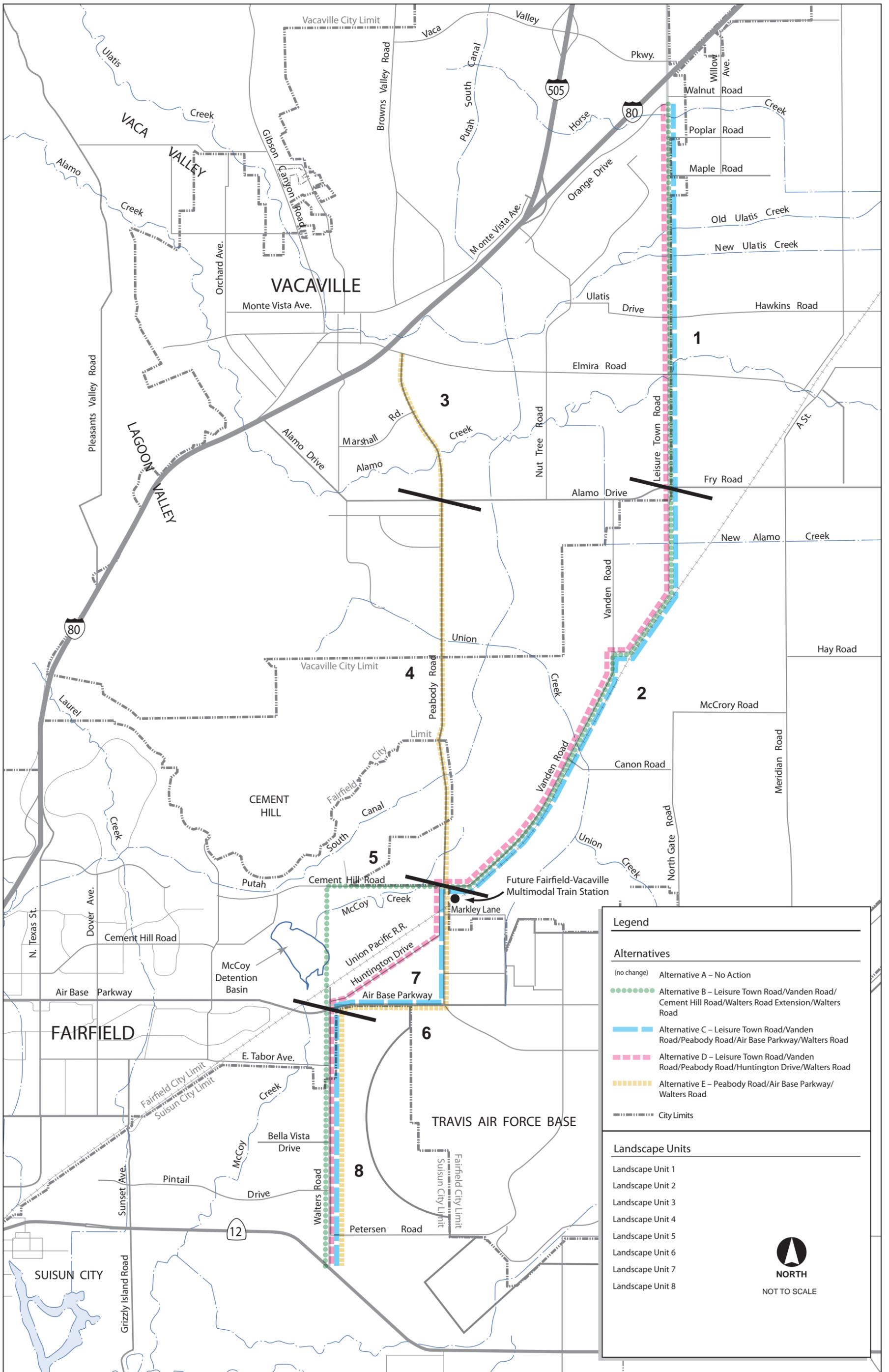
For the purposes of the visual analysis, the corridor is defined as the area within 0.5 mile of the project location. The corridor traverses a variety of landscapes, including those characterized by uniform residential developments, commercial, parks/recreation, schools, agriculture, rolling hills, and Travis Air Force Base (AFB). Horse Creek, Old Ulatris Creek, New Ulatris Creek, Alamo Creek, Union Creek, Putah South Canal, and McCoy Creek flow through the corridor.

Portions of the corridor lack visual obstructions, allowing for expansive views over agricultural fields to the rolling hills in the background. In other portions of the corridor, only foreground views are present because development and roadside vegetation obstruct views to the middleground and background. Overall, the visual quality of the corridor is moderate in vividness, intactness, and unity because of the commonality of views within corridor and the predominance of visual obstructions caused by residential structures, area vegetation, features associated with the Union Pacific Railroad (UPRR) (train traffic, switching stations and road intersections with crossing arms), and commercial and industrial buildings.

None of the corridor roadways have been identified as scenic roadways. However, SR 12, which lies at the southernmost end of the corridor, and I-80, which lies at the northernmost end of the corridor have been identified as scenic roadways in the Draft Scenic Resources Element of the Solano County General Plan.

Landscape Units and Key Viewpoints

For this analysis, eight general landscape units, shown in Figure 3.7-1, were identified as having views of the corridor. The landscape units have been defined on the basis of similar visual features and homogeneous character. Key viewpoints, indexed in Figure 3.7-2, have been chosen for their representation of the landscape unit within which they are located and the viewers affected. The landscape units, which would provide the framework for analysis, are described in Table 3.7-1 and the sections following.



Legend

Alternatives

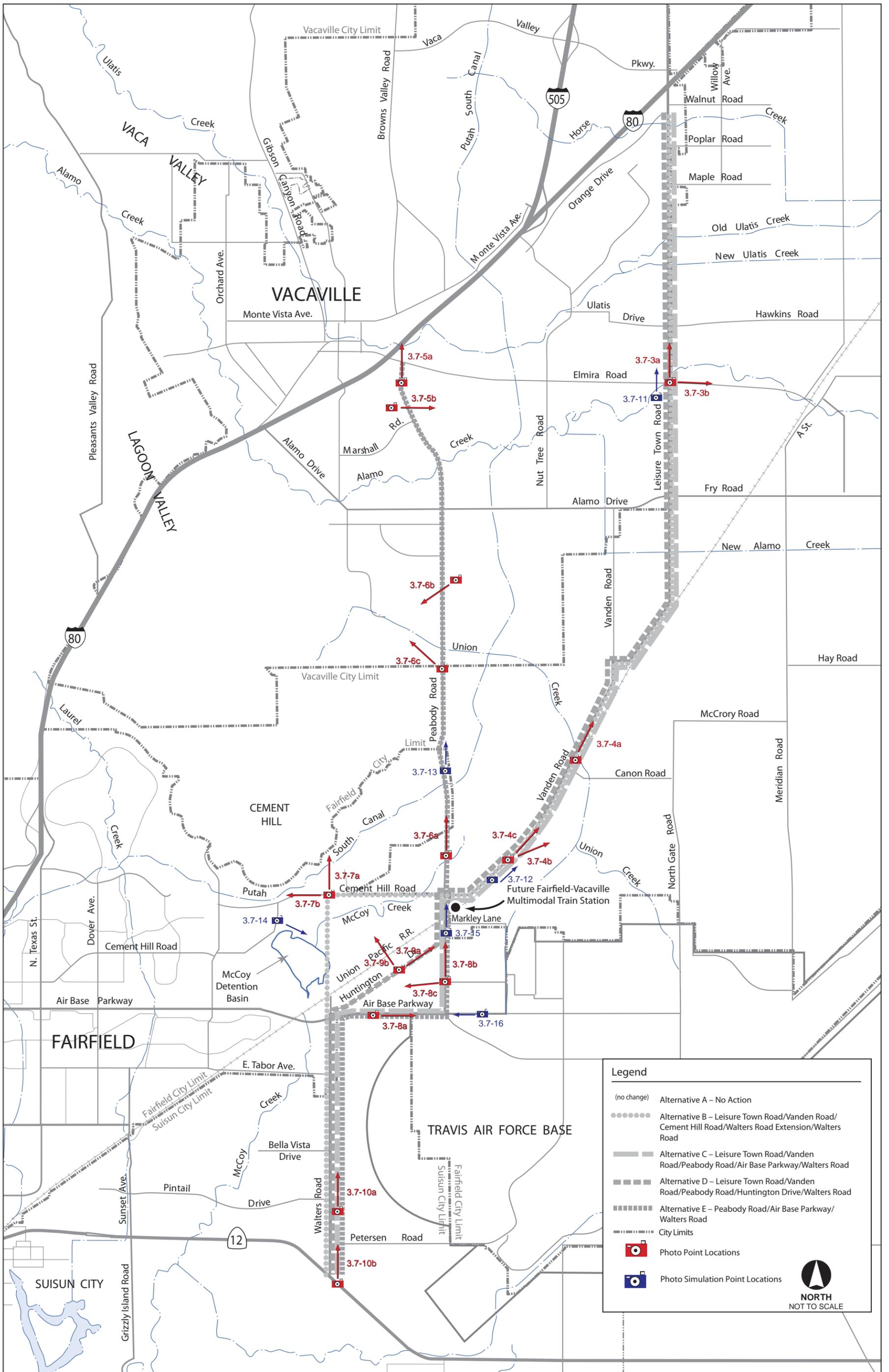
- (no change) Alternative A – No Action
- Alternative B – Leisure Town Road/Vanden Road/Cement Hill Road/Walters Road Extension/Walters Road
- Alternative C – Leisure Town Road/Vanden Road/Peabody Road/Air Base Parkway/Walters Road
- Alternative D – Leisure Town Road/Vanden Road/Peabody Road/Huntington Drive/Walters Road
- Alternative E – Peabody Road/Air Base Parkway/Walters Road
- City Limits

Landscape Units

- Landscape Unit 1
- Landscape Unit 2
- Landscape Unit 3
- Landscape Unit 4
- Landscape Unit 5
- Landscape Unit 6
- Landscape Unit 7
- Landscape Unit 8

NORTH
NOT TO SCALE

**Figure 3.7-1
Landscape Units**



3.7-9

Figure 3.7-2
Photo Index Map

**Table 3.7-1
Summary of Landscape Units in the Corridor**

Landscape Unit	Components	Associated Build Alternative(s)	Visual Quality^a
1	Leisure Town Road from Orange Drive to Alamo Drive	B, C, and D	3.7
2	Leisure Town Road from Alamo Drive to Vanden Road Vanden Road from Leisure Town Road to Cement Hill Road	B, C, and D	3.7
3	Peabody Road from Elmira Road to Alamo Drive	E	3.3
4	Peabody Road from Alamo Drive to Cement Hill Road/Vanden Road	E	4
5	Cement Hill Road from Peabody Road to Walters Road and Walters Road Extension from Cement Hill Road to Air Base Parkway	B	4.3
6	Peabody Road from Cement Hill/Vanden Road to Air Base Parkway and Air Base Parkway from Peabody Road to Walters Road	C and E	3.3
7	Huntington Drive from Peabody Road to Walters Road	D	3.3
8	Walters Road from Air Base Parkway to SR 12	B, C, D, and E	3.3

Note:

a. Visual Quality is rated on a scale of 1 to 7; 1 is very low, 4 is average/moderate, and 7 is very high.

Landscape Unit 1: Leisure Town Road from Orange Drive to Alamo Drive (Alternatives B, C, and D)

This landscape unit is characterized by medium-density residential, commercial, and agricultural development. Along the east side of Leisure Town Road, grazing land, row crops, and fallow agricultural lands dominate the landscape allowing for expansive views. Some residences and businesses located on the east side of Leisure Town Road are separated from the roadway by landscaping. Along the west side of the roadway, housing developments extend southward limiting views to the immediate foreground. Viewers in this landscape unit include residents, employees and patrons of local businesses, recreationists (bicyclists and golf course users), institutional users (a church and associated school), and motorists.

Both stationary (residents, golf course users, church users, and employees and patrons of local businesses) and mobile (bicyclists and motorists) viewers have foreground views of vehicles on the road; adjacent businesses and residences; grazing land, row crops, and fallow agricultural lands; and landscape buffers adjacent to the roadway (Figure 3.7-3a). Overhead utility lines are present in foreground views in most of the landscape unit and as described in the City of Vacaville’s City Gateways Plan (Vacaville, 1999) the heavy appearance of the aboveground utility lines creates a distraction and detracts from the quality of the available views. Middleground and background views are obstructed except in areas with agricultural land uses adjacent to the roadway. In these areas, middleground and background views are continuing views of foreground elements, primarily grazing lands and row crops (Figure 3.7-3b), background views may be limited and indistinct due to the flat topography. For some of these users, views are blocked by landscape buffers between them and the adjacent roadway. Unlike residents and other stationary viewers, however, mobile viewers generally view a range of landscape elements as they travel through the landscape unit.



a. North-facing view on Leisure Town Road at Elmira Road.



b. East-facing view on Leisure Town Road at Elmira Road.

Figure 3.7-3a and 3.7-3b
Representative Photographs of Landscape Unit 1

Within this landscape unit, vividness is moderately low (3), and intactness (4) and unity (4) are moderate. As a result, the visual quality of this landscape unit is moderate (3.7).

Landscape Unit 2: Leisure Town Road from Alamo Drive to Vanden Road, Vanden Road from Leisure Town Road to Cement Hill Road (Alternatives B, C, and D)

This landscape unit is generally rural in character, with grazing lands and a few residences in the northern portion of the landscape unit. The UPRR parallels the roadway in this landscape unit approximately 1 mile before Leisure Town Road intersects with Vanden Road, and continues to follow Vanden Road south to Peabody Road. Additionally, some low-profile commercial and industrial uses occur at the southern end of the landscape unit.

In the northern portion of the landscape unit, viewers are residents, bicyclists, and motorists. These viewers share similar views, which include agricultural land (grazing land and row crops) and mature trees in the foreground and middleground. Aboveground utility lines are present along some sections of the roadway and are part of the middleground views in those areas (Figure 3.7-4a). Background views are blocked by middleground landscape elements and the flat topography.

In the southern portion of the landscape unit, viewers are employees and patrons of local businesses; bicyclists; motorists; and train passengers. Foreground views are of industrial and commercial uses, as well as grazing lands (Figure 3.7-4b). Trains traveling along the UPRR tracks can also be seen in the foreground (Figure 3.7-4c). Middleground and background views in this area include agricultural (grazing land and row crops) lands, aboveground utility lines, unscreened storage areas, and stands of mature trees.

Within Landscape Unit 2, vividness is moderate (4), intactness is moderately low (3), and unity is moderate (4). As a result, the visual quality of this landscape is moderate (3.7).

Landscape Unit 3: Peabody Road from Elmira Road to Alamo Drive (Alternative E)

This landscape unit is characterized by residences, businesses, and institutional (park and school) uses buffered by vegetation. Viewers in this unit include residents, employees and patrons of local businesses, users of Will C. Wood High School and Al Patch Park, recreationists (primarily bicyclists), and motorists.

For most viewers, foreground views include vehicle traffic on the roadway; dense landscape buffers adjacent to the roadway consisting of a vertical mix of tall deciduous and evergreen trees and shorter shrubs; and commercial businesses and residences (Figure 3.7-5a). Middleground and background views are blocked by foreground elements.



a. North-facing view on Vanden Road at Union Creek.



b. Northeast-facing view on Vanden Road north of Peabody Road.

**Figure 3.7-4a and 3.7-4b
Representative Photographs of Landscape Unit 2**



c. North-facing view on Vanden Road north of Peabody Road.



a. North-facing view on Peabody Road south of Elmira Road.



b. East-facing view from Will C. Wood High School, located on the corner of Peabody Road and Marshall Road.

Figure 3.7-5a and 3.7-5b
Representative Photographs of Landscape Unit 3

Users of Will C. Wood High School have foreground views of a vacant grassy field between the school and Peabody Road, except at the school's track, where the east-facing foreground view is of Peabody Road and the west-facing foreground view is of the high school buildings. Middleground views from the school buildings are of Peabody Road and the associated vehicle traffic, and the landscaping and houses adjacent to the east side of the road. Background views are blocked by middleground elements (Figure 3.7-5b).

Vividness is moderately low (3), intactness is moderate (4), and unity is moderately low (3). As a result, the visual quality of this landscape unit is moderately low (3.3).

Landscape Unit 4: Peabody Road from Alamo Drive to Cement Hill Road/Vanden Road (Alternative E)

This landscape unit is characterized primarily by grazing land and rolling hills, with some residences, commercial, industrial, and institutional (California State Prison, Solano) uses in the northern portion of the landscape unit. Viewers in this unit include residents, employees and patrons of local businesses, recreationists (including bicyclists and park users of Arlington Park), and motorists on the roadway.

Viewers have foreground views that include grazing lands, vegetation, residences partially hidden by landscape buffers, vehicles on the roadway, and overhead utility lines (Figures 3.7-6a and 3.7-6b). For some residents, views are blocked by soundwalls and landscaping adjacent to their homes. In areas where middleground views are available, they consist of rolling hills and some commercial and institutional uses, including California State Prison, Solano (Figure 3.7-6c). Background views are of rolling hills, but in many portions of this landscape unit these views are blocked by foreground and middleground elements. Portions of Landscape Unit 4 have town-like qualities, while other portions have not been disturbed and maintain a rural character.

Vividness (5) is moderately high, intactness (4) is moderate, and unity (3) is moderately low. As a result, the visual quality of this landscape unit is moderate (4).

Landscape Unit 5: Cement Hill Road from Peabody Road to Walters Road, Walters Road Extension from Cement Hill Road to Air Base Parkway (Alternative B)

Viewers in this unit are employees and patrons of local businesses adjacent to Cement Hill Road, recreationists (primarily bicyclists), motorists on Cement Hill Road, and employees and patrons of local businesses along the northwest side of Huntington Drive.

For all viewers, foreground views are of grazing lands, vehicles on the roadway, and commercial and industrial uses. Middleground views are blocked intermittently by foreground elements, but are otherwise of grazing lands and rolling hills (Figure 3.7-7a). In areas where they are not blocked, background views include industrial structures, grazing land, and rolling hills (Figure 3.7-7b). Specifically, public views are available of Cement Hill Range along portions of the landscape unit. There are no significant trees along the corridor. Since the photographic documentation was prepared,



a. North-facing view on Peabody Road north of Cement Hill Road.



b. Southwest-facing view on Peabody Road, from Arlington Park north of Union Creek.

**Figure 3.7-6a and 3.7-6b
Representative Photographs of Landscape Unit 4**



c. Northwest-facing view from Peabody Road south of Union Creek.



a. North-facing view from the intersection of Cement Hill Road and Walters Road Extension.



b. West-facing view from the intersection of Cement Hill Road and Walters Road Extension.

**Figure 3.7-7a and 3.7-7b
Representative Photographs of Landscape Unit 5**

the area represented in Figure 3.7-7 has been undergoing planned residential development. Upon completion, residential development would dominate the foreground view seen in this figure, and the existing foreground and middleground views would disappear, including public views of Cement Hill Range, which are intended to be preserved as indicated in the City of Fairfield General Plan. The residential development is anticipated to be completed before Jepson Parkway is constructed.

Commercial and industrial uses exist along portions of Cement Hill Road and in the southern portion of the landscape unit. However, along the northeast side of Huntington Drive, the overall character of this landscape unit is rural, with expansive views and a lack of visual obstructions. Some portions of the landscape unit have been designated as “Intensive Agriculture Land Use.” The visual quality of this unit is, therefore, higher than that of previously described units.

Vividness (5) is moderately high, and intactness (4) and unity (4) are moderate. Therefore, the visual quality of this landscape unit is moderate (4.3).

Landscape Unit 6—Peabody Road from Cement Hill Road/Vanden Road to Air Base Parkway, Air Base Parkway from Peabody Road to Walters Road (Alternatives C and D)

Viewers in this unit include residents, employees and patrons of local businesses, military personnel (Travis AFB), recreationists (primarily bicyclists), and motorists on Peabody Road and Air Base Parkway.

All viewers have foreground views that include the roadway, fallow agricultural and grazing lands, commercial and industrial uses, and stands of trees. Soundwalls and vegetative buffers obstruct residents’ views from their properties and of their properties (Figures 3.7-8a and 3.7-8b). Vegetation along the roadway is intended to serve as a buffer to residents and does not substantially obstruct views. Specific views include a PG&E utility station near the intersection of Peabody Road and Cement Hill Road and industrial storage yards on Peabody Road south of the intersection of Peabody Road and Cement Hill Road/Vanden Road. Soundwalls and landscape buffers block the views of some residents in this landscape unit. Foreground elements block middleground and background views along much of the corridor. Where middleground and background views are unobstructed, these views include fallow agricultural land, grazing lands, and rolling hills. Middleground and background views sometimes include aboveground utility lines (Figure 3.7-8c).

Vividness (4) is moderate, and intactness (3) and unity (3) are moderately low. Therefore, the visual quality of this landscape unit is moderately low (3.3).

Landscape Unit 7—Huntington Drive from Peabody Road to Walters Road (Alternative D)

Grazing land and fallow agricultural land, and commercial and industrial uses characterize this landscape unit. Viewers in this unit are employees and patrons of local businesses located on either side of the roadway, recreationists (primarily bicyclists), and motorists on Huntington Drive.



a. East-facing view from Air Base Parkway west of Walters Road.



b. North-facing view on Peabody Road north of Air Base Parkway.

Figure 3.7-8a and 3.7-8b
Representative Photographs of Landscape Unit 6



c. West-facing view from Peabody Road. Foreground and middleground views are primarily of grazing land, while background views also include rolling hills and area vegetation. Note the overhead utility lines in the foreground and middleground views.

Figure 3.7-8c
Representative Photograph of Landscape Unit 6

All viewers have foreground views of vehicle traffic on Huntington Drive, business structures, automobile parking, landscaped right-of-ways, and fallow agricultural land (Figures 3.7-9a and 3.7-9b). Middleground views include fallow agricultural lands, automobile traffic on Air Base Parkway, and rolling hills (Figure 3.7-9b). Where background views are not blocked, background views include area vegetation, Travis AFB, and air traffic arriving and departing from the base. For recreationists and motorists, views include more variation because these viewers move through the landscape unit, while employees and patrons of local businesses are primarily stationary and see an unchanging view.

Vividness (4) is moderate, and intactness (3) and unity (3) are moderately low. Therefore, the visual quality of this landscape unit is moderately low (3.3).

Landscape Unit 8—Walters Road from Air Base Parkway to State Route 12 (Alternatives B, C, D, and E)

Viewers in this unit include residents and employees and patrons of local businesses located on either side of the roadway, residents directly south of the SR 12/Walters Road intersection, recreationists (primarily bicyclists), and motorists on Walters Road.

Extensive residential development currently exists or is under construction along both sides of the existing roadway for the section of Walters Road from Air Base Parkway to Peterson Road. For residents living adjacent to Walters Road, foreground views consist of soundwalls and vegetation that block views of the roadway. Middleground and background views are also blocked by these elements. In some areas, however, views are unobstructed by short soundwalls and fences that lack a vegetative buffer. These unobstructed views occur primarily for residents living in the newer housing developments. Foreground views for these residents are of Walters Road (Figure 3.7-10a). Middleground and background views for these residents include agricultural fields and stands of trees. Background views include expansive grazing land and rolling hills.

A large residential development directly to the south of the SR 12/Walters Road intersection has views that include SR 12 (a multi-lane highway), Walters Road (a four-lane road), and grazing lands in the foreground. Commercial and residential structures, interspersed with mature trees, are seen in the middleground. Background views do not exist beyond these middleground viewshed elements (Figure 3.7-10b).

Businesses on Walters Road include gas stations and small retail shops. Views seen by employees and patrons of local businesses are similar to views seen by residents with unobstructed views, because these businesses typically do not have adjacent soundwalls or vegetative buffers.



a. Northeast-facing view while traveling on Huntington Drive.



b. Northwest-facing view from Huntington Drive.

**Figure 3.7-9a and 3.7-9b
Representative Photographs of Landscape Unit 7**



a. North-facing view from Walters Road south of Pintail Drive.



b. North-facing view from the intersection of Walters Road and SR 12.

Figure 3.7-10a and 3.7-10b
Representative Photographs of Landscape Unit 8

For recreationists and motorists on Walters Road, foreground views include residences, roadside and median landscaping, and the roadway itself (Figure 3.7-10a). Middleground and background views are blocked by existing landscaping and residences in most areas. However, in areas where residences are under construction or planned for future construction, middleground and background views for recreationists and motorists on Walters Road are similar to those seen by residents adjacent to the roadway (Figure 3.7-10b).

Vividness (4) is moderate, and intactness (3) and unity (3) are moderately low. Therefore, the visual quality of this landscape unit is moderately low (3.3).

Viewer Groups

Residents, Employees, and Patrons of Local Businesses and Schools

Residents, employees, and patrons of local businesses and schools are generally considered to have higher visual sensitivity than nonrecreational motorists because of their extended viewing periods. Residences and businesses abut the existing roadways in many areas and are frequently not separated from the roads by any visual barriers. Viewers from these locations are likely to be accustomed to the current views of traffic. For other residents, tall and sometimes dense stands of vegetation block views of the various roadways.

Will C. Wood High School is located on Marshall Road, west of the intersection with Peabody Road, in Landscape Unit 6. School users are separated from the roadway by an open, grassy field, which acts as a buffer between the school and the road. Although school users can see the roadway, it is not a prominent feature because of its distance from the school.

Recreationists

Recreationists in the area include bicyclists traveling along the various roadways included in the project and park users at Arlington Park (in Landscape Unit 4). Recreationists use recreation sites to participate in an activity (e.g., bicycling, park activities) and experience the surroundings. Recreationists are more likely to regard the natural and built surroundings as a holistic visual experience compared to motorists, who travel through the surroundings more rapidly and have more fleeting views than recreationists. Because of the purpose of their use and duration of their views, recreationists would have a moderately high sensitivity to changes occurring as a result of the proposed action. However, recreationists traveling through the corridor are likely accustomed to the current views of traffic and construction.

Roadway Users

One of the largest viewer groups in the corridor consists of motorists using the existing roadways. Commuters have generally fleeting views and tend to focus on commute traffic, not on the surrounding scenery, and therefore, are generally considered to have low visual sensitivity. Local residents commute between Vacaville and Fairfield using the existing roadways in the corridor. During peak traffic hours, single views could have long durations, especially near lighted intersections. However,

because the purpose of their use is destination-oriented, viewers who frequently travel this roadway generally possess low visual sensitivity to their surroundings. Compared to recreationists, who use the roadway for the holistic experience they derive, commuters become familiar with the landscape, and their attention is typically not focused on the passing views. At standard roadway speeds during off-peak hours, views are short in duration, and roadway users are more focused on the surrounding traffic and less aware of road signs, their immediate surroundings within the automobile, and other visual features.

3.7.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The analysis of visual and aesthetic effects is based on a qualitative assessment of the change in views at the key viewpoints identified above. In addition, visual simulations of the proposed roadway improvements were prepared to demonstrate potential changes in visual quality at various locations in the corridor associated with project alternatives. The viewpoints from which the simulations were created are shown in Figure 3.7-2. The simulations are referenced in the appropriate impact discussion below.

Summary of Visual/Aesthetic Impacts

Table 3.7-2 compares each alternative and its respective visual/aesthetics impacts. As shown, each of the build alternatives would result in similar minor adverse effects associated with changes in the visual landscape.

Impact VIS-1: Would the Alternatives Result in Temporary Visual Changes from Construction?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed. Only ongoing maintenance of existing roads and facilities would continue. Therefore, there would be no impacts on visual resources resulting from implementation of Alternative A.

Alternatives B, C, D, and E. Construction of the proposed roadway and improvements would create temporary changes in views of and from the corridor with implementation of any of the build alternatives. Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewshed of public roadways and residential and business properties. Safety and directional signage would also be a visible element. Construction staging areas adjacent to the roadway could be in the foreground views of residents. The City of Fairfield General Plan prohibits outdoor storage of materials visible from the freeways; therefore, the presence of staging areas adjacent to the roadway would represent a visual impact related to construction.

**Table 3.7-2
Summary of Visual/Aesthetic Impacts**

Impact Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Temporary visual changes from construction	No Impact	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects
Permanent changes in light and glare	No Impact	Yes	Yes	Yes	Yes
Permanent visual changes resulting from earthwork and vegetation removal	No Impact	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects	Short-term adverse effects
Permanent changes in Landscape Unit 1	No Impact	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	No Impact
Permanent changes in Landscape Unit 2	No Impact	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	Minor Adverse Change in Visual Quality	No Impact
Permanent changes in Landscape Unit 3	No Impact	No Impact	No Impact	No Impact	Minor Adverse Change in Visual Quality
Permanent changes in Landscape Unit 4	No Impact	No Impact	No Impact	No Impact	Minor Adverse Change in Visual Quality
Permanent changes to views in Landscape Unit 5	No Impact	Minor Adverse Change in Visual Quality	No Impact	No Impact	No Impact
Permanent changes to views in Landscape Unit 6	No Impact	No Impact	Adverse Change in Visual Quality	No Impact	Adverse Change in Visual Quality
Permanent changes to views in Landscape Unit 7	No Impact	No Impact	No Impact	Minor Adverse Change in Visual Quality	No Impact
Permanent changes to views in Landscape Unit 8	No Impact	Minor Adverse Change in Visual Quality			
Inconsistency with Local Visual Policies	No Impact	No Impact	No Impact	No Impact	No Impact

Construction-related visual elements would be most noticeable for Alternatives B, C, and D in Landscape Unit 1, and for Alternative E in Landscape Unit 3. For Alternatives B, C, and D, residential and commercial uses are medium density along Leisure Town Road, particularly near I-80. These residents and business patrons, along with those on Peabody Road for Alternative E, would be sensitive to these temporary changes in views. The sensitivity of residents, in particular, to such impacts would be high. Therefore, residents would experience a short-term change in the visual character of the area near their residences while the staging area was in use. Mitigation has been identified to reduce this temporary visual impact related to construction (Mitigation Measure VIS-1).

Impact VIS-2: Would the Alternatives Result in Permanent Changes in Light and Glare?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed and ongoing maintenance of existing roads and facilities would continue. Because the project would not be built, there would be no permanent changes to light and glare in the project vicinity and no impact would occur under this alternative.

Alternatives B, C, D, and E. New sources of light (i.e., for widened roads the overcrossing of the UPRR tracks) and the extension of roadways (i.e., extension of Walters Road for Alternative B) into new areas would result in permanent changes in light and glare. To allow for road widening, existing vegetation that shades the roadway, as on Walters Road, Air Base Parkway, Peabody Road (Landscape Unit 3), and Leisure Town Road (Landscape Unit 1), would be removed. Removal of existing vegetation would increase the amount of reflective glare from the roadway surface, increasing the amount of ambient light affecting viewer groups. Appropriate lighting and vegetative barriers near residences would greatly reduce the amount of light affecting local residents. Landscaping that is included as part of the project (see description under Impact VIS-3, below) could take up to several years to adequately reestablish and would create a substantial long-term reduction in the amount of light and glare. The number of lights throughout the corridor would increase in areas where no roadway lighting currently exists and where existing lighting is insufficient for the proposed roadway. The change in intensity and location of light could result in an increase in light and glare over existing conditions. For Alternatives C, D, and E, new or upgraded light standards and materials used on overcrossing walls and railings and other road materials could also contribute to increased daytime and nighttime glare. Mitigation has been identified to reduce the impact of increased light and glare (Mitigation Measures VIS-2 and VIS-3).

Impact VIS-3: Would the Alternatives Result in Permanent Visual Changes Resulting from Earthwork and Vegetation Removal?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed and ongoing maintenance of existing roads and facilities would continue. Because the project would not be built, there would be no permanent visual changes resulting from earthwork and vegetation removal and no impact would occur under this alternative.

Alternatives B, C, D, and E. Throughout the corridor, the existing roadside landscaping would be functionally and visually affected to accommodate the roadway widening. Existing right-of-way vegetation would be removed throughout the corridor to accommodate the widening, which would change the current visual character of the roadways during construction. Approximate estimates of the total numbers of trees that would be removed within each landscape unit are provided below:

- Landscape Unit 1 (Alternatives B, C, and D): Implementation of Alternatives B, C, or D would result in the removal of approximately 65 trees from Landscape Unit 1. The majority of the trees that would be removed are located east of Leisure Town Road. Of the total number of trees that would be removed, approximately 10 are located near Poplar Road with the remaining trees concentrated in the vicinity of Elmira Road and Alamo Creek.
- Landscape Unit 2 (Alternatives B, C, and D): Implementation of Alternatives B, C, or D would result in the removal of approximately 55 trees from Landscape Unit 2. The majority of the trees that would be removed are located west of Vanden Road.
- Landscape Unit 3 (Alternative E): Implementation of Alternative E would result in the removal of approximately 90 trees from Landscape Unit 3. Trees would be removed from both sides of Peabody Road within this landscape unit.
- Landscape Unit 4 (Alternative E): Implementation of Alternative E would result in the removal of approximately 60 trees within Landscape Unit 4. Most of these trees are located along both sides of Peabody Road between Alamo Drive and the Vacaville City Limits. Very few trees along Peabody Road south of the Vacaville City Limits would be removed.
- Landscape Unit 5 (Alternative B): No trees would be removed within Landscape Unit 5 with the implementation of Alternative B.
- Landscape Unit 6 (Alternatives C and E): Approximately 110 trees would be removed within Landscape Unit 6 with the implementation of Alternatives C or E. This total includes approximately 30 trees along Peabody Road and approximately 80 trees along Air Base Parkway.
- Landscape Unit 7 (Alternative D): Approximately 45 trees would be removed within Landscape Unit 7 with implementation of Alternative D.
- Landscape Unit 8 (Alternatives B, C, D and E): Implementation of any of the four build alternatives would result in the removal of approximately 10 trees from Landscape Unit 8. The majority of the trees that would be removed are located near the Cement Hill Road/Air Base Parkway intersection.

The effects of tree removal would be short-term. Extensive replacement landscaping is included as part of the project design. In many areas, the landscaping would result in a larger vegetation buffer between the roadway and adjacent uses, as summarized below:

- For urban areas, landscaping on both sides of the roadway and a landscaped median would be provided wherever feasible. This would provide new views similar to Walters Road in Landscape Unit 8 for Alternatives B, C, D, and E in Landscape Units 1, 3, and 6. Trees would be planted in

the center median, with an understory of low shrubs, native grasses, and groundcover or decomposed granite. Trees in the center median would be planted at regularly spaced intervals. Where left-turn lanes are provided, the median would be too narrow for tree plantings. Vines would be planted at regular intervals along the frontage road soundwall.

- In rural areas (i.e., Landscape Units 2, 4, and 5), native trees would be planted on both sides of the roadway at irregular intervals in clusters, with at least five trees per cluster and native grasses as understory. Trees would also be used to mark intersections and drainages. In drainage areas, trees would be more densely planted to mimic what might occur naturally. New trees would be planted to augment existing vegetation. The median would be planted with native grasses and shrubs.
- In industrial areas (i.e., Landscape Unit 7), trees would be planted in the median with an understory of low shrubs, grasses, and decomposed granite. The landscaped strips would be planted with native shrubs and groundcover.
- Tree species best suited to the climactic conditions of high wind, lower water requirements, and low maintenance would be selected for rural areas, including California sycamore, gray pine, white alder, Fremont cottonwood, toyon, and other wind- and drought-resistant native species. In urban settings, selected non-native species may also be planted to serve as accent species, such as crape myrtle, ornamental pear, and other wind- and drought-resistant species.

Impact VIS-4: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 1?

Alternatives A and E. Under Alternative A or Alternative E, no roadway improvements would occur in Landscape Unit 1. Therefore, there would be no permanent changes to views in Landscape Unit 1 and no impact would occur under these two alternatives.

Alternatives B, C, and D. Alternatives B, C, and D would change the existing character of Landscape Unit 1 from a mixed suburban/rural setting to a suburban transportation corridor (see Figure 3.7-11). The vividness, intactness, and unity of this unit would be adversely affected by this alternative due to the increase in visual dominance of the roadway; the current visual quality rating would be reduced from a visual quality rating of moderate (3.7) to a rating of moderately low (3). Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 through VIS-4).

Impact VIS-5: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 2?

Alternatives A and E. Under Alternative A or Alternative E, no roadway improvements would occur in Landscape Unit 2. Therefore, there would be no permanent changes to views in Landscape Unit 2 and no impact would occur under these two alternatives.



Existing



With Project (Alternatives B, C, and D)

Figure 3.7-11
Leisure Town Road at Arbor Oaks Drive Looking North

Alternatives B, C, and D. Widening of the roadway and introduction of new roadway under Alternatives B, C, and D would change the existing character of Landscape Unit 2 considerably, from a somewhat rural character to a suburban transportation corridor (see Figure 3.7-12). The vividness, intactness, and unity of the unit would be affected by this alternative due to the increase in visual dominance of the roadway; the current visual quality rating would be reduced from moderate (3.7) to moderately low (3). Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 to VIS-4).

Impact VIS-6: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 3?

Alternatives A, B, C, and D. Under Alternatives A, B, C, or D, no roadway improvements would occur in Landscape Unit 3. Therefore, there would be no permanent changes to views in Landscape Unit 3 and no impact would occur under these four alternatives.

Alternative E. Within Landscape Unit 3, Alternative E would widen the roadway from a four-lane road to a six-lane road. This landscape unit is characterized by residences, businesses, and institutional (school) uses buffered by vegetation and the additional lane in each direction would create increased glare from the roadway surface. The intactness and unity of this unit would be affected due to the increase in visual dominance of the roadway; the existing visual quality rating would be reduced from 3.3 to 3, while the numerical rating would decrease, the landscape unit would retain a visual quality rating of moderately low. Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 through VIS-4).

Impact VIS-7: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 4?

Alternatives A, B, C, and D. Under Alternatives A, B, C, and D, no roadway improvements would occur in Landscape Unit 4. Therefore, there would be no permanent changes to views in Landscape Unit 4 and no impact would occur under these four alternatives.

Alternative E. Landscape Unit 4 is characterized by expansive grazing lands and rolling hills, with views of Arlington Park and California State Prison, Solano. Although it is primarily a rural area, residences and some commercial/industrial uses are currently being developed in the northern portion of this landscape unit. Widening of the road under Alternative E would contribute to a change in the character of Landscape Unit 4 from a somewhat rural character to a suburban transportation corridor (see Figure 3.7-13). The vividness, intactness, and unity of this unit would be affected by this alternative due to the increase in visual dominance of the roadway; the current visual quality rating would be reduced from moderate (4) to moderately low (3.3). Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 to VIS-4).



Existing



With Project (Alternatives B, C, and D)

Figure 3.7-12
Vanden Road East of Peabody Road Looking Northeast



Existing



With Project (Alternative E)

Figure 3.7-13
Peabody Road North of Joseph Gerevas Drive Looking North

Impact VIS-8: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 5?

Alternatives A, C, D, and E. Under Alternatives A, C, D, and E, no roadway improvements would occur in Landscape Unit 5. Therefore, there would be no permanent changes to views in Landscape Unit 5 and no impact would occur under these alternatives.

Alternative B. Permanent changes in views would occur in Landscape Unit 5 with Alternative B in the Walters Road Extension area (see Figure 3.7-14). The extension would connect Cement Hill Road with the existing Walters Road south of Huntington Drive. Currently, that area is primarily grazing land, with some industrial uses at the southern boundary and along Cement Hill Road. Because Huntington Drive and Cement Hill Road are not primary thoroughfares, there are currently few viewers in the Walters Road Extension area compared to other landscape units. Viewers in the area include employees and patrons of local businesses adjacent to Cement Hill Road, recreationists (primarily bicyclists), motorists on Cement Hill Road, and employees and patrons of local businesses along the northwest side of Huntington Drive. Operation of Alternative B would create new views in the landscape unit for recreationists and motorists who would travel on the new roadway. New views would be rural in character, primarily views of open agricultural land.

Although commercial and industrial uses exist along portions of Cement Hill Road and in the southern portion of the landscape unit, along the northeast side of Huntington Drive, the overall character of this landscape unit is rural, with expansive views and a lack of visual obstructions, and is generally a more natural setting than other landscape units. As noted, the area northwest of the extension has been undergoing planned development (Goldridge), which has introduced substantial nighttime glare into this landscape unit. Therefore, although the extension of new roadway under this alternative would add a new source of permanent light and glare, it would not introduce light and glare into an undisturbed area.

The Walters Road Extension profile would conform to the existing grade at Air Base Parkway and rise approximately 30 feet to cross over the UPRR tracks, with retaining walls on both sides of the rail crossing. The approaches to the structure over the UPRR tracks would be constructed on fill. An additional raised structure would be constructed at the detention pond crossing. The new roadway would cross through existing vacant agricultural land between Huntington Drive and Cement Hill Road. This would create a substantial change in the visual setting of this area by introducing roadway elements (the roadway, motorized vehicles, bicyclists, recreationists, and pedestrians) in an area that is currently vacant grazing land and would result in the obstruction of previously unobstructed views of open agricultural land. This change, along with the vertical structures described above, would create new visual elements in Landscape Unit 5 that would reduce the visual quality of the landscape unit.

Because of the above elements, the vividness, intactness, and unity of this landscape unit would be affected; the existing visual quality rating for the landscape unit would be reduced from moderate (4.3) to moderately low (3). Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 to VIS-4).



Existing



With Project (Alternative B)

Figure 3.7-14
Strassberger Drive Looking Southeast

Impact VIS-9: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 6?

Alternatives A, B, and D. Under Alternatives A, B, and D, no roadway improvements would be constructed in Landscape Unit 6. Therefore, there would be no permanent changes to views in Landscape Unit 6 and no impact would occur under these alternatives.

Alternatives C and E. Alternatives C and E would include an overcrossing that carries the roadway and bicycle/pedestrian facilities over the UPRR tracks just south of the intersection of Peabody and Vanden Roads (see Figure 3.7-15). A ramp would also be constructed in this landscape unit as a partial interchange eastbound for Air Base Parkway traffic continuing left onto northbound Peabody Road (see Figure 3.7-16). The land immediately surrounding the intersection consists primarily of industrial uses and open land. Construction of the overcrossing and the ramp would introduce new, large visual elements in Landscape Unit 6 that would obstruct existing views and would reduce the overall visual quality of the landscape unit. There are no sensitive receptors within the landscape unit, residences in the area are primarily hidden from sight by soundwalls and dense landscaping, which results in the obstruction of views. Therefore, views of the overcrossing and the ramp would likely be unavailable to residents. Construction of these features would cause a substantial change to the visual character of the area because they would be the largest roadway features within the corridor. The future Fairfield-Vacaville Multimodal Train Station would be constructed on the southeast corner of the Peabody Road/Vanden Road intersection as part of a separate project, and would contribute to the overall transit-oriented qualities of Landscape Unit 6. The overcrossing would be designed to facilitate automobile, pedestrian, and bicycle access to the station.

The vividness, intactness, and unity of this landscape unit would be affected by these alternatives; the existing visual quality rating would be reduced from moderately low (3.3) to low (2.3). Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 to VIS-4).

Impact VIS-10: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 7?

Alternatives A, B, C, and E. Under Alternatives A, B, C, and E, no roadway improvements would occur in Landscape Unit 7. Therefore, there would be no permanent changes to views in Landscape Unit 7 and no impact would occur under these alternatives.

Alternative D. Landscape Unit 7 is currently characterized by a mix of commercial and industrial uses and agricultural lands. Alternative D would change the existing character by increasing the urban feel of Landscape Unit 7 by expanding the roadway from two lanes to four lanes. The vividness, intactness, and unity would be reduced; the current visual quality rating would be reduced from a numerical rating of (3.3) to (3), while still retaining the unit's visual quality rating of moderately low. Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 to VIS-4).



Existing



With Project (Alternatives C, D, and E)

Figure 3.7-15
Peabody Road North of Markeley Lane Looking North



Existing



With Project (Alternatives C, D, and E)

Figure 3.7-16
Air Base Parkway East of Peabody Road Looking West

Impact VIS-11: Would the Alternatives Result in Permanent Changes to Views in Landscape Unit 8?

Alternative A. Under Alternative A, the proposed roadway improvements would not be constructed and ongoing maintenance of existing roads and facilities would continue. Because the project would not be built, there would be no permanent changes to views in Landscape Unit 8 and no impact would occur under this alternative.

Alternatives B, C, D, and E. Alternatives B, C, D, and E would include the construction of soundwalls along sections of the existing Walters Road. These soundwalls would reduce the visual quality of the landscape unit, inasmuch as they would create a more uniform and possibly institutional feel to the area. Landscape Unit 8 is characterized by mature trees and walls that provide a vegetated buffer through this portion of the corridor. The introduction of soundwalls would reduce the vividness, intactness, and unity; the current visual quality rating would be reduced from a numerical rating of (3.3) to (3), while still retaining the unit's visual quality rating of moderately low. Mitigation measures, along with project design elements described above in Impact VIS-3, have been identified to reduce this impact (Mitigation Measures VIS-2 to VIS-5).

Impact VIS-12: Would the Alternatives be Consistent with Local Visual Policies?

Alternative A. Under Alternative A, the proposed roadway improvements would not be implemented and ongoing maintenance of existing roads and facilities would continue. Because the project would not be implemented, there would be no inconsistency with local visual policies and no impact would occur under this alternative.

Alternatives B, C, D, and E. These alternatives are generally consistent with and would not conflict with local visual policies, as described below.

For all alternatives, the Scenic Resources Element of the Solano County Draft General Plan Update identifies SR 12 as a scenic roadway within the County (within Landscape Unit 8), as well as I-80. However, Alternatives B, C, D, and E would not have a substantial effect on the existing views from SR 12 or I-80. Therefore, the policies regarding scenic roadways do not apply.

For all alternatives, Suisun City General Plan Community Character and Design Policy 13 states that “[t]he City will generally require that existing trees of minimum height and diameter be preserved and integrated into new development. Specific requirements for tree preservation will be included in the City’s Development Guidelines.” Alternatives B, C, D, and E include implementation of a landscape plan as part of the project design elements detailed in Impact VIS-3 and would include replanting of trees as required by local government.

Vacaville General Plan Land Use Element Policy 2.1-G5 requires the “[d]esign [of] aesthetically pleasing roadways, including a loop street system lined with trees or other appropriate landscaping, that connect Vacaville neighborhoods and served planned development. Streets alone should not be used to set the outer limits of urbanization.” The proposed roadway would be designed to be

aesthetically pleasing by incorporating landscaping with bicycle, pedestrian, and vehicle use. This would apply for Alternative E in Landscape Units 3 and 4; and for Alternatives B, C, and D in Landscape Units 1 and 2. In addition to the General Plan, Chapter 14.09.131 of the Vacaville Land Use Development Code establishes regulations controlling the preservation and removal of trees on private and public property within the City. The project would, to the extent possible, accommodate the requirements of the City of Vacaville Tree Preservation Ordinance.

The requirement of the Fairfield General Plan Circulation Element Policy CI 11.2 is to “[r]oute roadways in careful relationship to adjoining land uses to minimize noise, visual, and other impacts.” Alternative B would route a roadway (Walters Road Extension) through grazing land and would considerably change the existing views in Landscape Unit 5. Mitigation Measures VIS-2 to VIS-5, along with project design elements described for Impact VIS-3, would reduce this impact.

The requirement of the Fairfield General Plan Urban Design Element Policy UD 4.5 is to “[s]creen negative views through site planning, architectural, and landscape devices,” and Policy UD 6.1 is to “[p]reserve existing significant trees and extensively plant new trees where appropriate.” The proposed roadway would be integrated into the local surroundings and use landscaping to screen negative views, as described in the project design. This would apply for Alternative B in Landscape Units 2 and 5; for Alternative C in Landscape Units 2 and 7; for Alternative D in Landscape Units 2 and 6; and for Alternative E in Landscape Units 4 and 7. As discussed in the project description and as part of the project design elements detailed in Impact VIS-3, new trees would be planted where appropriate.

Fairfield Zoning Code Section 25.36 regulates tree conservation within the city limits. This ordinance regulates the removal of protected trees and describes the requirements of tree removal permits and the mitigation requirements for removal of trees during development, as described in the Regulatory Setting. The project would, to the extent possible, accommodate the requirements of the City of Fairfield Tree Ordinance.

Impact VIS-13: Would the Alternatives Result in Cumulative Visual/Aesthetic Effects?

Potential effects on visual resources would include both temporary impacts from construction, such as the presence of construction equipment and staging activities, as well as longer term impacts resulting from removal of vegetation that would take several years to reestablish and the increased presence of vehicles along the roadways. In addition, the elevated structures associated with the project would introduce new visual elements into the landscape. However, as described above, these changes would have a minimal adverse effect on the existing visual quality of the landscape units in the corridor.

Several of the proposed projects and on-going projects in the surrounding area are transportation oriented; these developments, in addition to the Jepson Parkway Project would contribute to the transition from a mixed suburban/rural setting throughout the corridor, to a suburban transportation corridor. Improvements to existing roadways associated with project alternatives, as well as other projects in the corridor such as the addition of a multimodal train station, a bicycle path which would follow the entire length of the corridor, as well as the expansion of arterial roads in the area, would

contribute to the transportation oriented theme within the project area. Implementation of Mitigation Measures VIS-1, VIS-2, VIS-3, VIS-4, and VIS-5 would avoid and minimize visual impacts associated with the project. Also, to the extent possible, the project would accommodate the requirements of the Vacaville and Fairfield tree preservation ordinances. Therefore, the project would not make a cumulatively considerable contribution to impacts on visual resources.

3.7.4 Context Sensitive Solutions

Caltrans uses “Context Sensitive Solutions” (CSS) as an approach to plan, design, construct, maintain, and operate its transportation system. These solutions use innovative and inclusive approaches that integrate and balance community, aesthetics, historic, and environmental values with transportation safety, maintenance, and performance goals. CSS are reached through a collaborative, interdisciplinary approach involving all stakeholders and require careful, imaginative, and early planning, and continuous community involvement.

Caltrans’s *Highway Design Manual*, FHWA regulations, FHWA’s *Flexibility in Highway Design* publication, and the American Associate of State Highway Transportation Officials’ *A Policy on Geometric Design of Highways and Streets* all explicitly allow flexibility in applying design standards and approving exceptions to design standards where validated by applying sound engineering judgment. The design guidelines seek transportation solutions that improve mobility and safety while complementing and enhancing community values and objectives.² As such, the project would adhere to the design guidelines in order to balance a sense of community, aesthetics, historic, and environmental values with transportation goals.

3.7.5 Avoidance, Minimization, and/or Mitigation Measures

To avoid and minimize impacts to the visual landscape and to comply with local visual policies the project would, to the extent possible, accommodate the requirements of the City of Vacaville and the City of Fairfield tree preservation ordinances. These ordinances are described in detail in the regulatory setting. The project would apply for the appropriate local permits and provide replacement trees as required.

Mitigation Measure VIS-1: Install Temporary Visual Barriers between Construction Staging Areas and Residences. During construction, fencing (e.g., chain link with slats or fencing made of windscreen material) will be installed to obstruct undesirable views of construction staging areas from adjacent residences. The fencing will also help to maintain the privacy of residents. These fences will be approximately 7 feet high and will block views from residents’ yards.

Mitigation Measure VIS-2: Prepare and Implement a Lighting Plan. STA or the appropriate local agency will require the contractor to prepare and implement a lighting plan that demonstrates that project lighting will not increase ambient nighttime lighting conditions for surrounding residential properties by more than 0.5-foot candles, the recommended level of illumination for a walkway along a

² California Department of Transportation, “Director’s Policy: Context Sensitive Solutions,” November 29, 2001, accessed at <http://www.dot.ca.gov/hq/oppd/context-solution.pdf>, on March 30, 2009.

residential roadside. Designs for shields and directional lighting will be included in this plan to minimize the distance at which light emanating from the proposed action is visible and to mitigate the effects of glare. The residential areas will be shielded from lighting effects to the extent feasible. The following points provide additional detail on street lights to be incorporated into the lighting plan:

- Street lights will be cut-off-type fixtures that cast low-angle illumination to minimize incidental spillover of light onto adjacent properties and open space. Fixtures that project upward and horizontally shall not be used.
- Street lights will be shaded and directed away from the residential and open space areas adjacent to the project site.
- Street light lamps will provide natural light qualities, and will be used only where necessary for safety and security purposes.
- Street light mountings will be downcast and the height of placement minimized to reduce potential for backscatter into the nighttime sky and incidental spillover into adjacent properties and open space. Street light mountings shall have low-sheen, nonreflective finishes.

Mitigation Measure VIS-3: Construct Walls and Barriers with Low-Sheen and Non-Reflective Surface Materials. Retaining walls and barriers (e.g., railings) will be designed with low-sheen, nonreflective surface materials to reduce potential for glare. Finishes on walls will be matte and roughened; the use of smoothly troweled surfaces and glossy paint will be avoided.

Mitigation Measure VIS-4: Incorporate Design Characteristics to Minimize Visual Obtrusion. Structural and vertical elements such as bridges, railings, abutments, piers, supports, and similar features will have a minimum profile to reduce visual intrusion and obstruction. Supports, piers, and railings will have an “open” structure (i.e., “transparency”) wherever possible to facilitate views beyond. Vertical elements will be designed at even intervals and spacing to create aesthetic rhythm. Finished surfaces on all vertical features will have color and sheen that minimize contrast with the daytime sky. Additionally, major vertical elements at locations identified by the local agency, such as bridges and creek crossings, will be celebrated through public art and landscape enhancements and will be used as community gateway features.

Mitigation Measure VIS-5: Provide Aesthetic Treatments to All Noise Barriers. Aesthetic treatments to all noise barriers that may be required for the chosen alternative will be added, including landscaping and low-sheen and non-reflective surface materials. The finish will be matted and roughened, and the use of smooth troweled surfaces and glossy paint will be avoided.

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3.8 Cultural Resources

3.8.1 Regulatory Setting

“Cultural resources” as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include the National Historic Preservation Act of 1966, as amended, (NHPA), which 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) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA’s responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773), effective July 1, 2007.

3.8.2 Affected Environment

The information below is summarized from the Historic Property Survey Report (HPSR), including the Archaeological Survey Report and Historic Resources Evaluation Report. These reports are incorporated by reference and are available for review at the Solano Transportation Authority’s (STA’s) and Caltrans’ offices.

The affected environment is identified as the Area of Potential Effects (APE). The APE is the geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE for the Jepson Parkway Project is based on the construction footprints for each alternative and the total existing and required right-of-way width. The archaeological APE encompasses all areas where project-related ground disturbance would occur, including full fee title right-of-way that would be acquired for roadway widening, fill, excavation, construction easements, staging areas, and access routes. The architectural APE encompasses entire parcels in which a partial take is needed for roadway right-of-way and on which structures are located. The APE line extends 200 feet into vacant parcels.

To determine the potential for existing cultural resources in the APE, a record search was conducted on July 27, 2001 at the Northwest Information Center of the California Historical Resources Information System at Sonoma State University. The record search covered a 1.0-mile radius of the APE. An updated record search focusing on a 0.5-mile radius of the APE was conducted on August 11, 2005. Sources consulted for the record search included maps of previous cultural resource studies and known cultural resource locations, as well as the NRHP, the *California Register of Historical Resources* (CRHR; California Department of Parks and Recreation 1998), the *California Inventory of Historic Resources* (California Department of Parks and Recreation 1976), *California Historical Landmarks*

(California Department of Parks and Recreation 1996), and *California Points of Historical Interest* (California Department of Parks and Recreation 1992 and updates). Additional background research and field studies were conducted to arrive at the conclusion presented in the HPSR.

Letters describing the proposed action and requesting any information on potential cultural resources in the APE were sent to the Vacaville Museum, Solano County Historical Society, and Solano County Historical Records Commission. The Native American Heritage Commission (NAHC) was contacted for information regarding important religious and cultural sites that might be located in the APE and vicinity. A letter received from NAHC in September 2001 indicated that there are no sacred Native American sites or cultural resources in the APE and its vicinity. The NAHC letter also provided contact information for Native American individuals who may be familiar with the APE. There was no response from the individuals contacted in September 2001. After subsequent contact on November 25, 2002, Kesner Flores communicated that he does not know of any problems or issues regarding Native American sites or remains in the APE and its vicinity.¹

There are no archaeological resources within the APE. Two built environment resources in the APE were evaluated and determined ineligible for inclusion on the NRHP. As a result of the research and coordination conducted in compliance with Section 106, Caltrans determined a finding of No Historic Properties Affected was appropriate for the project. The SHPO letter of March 2, 2006 concurred with Caltrans' findings.

The following provisions are provided to address the discovery of cultural materials or human remains:

- If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area shall be diverted until a qualified archaeologist can assess the nature and significance 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 shall notify the Native American Heritage Commission (NAHC) who shall then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains shall contact Caltrans District 04, Office Chief, Office of Cultural Resources, so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code (PRC) 5097.98 are to be followed as applicable.

3.8.3 Environmental Consequences (including Permanent, Temporary, Direct, Indirect, and Cumulative)

This section provides a summary and comparison of impacts to cultural resources resulting from the alternatives. As described in detail below, none of the alternatives would affect cultural resources.

¹ Flores, Kesner. Cortina Band of Indians and the Wintun Environmental Protection Agency. November 25, 2002—telephone conversation. Fitzgerald, R. T., T. L. Jones, and A. Schroth.

Impact CR-1: Would the Alternatives Affect Identified Cultural Resources?

Alternative A. Under Alternative A, ongoing maintenance of existing roads and facilities would continue. The project would not be implemented and no construction activities would occur. Therefore, there is no potential for this alternative to affect cultural resources.

Alternative B, C, D, and E. As described under the affected environment section above, the investigations in the APE did not identify any cultural resources. Subsequently, construction and operation of Alternatives B, C, D, and E has no potential to affect cultural resources.

3.8.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are necessary because the alternatives would not affect cultural resources.

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PHYSICAL ENVIRONMENT

3.9 Hydrology and Floodplains

This section addresses issues related to hydrology and floodplains in the corridor and vicinity. The information below is summarized from the Location Hydraulic Study (LHS), including the Floodplain Evaluation Report Summary (FERS; appended to the LHS), and the Hydrology and Water Quality Technical Report prepared for the project. These reports are incorporated by reference and are available for review at the Solano Transportation Authority's (STA's) and Caltrans' offices.

3.9.1 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. Federal Highway Administration (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; and
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The base 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 base floodplain.”

Executive Order 11988 guidelines for assessing potential floodplain impacts include an eight-step process that agencies should carry out as part of their decision-making process on projects that have potential impacts to or within the floodplain.

- Determine if a proposed action is in the base floodplain (that area which has a one percent or greater chance of flooding in any given year).
- Conduct early public review, including public notice.
- Identify and evaluate practicable alternatives to locating in the base floodplain, including alternative sites outside of the floodplain.
- Identify impacts of the proposed action.
- If impacts cannot be avoided, develop measures to minimize the impacts and restore and preserve the floodplain, as appropriate.
- Reevaluate alternatives.

- Present the findings and a public explanation.
- Implement the action.

Among a number of things, the Interagency Task Force on Floodplain Management clarified the Executive Order with respect to development in floodplains, emphasizing the requirement for agencies to select alternative sites for projects outside the floodplains, if practicable, and to develop measures to mitigate unavoidable impacts.

The Caltrans environmental review process, including preparation of Location Hydraulics Studies, Summary Floodplain Encroachment Reports, and environmental review document, is used to determine compliance with Executive Order 11988; the environmental review process follows the Executive Order 11988 guidelines.

The following federal, State, and local plans and regulations are applicable to hydrology and floodplains in the corridor.

Federal Regulations

Federal Flood Insurance Program

The National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973 were enacted to reduce the need for large, publicly-funded flood control structures and disaster relief. The approach of these acts is to restrict development on floodplains. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development on floodplains. FEMA issues Flood Insurance Rate Maps (FIRMs) for communities participating in the NFIP. These maps delineate flood hazard zones in the community.

State Regulations

California Reclamation Board

The California Reclamation Board cooperates with various agencies of the federal, State, and local governments in establishing, planning, constructing, operating, and maintaining flood control works. The board also maintains the integrity of the existing flood control system and designated floodways through its regulatory authority by issuing permits for encroachments.

Local Regulations

Solano County Code¹

Chapter 9 Drainage and Land Leveling. This chapter discusses permit requirements for interference with public drainage and control facilities including conformance with grading and erosion control standards.

Chapter 12.2 Flood Damage Prevention. The purpose of this ordinance is to promote public health, safety, and general welfare; and to minimize public and private losses due to flood conditions in specific areas by provisions designed: (a) to protect human life and health; (b) to minimize expenditure of public money for costly flood control projects; (c) to minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; (d) to minimize prolonged business interruptions; (e) to minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; streets and bridges located in areas of special flood hazard; and others.

Section 12.2-13. Methods of Reducing Flood Losses. In order to accomplish its purposes, this ordinance includes methods and provisions for:

- (a) Restricting or prohibiting uses which are dangerous to health, safety, and property due to water hazards, or which result in damaging increases in flood heights or velocities;
- (b) Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- (c) Controlling the alteration of natural floodplains, stream channels, and natural protective barriers which help accommodate or channel flood waters;
- (d) Controlling filling, grading, dredging, and other development which may increase flood damage; and
- (e) Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas.

Chapter 13 Grading and Erosion Control. The purpose of this chapter, in conjunction with Uniform Building Code as adopted, is to provide the means for controlling soil erosion, sedimentation, increased rates of water runoff and related environmental damage by establishing minimum standards and providing regulations for the construction and maintenance of fills, excavations, cuts and clearing of vegetation, revegetation of cleared areas, drainage control, and the protection of exposed soil surfaces in order to protect downstream waterways and wetlands and to promote the safety, public health, convenience and general welfare of the community.

¹ County of Solano, California. 2006. Solano County Code. <<http://www.co.solano.ca.us/countycode.asp>> Accessed April 23, 2007.

3.9.2 Affected Environment

The Hydrology and Water Quality Technical Report describes the environmental and regulatory setting of the corridor, the environmental consequences of the alternatives as they pertain to hydrology and water quality, and measures to minimize impacts of the proposed action on hydrology and water quality. The bridges spanning Old Ulatis Creek, New Ulatis Creek, and Horse Creek were widened as separate projects. According to the City of Vacaville and studies for this project, the base floodplain is contained at these locations.

Surface Water Resources

The Jepson Parkway corridor includes two major hydrologic units (Lower Sacramento and Suisun Bay) that contain several smaller watersheds. Portions of the corridor, primarily in Fairfield and Suisun City, are connected to Suisun Slough, which drains to Suisun Bay via seasonal and perennial streams in the area. Area streams have been used primarily for fish and wildlife habitat, groundwater recharge, conveyance, and agricultural water supply. The streams in this area crossed by all of the project alignments are Alamo Creek and McCoy Creek. Leisure Town Road crosses Horse Creek, Old Ulatis Creek, New Ulatis Creek, Alamo Creek, and New Alamo Creek. Vanden Road crosses Union Creek. Peabody Road crosses Alamo Creek, Union Creek, the Putah South Canal, and McCoy Creek and the McCoy Detention Basin. The Putah South Canal flows through the corridor from northeast to southwest, delivering water from Lake Berryessa for agricultural and municipal purposes. Cement Hill Road and the proposed Walters Road Extension cross McCoy Creek. Figure 3.9-1 shows the named streams and creeks within the study area and their mapped floodplains.

Base Floodplain

FEMA provides information on flood hazard and frequency for cities and counties on its FIRMs. FEMA identifies designated zones to indicate flood hazard potential. The 100-year floodplain is defined as “the area subject to flooding by the flood or tide having a 1 percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the 100-year floodplain.” Changes to the floodplain will require concurrence from the FEMA.

In general, flooding occurs along waterways, with infrequent localized flooding also occurring because of constrictions of storm drain systems or surface water ponding. As part of preparation of the LHS, FEMA 100-year base floodplain limits were mapped onto design drawings for the build alternatives. Figure 3.9-1 shows the streams and their associated 100-year base floodplains. The base floodplain limits for each action alternative are shown on Figures 3.9-2 to 3.9-6.

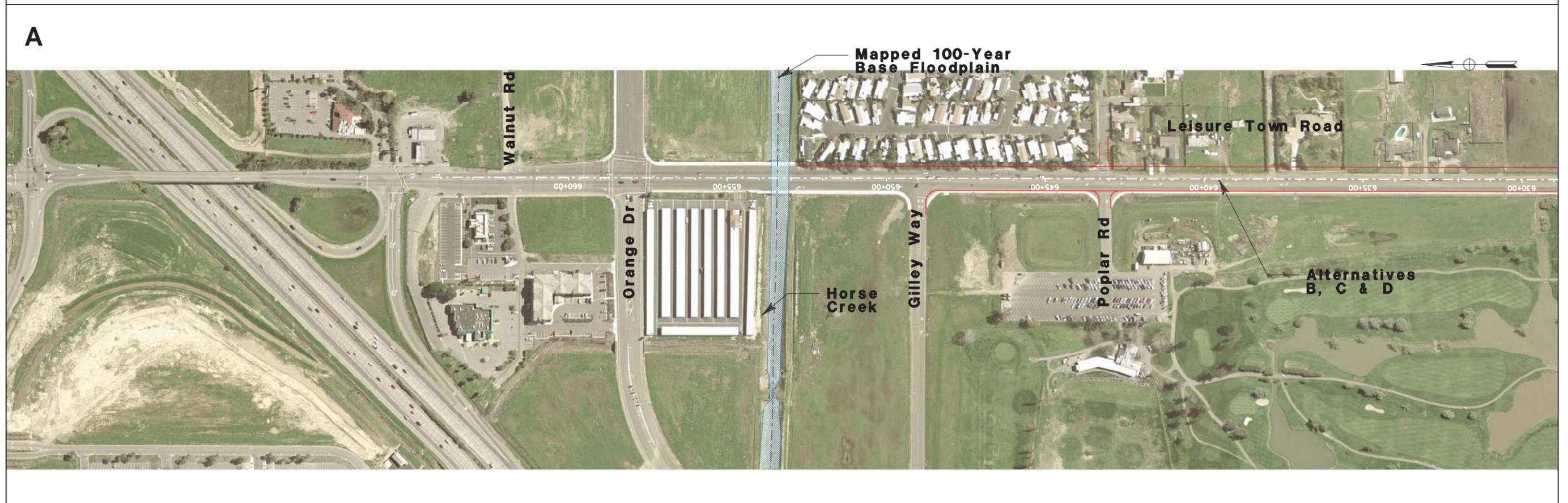
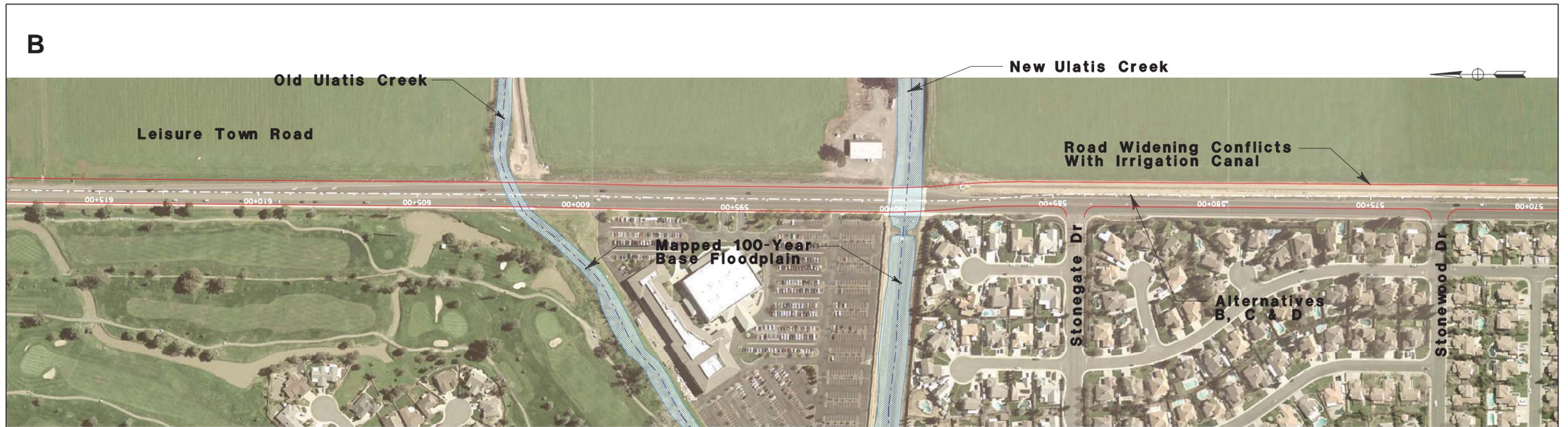


Figure 3.9-2
Leisure Town Road 100-Year Base Floodplain

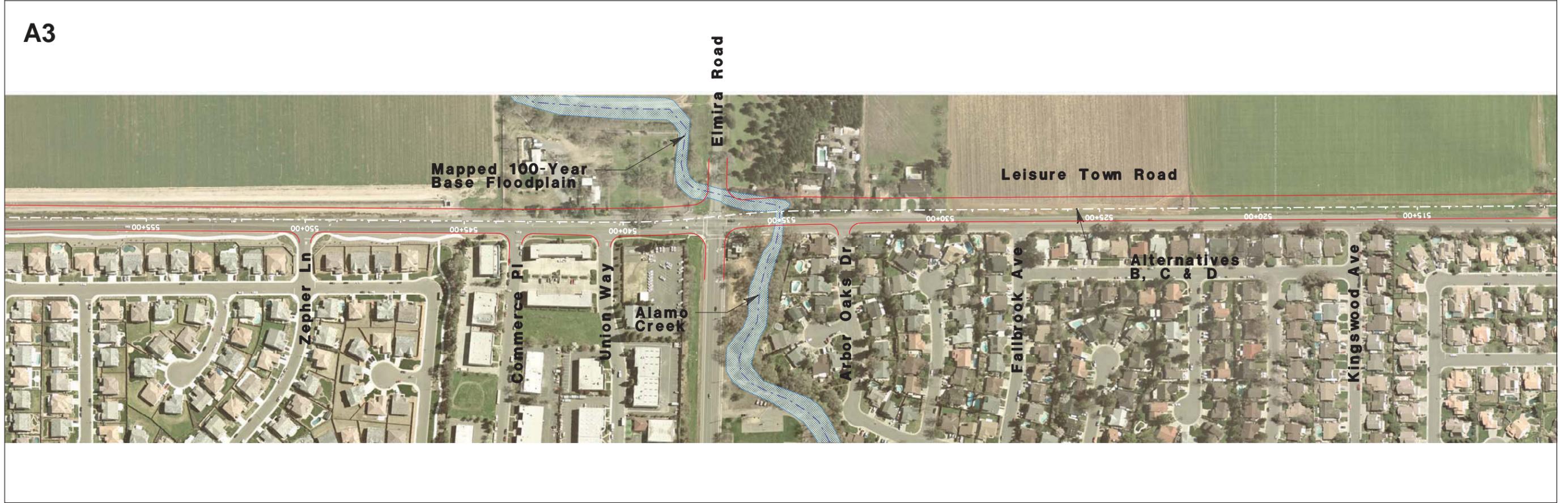


Figure 3.9-3
Leisure Town Road 100-Year Base Floodplain

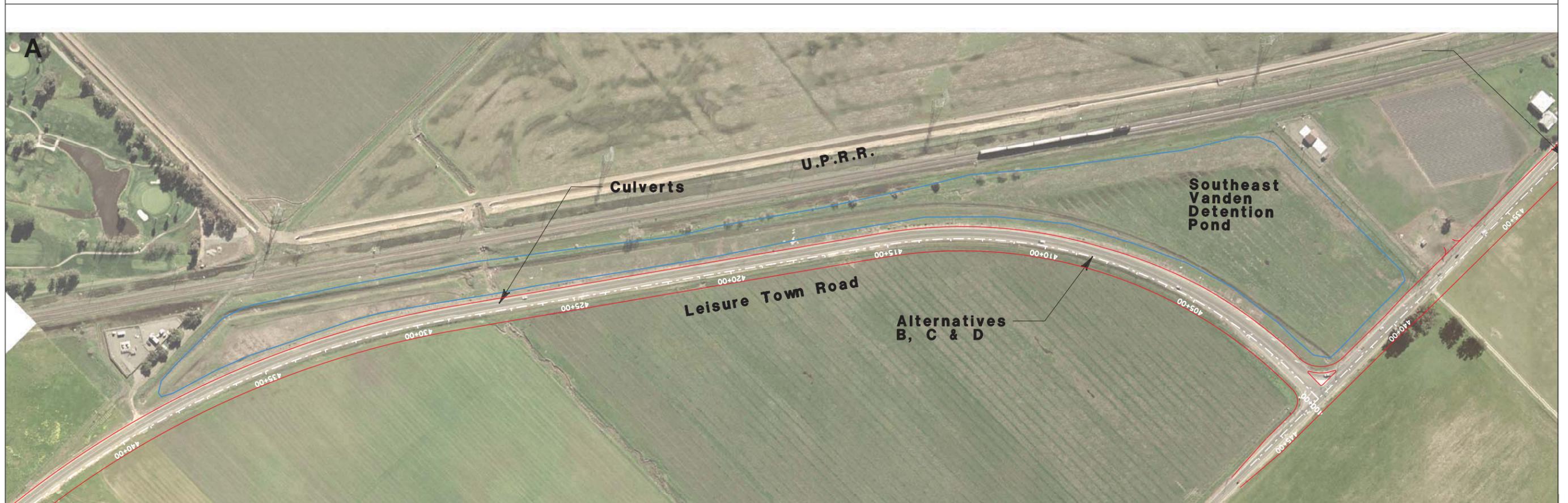
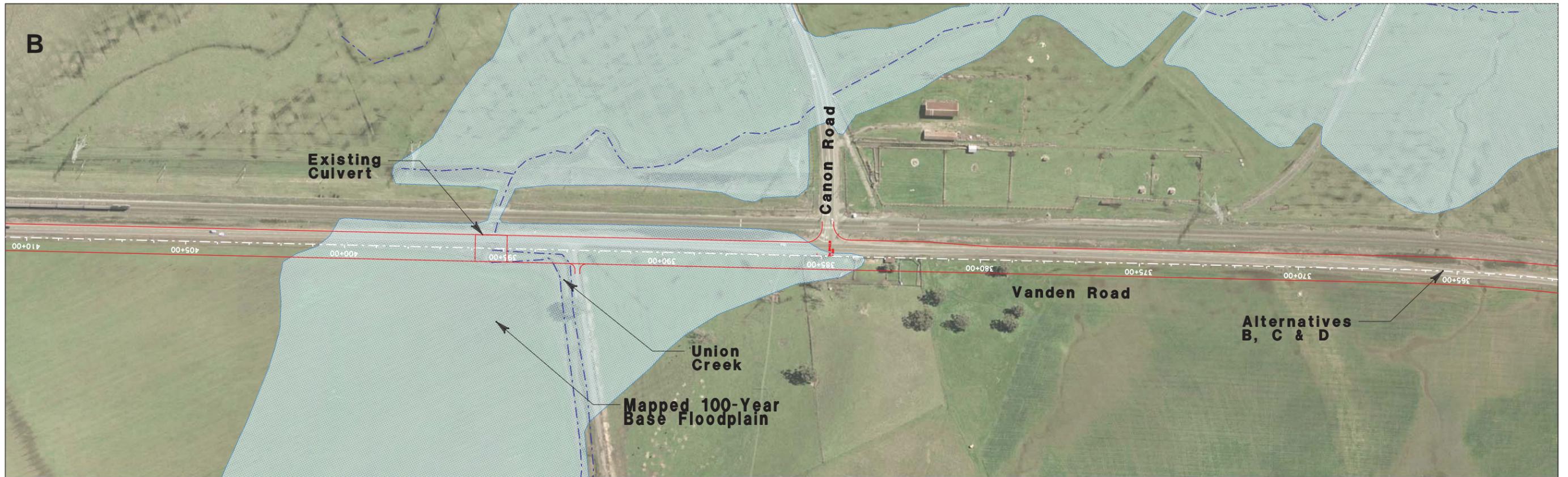


Figure 3.9-4
Leisure Town and Vanden Road 100-Year Base Floodplain

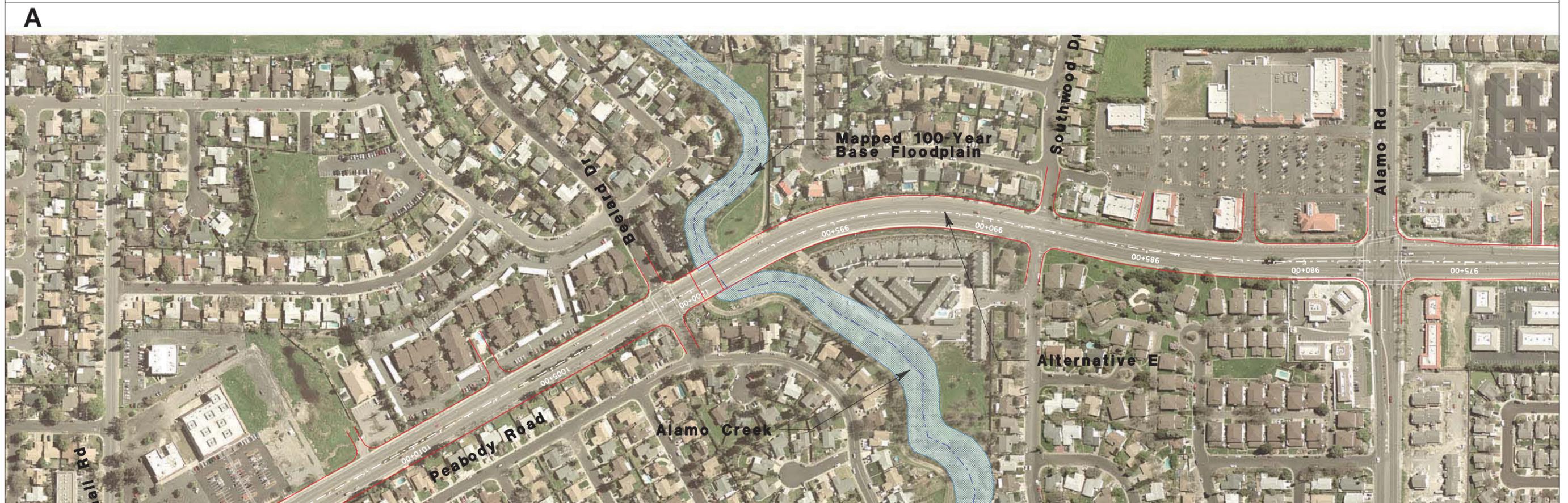
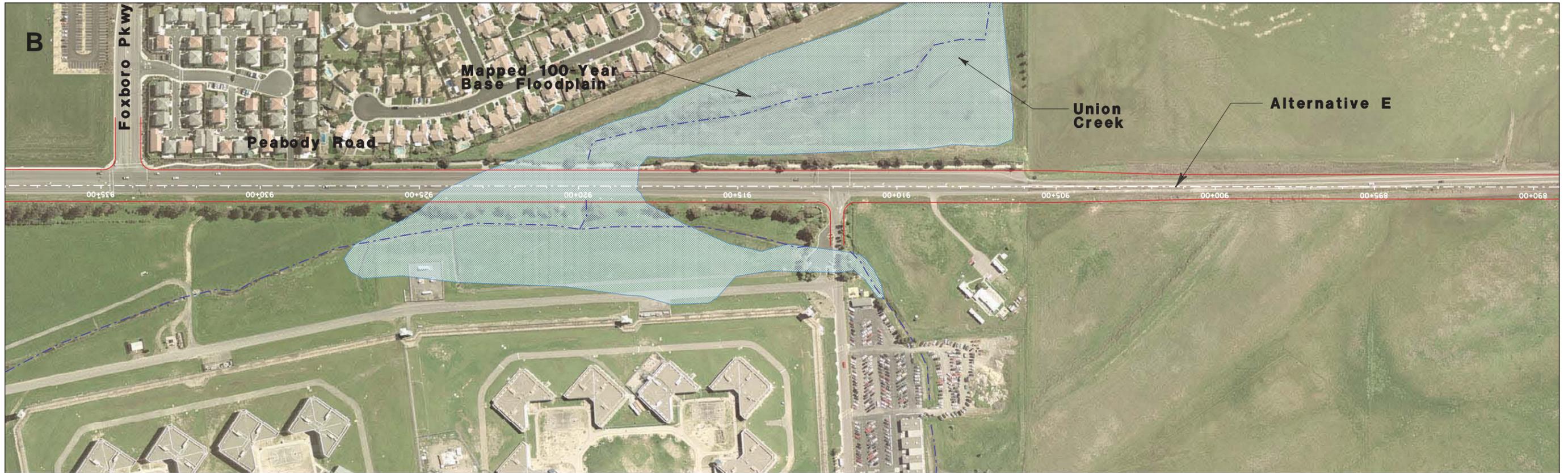


Figure 3.9-6
Peabody Road 100-Year Base Floodplain
 3.9-15

3.9.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The assessment of impacts on hydrology and floodplains is based on the findings of the LHS, including the FERS, an appendix to the LHS, as well as a review of agency and statutory requirements relevant to the proposed action and corridor.

Summary of Impacts to Hydrology and Floodplains

Table 3.9-1 summarizes the potential for each alternative to affect hydrology and floodplains. As shown, each of the build alternatives would alter drainage conditions in the corridor. Each build alternative also crosses mapped and unmapped areas of the floodplain. A detailed description of hydrology and floodplain impacts for each alternative is presented below.

**Table 3.9-1
Summary of Impacts to Hydrology and Floodplains**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Permanently change local stormwater drainage patterns or volumes	No	Yes	Yes	Yes	Yes
Encroach into the FEMA-mapped 100-year floodplain	No	Yes	Yes	Yes	Yes
Potentially encroach into floodplains not mapped by FEMA	No	Yes	Yes	Yes	Yes

Impact HYD-1: Would the Alternatives Permanently Change Local Stormwater Drainage Patterns or Volumes?

Alternative A. Under Alternative A, the proposed roadway improvements and widening would not be constructed. Ongoing maintenance of existing roads and facilities would continue. However, improvements to existing stormwater drainage and conveyance infrastructure pursuant to implementation of the build alternatives would not occur.

Alternative B. Under Alternative B, the introduction of new impervious surfaces caused by roadway widening and the construction of new roadway surface for the Walters Road Extension would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. This additional runoff could contribute to the flood potential of natural stream channels and accelerate soil erosion and stream channel scour.

Sections of the alignment would encroach on FEMA 100-year floodplains (Impact HYD-2). Encroachment into the floodplain from road widening and bridge crossings, and the resulting changes

in impervious surfaces, could cause direct and indirect changes in local stormwater drainage patterns. Direct changes could occur from road widening by slightly reducing floodplain storage capacity because it would take up slightly more space in some of the floodplain. Bridges could directly reduce hydraulic capacity of channels by placing pilings or other structures in the channels that could restrict flow. Indirectly, increased impervious areas could contribute more runoff, and therefore, more flood flows.

Many of the existing drainage facilities in the rural sections of Alternative B are undersized or full of sediment. Most facilities would be replaced or upgraded to meet design standards or inadequate capacity. Within the urban areas of Leisure Town Road, Cement Hill Road, and Walters Road, existing storm drain facilities would be used or upgraded. Upgrades would be completed to meet design standards and improve capacity. Alternative B would also lengthen the culvert on Alamo Creek (Figure 3.9-3). Lengthening the culvert may affect creek hydraulics. A detailed hydraulics analysis would be performed to determine whether the existing culvert can be lengthened or should be replaced with a larger culvert or series of culverts that has better hydraulic conveyance (Mitigation Measures HYD-1 and HYD-2). Alternative B would not adversely alter drainage patterns and would improve existing conditions by reducing the potential for localized flooding due to the current lack of storm drainage facilities.

Alternative C. The impact under Alternative C would be similar to Alternative B; although less new impervious surface would be created under Alternative C. Alternative C would require expansion of road crossings for Alamo Creek, New Alamo Creek, and Union Creek. Alternative C would follow Alternative B south as far as the Peabody Road/Cement Hill Road intersection, with the same changes in impervious surfaces resulting from the widening of the Leisure Town Road from two lanes to four lanes. Alternative C would also widen sections of Peabody Road from Cement Hill Road to Air Base Parkway and from Air Base Parkway to Walters Road from four lanes to six lanes, thereby increasing the impervious surfaces in these areas. Along Air Base Parkway the existing conveyance ditch on the north side of the road would be encroached on, requiring a realignment of the ditch and requiring extending and possibly enlarging the double culvert crossing at Walters Road. A detailed hydraulics analysis would be performed to determine whether the existing culverts can be lengthened or should be replaced with larger culverts. Encroachment into the floodplain from road widening and bridge crossings, and the resulting changes in impervious surfaces, could cause direct and indirect changes in local stormwater drainage patterns, as described above. Mitigation has been identified for this effect (Mitigation Measures HYD-1 and HYD-2).

Alternative D. The impact under Alternative D would be similar to Alternative B and would increase impervious surface area, potentially increasing stormwater runoff volumes. Like Alternative C, Alternative D would also require expansion of road crossings for Alamo Creek, New Alamo Creek, and Union Creek. Alternative D would follow Alternative C south to Huntington Drive, which would be widened from two lanes to four lanes to the Air Base Parkway/Walters Road intersection, increasing the impervious surfaces along this alignment. Encroachment into the floodplain from road widening and bridge crossings, and the resulting changes in impervious surfaces, could cause direct and indirect

changes in local stormwater drainage patterns, as described above. Mitigation has been identified for this effect (Mitigation Measures HYD-1 and HYD-2).

Alternative E. The impact under Alternative E would be similar to Alternative B, although Alternative E would increase the impervious surface area along Peabody Road from Elmira Road to the Vacaville city limits by widening this portion of Peabody Road from four lanes to six lanes. Alternative E would also require expansion of Peabody Road crossings at Alamo Creek, Union Creek, and McCoy Creek, and the Putah South Canal. Encroachment into the floodplain from road widening and bridge crossings, and the resulting changes in impervious surfaces, could cause direct and indirect changes in local stormwater drainage patterns, as described above. Mitigation has been identified for this effect (Mitigation Measures HYD-1 and HYD-2).

Impact HYD-2: Would the Alternatives Encroach into the FEMA-Mapped 100-Year Floodplain?

Alternative A. Alternative A would not encroach into the mapped 100-year floodplain because the proposed roadway improvements and widening would not be constructed.

Alternative B. Alternative B would encroach on the mapped 100-year floodplain of Alamo Creek, Union Creek, and McCoy Creek, increasing the potential for flooding. The fill proposed for the widening of the section of Leisure Town Road at Elmira Road would result in blockage of the Alamo Creek channel (Figure 3.9-3), which would require either a culvert to convey the water or construction of a new channel farther east of Leisure Town Road. At this time, Alternative B includes plans for a culvert. A hydraulics analysis would be performed to determine whether the existing culvert can be lengthened or should be replaced with a larger culvert or series of culverts that has better hydraulic conveyance (Mitigation Measures HYD-1 and HYD-2). The FERS identified a longitudinal encroachment of the base floodplain at this location. The roadway would encroach on approximately 0.2 acres of the mapped 100-year floodplain.

Floodplain mapping indicates that the portion Vanden Road in the vicinity of Union Creek (Figure 3.9-4) is overtopped with flow during the 100-year flood. The proposed roadway would encroach on approximately 5.3 acres of the mapped 100-year floodplain. Encroachment would occur in an area where the FEMA floodplain was mapped using “approximate methods”² instead of a detailed study. A detailed hydraulic analysis will be conducted to accurately determine the flood elevation, location of the floodplain boundaries, and amount of floodplain encroachment. The existing crossing for Union Creek

² FEMA flood zones mapped using “approximate methods” include flood data and floodplain information from a variety of sources — such as soils mapping, actual high water profiles, aerial photographs of previous floods, and topographic maps — to overlay the approximate outline of the base floodplain for specific stream reaches on available community maps, usually U.S. Geological Survey topographic quadrangle maps. In addition, many flooding sources have been studied by other federal, State, or local agencies. Some of these studies do not meet the NFIP standards for a Flood Insurance Study, but often contain valuable flood hazard information, which may be incorporated into the NFIP maps as approximate studies. Those types of studies typically cover developed or developing areas. They often contain flood elevation profiles that can be used as “best available data” for floodplain management purposes. Approximate methods do not allow for determination of Base Flood Elevations.

is comprised of two undersized pipe culverts, and the roadway is about five feet lower than the adjacent UPRR tracks. Alternative B includes raising the roadway in this area two feet to four feet and replacing the undersized culverts with a series of box culverts or a small bridge. The combination of raising the roadway and increasing the crossing size would eliminate the roadway over topping in the 100-year flood. A detailed hydraulic analysis would be completed to determine the appropriate sized crossing (Mitigation Measures HYD-1 and HYD-2).

Alternative B would require the creation of a new road crossing at McCoy Creek (Figure 3.9-5). Encroachment would occur in an area where the FEMA floodplain was mapped using “approximate methods”² instead of a detailed study. A detailed hydraulic analysis will be conducted to accurately determine the flood elevation, location of the floodplain boundaries, and amount of floodplain encroachment. The upstream drainage area of this area is relatively small, so a culvert would likely provide sufficient conveyance of flow under the roadway; however, a small bridge is planned for this crossing of McCoy Creek. Mitigation is available for this impact (Mitigation Measure HYD-1).

Alternative C. Similar to Alternative B, Alternative C would encroach on the mapped 100-year floodplain of Alamo Creek and Union Creek, increasing the potential for flooding. The impact on the Alamo Creek and the Union Creek floodplains would be the same as described for Alternative B.

Alternative D. Similar to Alternative B, Alternative C would encroach on the mapped 100-year floodplain of Alamo Creek and Union Creek, increasing the potential for flooding. The impact on the Alamo Creek and the Union Creek floodplains would be the same as described for Alternative B. Mitigation is available for this impact (Mitigation Measures HYD-1 and HYD-2).

Alternative E. Alternative E would encroach on the mapped 100-year floodplain of Alamo Creek and Union Creek, increasing the potential for flooding. Peabody Road crosses the mapped floodplain of Alamo Creek with a bridge (Figure 3.9-6A). Alternative E would widen the existing bridge. The bridge would encroach on less than 0.1 acres of the mapped 100-year floodplain.

Peabody Road passes through the mapped floodplain of Union Creek (Figure 3.9-6B). Floodplain mapping indicates that the existing roadway is overtopped with flow during the 100-year flood. The road would encroach on approximately 1.8 acres of the mapped 100-year floodplain. Encroachment would occur in an area where the FEMA floodplain was mapped using “approximate methods” instead of a detailed study. A detailed hydraulic analysis will be conducted to accurately determine the flood elevation, location of the floodplain boundaries, and amount of floodplain encroachment. The existing culvert would be replaced with a larger culvert. A detailed hydraulic analysis will be completed to determine the appropriate sized crossing. Mitigation is available for this impact (Mitigation Measures HYD-1 and HYD-2).

Impact HYD-3: Would the Alternatives Potentially Encroach into Floodplains Not Mapped by FEMA?

Alternative A. Alternative A would not encroach into floodplains not mapped by FEMA because the proposed roadway improvements would not be constructed.

Alternative B. Alternative B would cross and possibly affect several irrigation canals, existing culverts, and several drainages in areas where FEMA floodplain studies have not been performed, increasing the potential for flooding. Irrigation canals along Leisure Town Road would be impacted by road construction and would require extensions or reconstruction. A detailed hydraulics analysis is necessary to determine whether extending culverts would provide adequate hydraulic conveyance. Based on warning signs on Cement Hill Road that indicate that the road is subject to flooding, the area around McCoy Creek may be within the 100-year floodplain. A detailed hydraulics analysis is necessary to establish the limits of the floodplain, determine future road surface elevation to prevent flow from overtopping the road during a 100-year event, and provide adequate hydraulic conveyance under the road at each drainage channel crossing to prevent flooding north of the road. Mitigation is available for this impact (Mitigation Measure HYD-1).

Alternative C. Similar to Alternative B, Alternative C would cross and possibly affect several irrigation canals and existing culverts, increasing the potential for flooding. Irrigation canals along Leisure Town Road would be impacted by road construction and would require extensions or reconstruction. Mitigation is available for this impact (Mitigation Measure HYD-1).

Alternative D. Similar to Alternatives B and C, Alternative D would cross and possibly affect several irrigation canals and existing culverts, increasing the potential for flooding. Irrigation canals along Leisure Town Road would be impacted by road construction and would require extensions or reconstruction. Mitigation is available for this impact (Mitigation Measure HYD-1).

Alternative E. Similar to Alternatives B, C, and D, Alternative E would cross and possibly affect drainages in areas where FEMA floodplain studies have not been performed, increasing the potential for flooding. Peabody Road passes through an area just north of the Peabody Road and Cement Hill Road/Vanden Road intersection where no detailed FEMA study has been performed to delineate floodplain boundaries. The existing road may be within the 100-year floodplain and may be inundated during a 100-year flood event. The FERS identified a longitudinal encroachment of the base floodplain at this location. A detailed hydraulics analysis is necessary to establish the limits of the floodplain, determine future road surface elevation to prevent flow from overtopping the road during a 100-year event, and provide adequate hydraulic conveyance under the road at each drainage channel crossing to prevent flooding north of the road. Mitigation is available for this impact (Mitigation Measure HYD-1).

Impact HYD-4: Would the Alternatives, in Combination with Other Development, Result in Cumulative Effects to Hydrology and Floodplains?

The proposed project would introduce new impervious surfaces that would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels, and accelerate soil erosion and stream channel scour. Addition development in the vicinity of the corridor would also increase impervious surfaces and associated runoff. Implementation of Mitigation Measures HYD-1 and HYD-2 would ensure that the

proposed project would not make a cumulatively considerable contribution to regional increases in runoff volumes and flooding.

3.9.4 Avoidance, Minimization, and/or Mitigation Measures

In addition to the measures below, each build alternative design includes improvements to drainage crossings, storm sewer systems, culverts, and irrigation facilities to collect and convey stormwater drainage and floodwaters.

Mitigation Measure HYD-1: Prepare Detailed Master Drainage Plan (MDP) and Implement Plan Requirements. In coordination with the Cities of Fairfield, Vacaville, and Suisun City, STA shall prepare a detailed drainage report (also called a master drainage plan or runoff design report) for the entire construction area. This MDP shall include detailed hydrology and hydraulics for the chosen alternative's affected creek encroachment areas, bridges, culverts, and associated floodplain areas. This MDP shall be reviewed and approved by the Solano County Water Agency (SCWA), Solano County, and STA, and reviewed by the Cities of Fairfield, Suisun, and Vacaville. STA shall include in the project design, drawings, and plans the flow and drainage control requirements identified in the MDP in order to prevent flood and flood flow impacts. The drainage system will be designed in accordance with the flood control design criteria of Solano County and SCWA. The MDP shall ensure that project design and drainage plans comply with Executive Order 11988, Sections 3.b and 4.c. The MDP will be coordinated with any required mitigation measures associated with work in the creeks and streams that require a 404 or 401 permit.

The MDP shall be prepared by a registered water resources civil engineer before site development begins and shall include:

- An accurate calculation of pre- and post- project runoff conditions using standards specified in the Solano County Hydrology Manual. These conditions shall be determined at all water crossings along the project corridor and at intermediate locations necessary to obtain an accurate determination of flood potentials. Post-project runoff conditions shall include any detention structures incorporated into the site design.

If post-project runoff rate and volume exceed existing conditions for the design storm event, the MDP shall include calculations of the amount of detention required to reduce stormwater runoff to pre-project levels.

- A detailed hydraulic analysis. An accurate determination of base (e.g., irrigation ditch areas) and post-project flood elevation levels and hydraulic conditions using standard hydraulics engineering methods (e.g., Hydrologic Engineering Centers River Analysis System) shall be prepared. These techniques shall be used to accurately evaluate potential changes in design storm flood elevations and flow erosive potential for the design of flow conveyance or control features. Additional topography surveying may be required to accurately describe the existing floodplain within areas not mapped by FEMA (e.g., irrigation/drainage channels adjacent to roads).

If post-project conditions exceed drainage design standards as specified in the Solano County Hydrology Manual or if they otherwise contribute to adverse hydraulic impacts in the drainage

system, the proposed drainage system structures shall be redesigned to minimize impacts. For example, if the proposed box culvert for Alamo Creek is found to create adverse hydraulic impacts in Alamo Creek (e.g., back up of flood flows, concentrated high velocity flow, and others), according to this detailed hydraulic analysis, then other designs shall be assessed (e.g., bridge). One or more system designs shall be prepared to mitigate potential project impacts and to minimize changes from the original plan while mitigating adverse impacts.

The standards for proposed drainage systems shall be evaluated on an alternative-specific basis.

- An inventory and assessment of any existing drainage facilities within the corridor including any necessary upgrades, replacements, redesigns, and rehabilitation.
- Proposed storm drainage systems will be designed to convey both on-site and off-site stormwater runoff to regional streams and creeks. Storm drainage systems will use existing facilities within the corridor as available and upgrade undersized facilities as needed.
- Proposed design measures to remove structures from 100-year floodplain areas. Where structures are below the post-project 100-year flood elevation level, design measures shall be developed and implemented to remove these structures from the floodplain. Any substantial removal or import of fill material, placement or removal of barriers, or placement or removal of drainage systems to remove structures from floodplain shall be included in all hydraulic analyses.
- A description of the proposed maintenance program for the on-site drainage system(s).

Mitigation Measure HYD-2: Improve Under Capacity Culverts. Many of the existing drainage facilities in the rural areas are undersized and full of sediment. Consistent with Mitigation Measure HYD-1, a detailed hydraulic analysis will be completed for the project to identify the appropriate culvert size.

For Alternatives B, C, and D the existing culverts under Vanden Road at Union Creek shall be replaced with a bridge or series of box culverts sufficient for adequate hydraulic capacity during a 100-year flood event. A detailed hydraulic analysis (see Mitigation Measure HYD-1) of the design configurations shall be conducted to determine sizing and efficacy of both the bridge and large culvert structures for mitigating flood conditions. The roadway shall also be raised in this area by approximately two feet to four feet above the existing road elevation to be higher than the elevation of the mapped floodplain.

For Alternatives C and E the existing culverts under Walters Road on the north side of Air Base Parkway shall be extended and possibly upsized to account for the loss of the roadside ditch from the widening of Air Base Parkway. A detailed hydraulic analysis (see Mitigation Measure HYD-1) of the crossing shall be conducted to determine sizing and efficacy. These improvements shall be included in all hydrologic and hydraulic analysis specified in Mitigation Measure HYD-1 and will be designed in accordance with Executive Order 11988, Sections 3.b and 4.c.

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3.10 Water Quality and Stormwater Runoff

This section addresses issues related to water quality and stormwater runoff in the corridor. The information below is summarized from the hydrology and water quality technical reports prepared for the proposed action. These reports are incorporated by reference and are available for review at the Solano Transportation Authority's (STA's) and Caltrans' offices.

3.10.1 Regulatory Setting

3.10.1.1 Federal Requirements: Clean Water Act

In 1972, the Federal Water Pollution Control Act was amended, making the discharge of pollutants to the waters of the United States from any point source unlawful, unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The Federal Water Pollution Control Act was subsequently amended in 1977, and was renamed the Clean Water Act (CWA). The CWA, as amended in 1987, directed that storm water discharges are point source discharges. The 1987 CWA amendment established a framework for regulating municipal and industrial storm water discharges under the NPDES program. Important CWA sections are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal project that proposes an activity, which may result in a discharge to waters of the United States to obtain certification from the State that the discharge will comply with other provisions of the act.
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) into waters of the United States. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) addresses storm water and non-storm water discharges.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (Corps).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

3.10.1.2 State Requirements: Porter-Cologne Water Quality Control Act (California Water Code)

California’s Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives) required by the CWA, and regulating discharges to ensure that the objectives are met. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. States designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are state listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source controls, the CWA requires establishing Total Maximum Daily Loads (TMDLs). TMDLs establish allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

3.10.1.3 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility. Because stormwater runoff from construction sites and new roadway improvements could contain pollutants that could affect surface or groundwater quality, two provisions of the NPDES program would apply.

- **Municipal Separate Storm Sewer System Program**

The U.S. Environmental Protection Agency (EPA) defines a Municipal Separate Storm Sewer System (MS4) as any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water. As part of the NPDES program, EPA initiated a program requiring that entities having MS4s apply to their local RWQCBs for storm water discharge permits. The program proceeded through two phases. Under Phase I, the program initiated permit requirements for designated municipalities with populations of 100,000 or greater. Phase II expanded the program to municipalities with populations less than 100,000.

For the County of Solano, post-construction stormwater discharges are managed under general permit for the Discharge of Storm Water from Small MS4s (Order No. 2003-0005-DWQ) (Small MS4 General Permit) adopted by the SWRCB in April 2003. The cities of Fairfield and Suisun City have joined together with the Fairfield-Suisun Sewer District to acquire and maintain a single permit in the name of the Fairfield-Suisun Urban Water Management Program (FSURMP) (NPDES Permit No. CAS 612005). These Small MS4 General Permits require permitted entities to implement the following program elements to protect receiving waters from stormwater pollution: public participation/involvement; public education and outreach; construction site runoff control; illicit discharge detection and elimination; pollution prevention/good housekeeping; post-

construction runoff control. To implement these elements, the Small MS4 General Permits require that dischargers develop and implement a Storm Water Management Program (SWMP) that describes the BMPs, measurable goals and time - schedules of implementation, as well as assigns responsibility of each task to reduce the discharge of pollutants through their MS4s to the Maximum Extent Practicable (MEP). The City of Vacaville is included in the Vacaville-Dixon SWMP,¹ which includes BMPs, measureable goals, and an implementation schedule for construction and post-construction stormwater management.

- Construction Activity Permitting

STA would be subject to the September 2, 2009 NPDES Construction General Permit (Order No. 2009-0009-DWQ) that became effective on July 1, 2010. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit.

The newly adopted permit separates projects into Risk Levels 1 – 3. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring. Risk levels are determined during the design phase and are based on potential erosion and transport to receiving waters and dependent upon receiving waters beneficial uses. Applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP).

During the construction phase, compliance with the permit requires appropriate selection and deployment of structural and/or non-structural BMPs. These BMPs must achieve performance standards of Best Available Technology economically achievable/Best Conventional Pollutant Control Technology (BAT/BCT) to reduce or eliminate storm water pollution.

Typical temporary Construction Site BMPs include soil stabilization practices, sediment control measures, wind erosion control measures, tracking control measures, non-stormwater control measures, and waste-management and materials pollution control practices. In general, the contractor implements an appropriate set of BMPs in the SWPPP that are based on project-specific construction practices. The types of BMPs required depend on many site-specific physical and hydrologic variables, the time of year for construction, and the contractor's unique construction practices and equipment.

Beneficial Uses and Water Quality Objectives. Under authority granted by CWA Section 303 and California Water Code Section 13000, the State RWQCBs designate beneficial uses and establish water quality objectives to protect those beneficial uses in Water Quality Control Plans (Basin Plans) prepared pursuant to the State Porter-Cologne Water Quality Control Act. The San Francisco Bay and Central Valley RWQCBs both have jurisdiction in the study area. The project footprint would touch parts of Horse Creek, Old Ulatis Creek, New Ulatis Creek, Alamo Creek, New Alamo Creek, Union Creek, McCoy Creek, and the Putah South Canal. There are no beneficial uses designated for these

¹ City of Vacaville and City of Dixon Stormwater Management Plan Fiscal Years 2003-2004 through 2007-2008.

creeks in the Basin Plans for either RWQCB (San Francisco Bay Regional Water Quality Control Board 2007; Central Valley Regional Water Quality Control Board 2007). Under such circumstances, the appropriate RWQCB either makes site-specific determinations when reviewing projects that may affect water resources or applies the beneficial uses that are designated for the nearest downstream tributary of the water body in question. However, all creeks within the Central Valley Basin Plan are considered to support the municipal and domestic water supplies beneficial use, except for Old Alamo Creek.

Horse Creek, Ulatis Creek, Old Alamo Creek and New Alamo Creek eventually discharge into the Sacramento-San Joaquin Delta (Delta). The Delta has designated beneficial uses in the Central Valley Basin Plan of municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, water contact and non-contact water recreation, warm and cold freshwater habitat, migration of aquatic organisms, navigation, wildlife habitat, and spawning, reproduction, and/or early development. However, Old Alamo Creek, from its headwaters to the confluence with New Alamo Creek, is specifically exempt from municipal and domestic water supplies, cold freshwater habitat, migration of aquatic organisms, and spawning, reproduction, and/or early development beneficial uses.

Union Creek, Putah South Canal, and McCoy Creek drain to the Suisun Bay. Additionally, the Putah South Canal is used to convey municipal, industrial, and irrigation water supplies. Suisun Bay has designated beneficial uses in the San Francisco Bay Basin Plan of industrial service supply, industrial process supply, estuarine habitat, migration of aquatic organisms, preservation of rare and endangered species, wildlife habitat, water contact and non-contact water recreation, spawning, reproduction, and/or early development, and ocean, commercial, and sport fishing.

Water Quality Objectives (WQOs) in a Basin Plan can be narrative or numerical, and they differ depending on the specific beneficial uses being protected. Narrative WQOs are established for parameters such as color, suspended and settleable material, oil and grease, biostimulatory substances, and toxicity; numeric WQOs can include such parameters as dissolved oxygen, temperature, turbidity, pH, and specific chemical constituents such as trace metals and synthetic organic compounds. In addition to established Basin Plan WQOs, numeric criteria for priority toxic pollutants (i.e., trace metals and organic compounds) are regulated under the California Toxics Rule, which was promulgated in 2000 (65 Federal Register 31681–31719). The RWQCB implements its authority by issuing and enforcing waste discharge requirements, or other permits and authorizations, for waste discharges to land and waters within its jurisdiction.

The RWQCBs also administer the NPDES permit program, which regulates discharges of pollutants into water. Construction projects that disturb more than one acre (including construction staging areas) are required under the RWQCB Statewide NPDES General Construction Permit to submit a Notice of Intent (NOI) to the RWQCB, and prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). A SWPPP describes the location and physical characteristics of the site, identifies construction activities that will occur, and describes Best Management Practices (BMPs) that will be used to prevent soil erosion and discharge of other construction-related contaminants, such as sediment, fuels, oil, grease, solvents, paints, and cement, that could contaminate nearby water resources.

California Fish and Game Code Sections 1600 to 1607

Under California Fish and Game Code Sections 1600 to 1607, the Department and other agencies are required to notify the California Department of Fish and Game (CDFG) prior to any project that would divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a “streambed alteration agreement” which becomes part of the plans, specifications and bid documents for the project.

3.10.1.4 Local Requirements

Local regulations within Solano County, and the cities of Vacaville, Fairfield, and Suisun City include requirements for design of roadways and post-construction BMPs to comply with the applicable NPDES permit. Construction within each of these jurisdictions would be required to comply with the local requirements of the respective jurisdiction.

3.10.2 Affected Environment

As noted above, a hydrology and water quality technical report (*Hydrology and Water Quality Technical Report: Jepson Parkway Project*, August 2005 and Addendum, March 2011) was prepared that describes the environmental and regulatory setting of the corridor, the environmental consequences of the alternatives as they pertain to surface water resources, water quality and stormwater runoff, and measures to minimize impacts of the proposed action on water quality.

Surface Water Quality

Surface water quality depends primarily on the mineral composition of the soils, as well as associated parent materials within a watershed, hydrologic characteristics, and sources of contaminants in the watershed. Land in the vicinity of the corridor has residential, commercial, agricultural, and military uses, and includes wetlands and grazing land. Maintaining and enhancing water quality in the corridor streams is important because all runoff and wastewater from the corridor eventually discharges into either Suisun Marsh or the Sacramento River, and ultimately to the Suisun Bay. Suisun Marsh is protected under State law (Suisun Marsh Preservation Act of 1977) in recognition of its irreplaceable value as a wildlife and aquatic habitat. Its water quality is influenced mainly by temperature, turbidity, contamination, and salinity. Currently, Suisun Bay is listed as impaired (not meeting its designated beneficial uses) by legacy pesticides, dioxins, furan, metals, nutrients, organic enrichment, salinity/total dissolved solids (TDS), exotic species, nickel, mercury, polychlorinated biphenyls (PCBs), and selenium (2006 202(d) list). The Sacramento-San Joaquin Delta is listed as impaired by similar pollutants.

Recent water quality information for creeks in the corridor is limited; however, a previous water quality study in the area, the Fairfield Vicinity Streams Project, found high levels of nutrients and

pesticides and low levels of heavy metals in most streams.² Nutrient levels were attributable to agricultural runoff, and the presence of pesticides stemmed primarily from urban runoff. Oxygen content and acidity were within acceptable ranges for aquatic life. Total suspended solids were high, possibly indicating upstream erosion problems.

More recently, the Fairfield-Suisun Sewer District (FSSD) has conducted specific monitoring for the Urban Runoff Management Program (URMP), an ongoing program being conducted to comply with the regulatory requirements of Phase II of the NPDES stormwater permit program for urban areas that exceed a population of 100,000.³ Dry-season monitoring of total and dissolved metals, total suspended solids, coliform bacteria, and two pesticides (diazanone and chlorpyrifos) in area creeks, including McCoy Creek, was conducted on five dates between summer 1997 and summer 2000.⁴ The Fairfield-Suisun Urban Runoff Management Program determined that water quality was very good given the urban environment through which the creeks flow.⁵ Elevated arsenic levels in McCoy Creek were thought to have resulted from extended detention of the flows in a large upstream detention basin that allowed sufficient time for natural arsenic to leach from the soil into the water. The FSSD is continuing to investigate the arsenic problem with University of California, Davis, staff. Future efforts of the URMP will focus on public education and enforcement to most effectively utilize URMP resources.⁶

3.10.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The key effects of the project were identified and evaluated based on the physical characteristics of the corridor and the anticipated nature, scope, intensity, and duration of proposed activities. The analysis focused on surface water resources because the proposed action is not expected to result in any substantial effect on groundwater resources. No wells would be constructed, and construction activities are not expected to intercept or substantially alter groundwater recharge, discharge, or flow conditions.

Summary of Water Quality and Stormwater Runoff Impacts

Table 3.10-1 shows the locations where project impacts could occur without implementation of BMPs. As shown, each of the build alternatives may potentially result in temporary construction-related

² U.S. Army Corps of Engineers. 1973. Fairfield Vicinity Streams, California: Water Quality Study. (Design Memorandum No. 1.) Sacramento, CA.

³ Eisenberg, Olivieri, & Associates, Inc. 2000. Fairfield-Suisun Urban Runoff Management Program, 1999–2000 annual report. Prepared for the Fairfield-Suisun Sewer District, City of Fairfield, and City of Suisun City. Oakland, CA.

⁴ Eisenberg, Olivieri, & Associates, Inc. 2000. Fairfield-Suisun Urban Runoff Management Program, 1999–2000 annual report. Prepared for the Fairfield-Suisun Sewer District, City of Fairfield, and City of Suisun City. Oakland, CA.

⁵ Eisenberg, Olivieri, & Associates, Inc. 2000. Fairfield-Suisun Urban Runoff Management Program, 1999–2000 annual report. Prepared for the Fairfield-Suisun Sewer District, City of Fairfield, and City of Suisun City. Oakland, CA.

⁶ Fairfield-Suisun Sewer District (FSSD). 2004. Urban Runoff Management Program. June 17, 2004—electronic mail communication with Kevin Cullen, Manager.

Table 3.10-1
Summary of Potential Water Quality Impacts by Location and Alternative Without Implementation of Mitigation Measures

Location	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Temporary construction-related water quality impacts Putah South Canal.	No Impact.	No Impact.	No Impact.	No Impact.	The existing bridge will be widened as required. Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the canal. Impacts avoided by implementation of a SWPPP.
Temporary construction-related water quality impacts to Alamo Creek.	No Impact.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek. Impacts avoided by implementation of a SWPPP.
Temporary construction-related water quality impacts to New Alamo Creek.	No Impact.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	No Impact.
Temporary construction-related water quality impacts to McCoy Creek.	No Impact.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	No Impact.	No Impact.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek. Impacts avoided by implementation of a SWPPP.
Temporary construction-related water quality impacts to Union Creek.	No Impact.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek.	Temporary construction-related water quality impacts. Disturbance to soils and channel banks near the creek. Impacts avoided by implementation of a SWPPP.
Permanent changes in local stormwater contaminant loading.	No Impact.	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading.	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading.	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading.	Permanent changes in local stormwater drainage patterns and/or volumes. Permanent changes in local stormwater contaminant loading. Impacts avoided by implementation of a Stormwater Management Plan.

impacts to water channels in the corridor and permanent changes in local stormwater drainage and contaminant loading and could result in changes in sediment and contaminant loading during and after construction. With proper implementation of construction and post-construction BMPs potential impacts to existing water quality would be avoided.

Impact WQ-1: Would the Alternatives Result in Temporary Construction-Related Water Quality Impacts?

Construction activities can impair water quality temporarily because disturbed and eroded soil, petroleum products, and miscellaneous wastes may be discharged into receiving waters. Soil and associated contaminants that enter stream channels can increase turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms. Pollutants, including construction materials such as fuels, oils, paints, and concrete, are potentially harmful to fish and other aquatic life if released into the environment. The extent of potential environmental effects depends on the propensity of erosion of the soil types encountered, the type of construction practices, the extent of disturbed area, the duration of construction activities, the timing of precipitation, the proximity to receiving water bodies, and the sensitivity of those water bodies to contaminants of concern. Accidental spills of construction-related substances such as oils, fuels, and concrete can contaminate both surface water and groundwater. Any construction activities that would involve work within a creek would be subject to a CDFG Streambed Alteration Agreement and Section 401 and 404 permits to prevent damage to habitat. Construction within a canal would be subject to the Solano County Water Agency.

Alternative A. Under Alternative A, the proposed roadway improvements and widening would not be constructed. Because there would be no project-related construction, no impact on water would occur.

Alternative B. The project would not require temporary or permanent dewatering or waste discharges. Surface water quality could be affected by construction grading, earthmoving, and facility construction activities that would occur over several months. The construction activities resulting from implementation of Alternative B would directly disturb soils and channel banks near Alamo Creek, New Alamo Creek, Union Creek, and McCoy Creek. Preparation of a SWPPP, as required by the NPDES permit, would minimize water quality impacts during construction and beneficial uses of downstream receiving waters would not be substantially altered. The SWPPP requirements are described in detail in Section 3.10.4, Avoidance, Minimization, and/or Mitigation.

Alternative C. Impacts are similar to that under Alternative B. Construction activities would directly disturb soils and channel banks near Alamo Creek, New Alamo Creek, and Union Creek. However, this alternative would not affect McCoy Creek. Compliance with regulations would minimize this effect and beneficial uses of downstream receiving waters would not be substantially altered.

Alternative D. Impacts are similar to that under Alternative C. Construction activities would directly disturb soils and channel banks near Alamo Creek, New Alamo Creek, and Union Creek. Compliance with regulations would minimize this effect and beneficial uses of downstream receiving waters would not be substantially altered.

Alternative E. This impact is similar to that under Alternative B. Construction activities would directly disturb soils and channel banks near Alamo Creek, Union Creek, McCoy Creek, and the Putah South Canal. Compliance with regulations would minimize this effect and beneficial uses of downstream receiving waters would not be substantially altered.

Impact WQ-2: Would the Alternatives Result in Permanent Changes in Local Stormwater Contaminant Loading?

Alternative A. Under Alternative A, the proposed roadway improvements and widening would not be constructed. Therefore, no changes in existing local stormwater loading would occur.

Alternatives B, C, D, and E. These alternatives may result in additional impervious surfaces that may contribute to an increase in the transport of pollutants to waterways. Greater quantities of contaminants, such as petroleum products and other substances (e.g., trace metals, hazardous materials, and litter), could be deposited on these new surfaces and added to stormwater runoff, increasing the contaminant loading potential of the roadways. Contaminants in roadway runoff, if discharged untreated into receiving water bodies, could be toxic to fish and other aquatic organisms. Preparation of permanent post-construction BMPs, as required by the NPDES permit, would avoid any permanent impacts to water and beneficial uses of downstream receiving waters would not be substantially altered.

Impact WQ-3: Would the Alternatives Result in Cumulative Water Quality Effects?

The project would introduce new impervious surfaces that would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels, and accelerate soil erosion and stream channel scour. Compliance with the avoidance and minimization measures listed in Section 3.10.4 will ensure that the project will not result in a cumulatively considerable contribution to regional increases in runoff volumes and flooding.

In addition, the project could potentially contribute to a cumulative increase in stormwater contaminants due to the incremental increase in roadway surface area, increased transport of pollutants to waterways, and increased use of the roadway over time as future development occurs in the corridor. As development in the surrounding urban areas and use of the proposed roadway improvements increase, greater quantities of contaminants could be deposited on the road surfaces, which could contribute to a cumulative increase in stormwater contaminant loading. However, compliance with the avoidance and minimization measures listed in Section 3.10.4 will ensure that the project itself will not have a cumulatively considerable contribution to a regional increase in stormwater contaminants during construction or operation. Compliance with these measures will ensure that beneficial uses of downstream receiving waters would not be substantially altered by the proposed project.

3.10.4 Avoidance, Minimization, and/or Mitigation Measures

Avoidance and minimization measures have been identified to address the potential for adverse effects to water quality. The local lead agency is required to prepare the necessary plans, in compliance with applicable NPDES stormwater quality protection requirements.

Construction Activities

The contractor shall prepare and submit a Notice of Intent (NOI) in accordance with NPDES General Permit for Storm Water Discharges Associated with Construction Activity [Order No. 2009-0009-DWQ, NPDES No. CAS000002] requirements, or the adopted order in effect at the time project construction begins. A Risk Level Assessment must be conducted to determine the project's potential for sediment risk to receiving waters. The project contractor is required to prepare and implement a project construction SWPPP before implementation of the proposed action, as a condition of the Construction General Permit. The SWPPP must contain specific minimum BMPs, including sampling, monitoring, and reporting requirements, in accordance with the project's identified Risk Level. This SWPPP must identify pollution prevention measures (e.g., erosion and sediment control measures, and measures to control non-stormwater discharges and hazardous spills), demonstration of compliance with all applicable RWQCB standards, local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a BMPs monitoring and maintenance schedule.

The objectives of the SWPPP will be to identify pollutant sources that could affect the quality of stormwater, to implement practices to reduce pollutants in stormwater runoff, and to protect receiving water quality. Additional BMP strategies may be required on a project-specific basis. The SWPPP shall include the following BMPs in accordance with the General Construction Permit, and consistent with the identified Risk Level:

- Employment of soil stabilization control measures. Construction scheduling, preservation of existing vegetation, streambank stabilization, and either hydraulic mulch, hydroseed, soil binders, straw mulch, geotextiles, plastic sheeting, erosion control blankets/mats, or a combination of these shall be implemented as part of the project SWPPP.

Additional BMPs shall include outlet protection/velocity dissipation devices to prevent erosion caused by concentrated flows. If necessary, earth dikes, drainage swales, and lined ditches may be required for conveyance of surface runoff down sloping land, for interception and diversion of runoff on sloped surfaces, to direct runoff to a stable watercourse or other stable conveyance, to prevent runoff from accumulating at the base of a grade, or to avoid flood damage along roadways and facilities.

- Employment of temporary sediment control measures. Minimum requirements shall include silt fences or fiber rolls and street sweeping or vacuuming to be implemented as part of the project construction SWPPP in accordance with the General Construction Permit.

Additional BMPs may be required such as sediment/desilting basins, sediment traps, check dams, gravel bag berms, sandbag berms, strawbale barriers, and stormdrain inlet protection.

- Employment of wind erosion control measures. Temporary ground covers and mulches or approved dust palliatives shall be used during the dry season to control wind erosion.
- Employment of tracking control measures. Tracking control measures will be implemented as part of the SWPPP in accordance with BMPs when and if necessary. These measures may include stabilized construction entrances, stabilized construction roadways, and entrance/outlet tire washing (wet soils).
- Employment of non-stormwater management BMPs. Minimal BMPs requirements shall include water conservation practices, paving and grinding operations, temporary stream crossings, clear water diversions, illicit connection/illegal discharger detection and reporting, portable water/irrigation, vehicle and equipment cleaning, vehicle and equipment fueling, vehicle and equipment maintenance, pile driving operations, concrete curing, material and equipment use over water, concrete finishing, structure demolition/removal over or adjacent to water, dewatering operations. BMPs for these activities must be implemented as part of the SWPPP unless they are determined to be unnecessary (e.g., equipment maintenance off-site at a permitted facility, no material and equipment use over water, no dewatering of trenches, and others). The project SWPPP shall include clear water diversion BMPs for implementation of any alternatives requiring work within the creek or streams.
- Employment of waste management and materials pollution control BMPs. Minimal required BMPs include material delivery and storage, material use, stockpile management, spill prevention and control, solid waste management, hazardous waste management, contaminated soil management, concrete waste management, sanitary/septic waste management, and liquid waste management. These BMPs shall be implemented as part of the project SWPPP.

The spill prevention and control plan shall be prepared and implemented to minimize the potential for and effects of spills of hazardous substances during construction. In the event of a spill, the contractor's superintendent will notify the applicable Solano County emergency services office and the California Department of Toxic Substances Control; their spill response and cleanup protocols shall be followed. A written description of the reportable releases that have occurred shall be submitted to the applicable RWQCB, including a description of the spill that indicates the type of material, an estimate of the amount spilled, the date of the spill, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future spills. Spills shall be documented on a spill report form.

A construction schedule shall be included in the SWPPP and effective dates included on the WPC Plans. The construction schedule shall be implemented to coordinate the timing of land-disturbing activities with installation of soil stabilization and sediment and erosion control measures to reduce potential for sediment erosion and transport. A phased approach should be implemented for construction activities to minimize the amount of disturbed soil areas exposed at any given time. Because of the site-specific conditions of the corridor, nature of the build alternatives, area of the proposed action, and duration of the proposed construction activities, the SWPPP will generally include limiting soil disturbances during the designated winter rainfall season (October 15 to April 15). If construction is expected to occur during the rainy season, a winterization erosion and sediment control plan shall also be prepared to prevent soil and sediment transport during the rainy season and BMPs

shall be installed prior to the beginning of the rainy season. For completed sections, permanent soil stabilization and sediment controls shall be implemented according to the post-construction storm water management plan.

Erosion in disturbed areas shall also be controlled through the use of grading operations to minimize direct routes for conveying runoff to drainage channels, and the use of soil stabilization BMPs such as mulching, erosion control fabrics, or reseeded with grass or other plants where necessary. Standard staging-area practices for sediment-tracking reduction will also be identified where necessary, including vehicle washing and street sweeping. Temporary concentrated flow conveyance systems, such as berms, ditches, and outlet flow velocity dissipation devices, will also be considered to reduce erosion from newly disturbed slopes.

Work conducted within the Alamo, New Alamo, and McCoy Creek channels shall include particular BMPs, such as placement of staging areas and potential stockpiles away from stream banks, conducting all in-water work behind cofferdams, sheet piling, or use of other containment facilities to control discharges of contaminated runoff and use of clear-water diversions around the active work site. Monitoring and inspection shall be conducted for identifying increases in downstream turbidity that would exceed applicable RWQCB water quality objectives and any other request from the 404 permit or a 1600-1616 Streambed Alteration Agreement.

Under the direction of STA or the appropriate local agency engineering staff, the general contractor and subcontractor conducting the work shall be responsible for constructing or implementing, regularly inspecting, and maintaining the BMPs in good working order. They shall also be required to implement appropriate hazardous materials management practices to reduce the possibility of chemical spill or release of contaminants, including any non-stormwater discharge to drainage channels. Standard hazardous materials management and spill control and response measures will minimize the potential for surface and groundwater contamination. The construction general permit (NPDES General Permit for Storm Water Discharges Associated with Construction Activity [Order No. 2009-0009-DWQ, NPDES No. CAS000002], adopted September 2, 2009, and effective July 1, 2010) requires that, for regulated projects (project disturbing one or more acres of land surface), a Risk Level Assessment must be conducted to determine the project's potential for sediment risk to receiving waters. The SWPPP must contain specific minimum BMPs, including sampling, monitoring, and reporting requirements, in accordance with the project's identified Risk Level.

Post Construction

The project sponsor is also required to comply with local regulations for design of roadways and implementation of BMPs to comply with the applicable NPDES permit in each jurisdiction. Development and implementation of coordinated drainage features with permanent post-construction BMPs will minimize potential water quality impacts associated with roadway runoff. The contractor for the proposed action shall be responsible for determining the appropriate features and constructing permanent post-construction stormwater BMPs. The permanent post-construction BMPs shall accommodate the additional drainage discharges generated by the proposed action, as determined in the

associated Master Drainage Plan to be prepared in conformance with Mitigation Measure HYD-1 (see Section 3.9, Hydrology and Floodplains), and avoid adverse effects such as offsite erosion, sedimentation, or water quality impairment.

Although complete removal of all contaminants is not feasible, BMPs shall be selected, designed, and sited to remove the Maximum Extent Practicable (MEP) using the Best Available and Conventional Technologies (BAT and BCT, respectively) that is economically feasible. The expected pollutant removal success rates listed in Table 3.10-2 suggest that single or multiple BMPs, when properly designed, installed and maintained, can achieve the pollutant removal efficiencies shown in the table. Single BMPs or a group of BMPs can be used to achieve the targeting removal rates.

Three broad categories of permanent post-construction BMPs and several specific types of BMPs shall be implemented. The first will consist of erosion and sediment control measures, such as preservation of existing vegetation, establishment of stabilized concentrated flow conveyance systems (e.g., ditches, berms, drains, flared culvert end sections, outlet protection, and flow velocity dissipation), slope protection measures, settling basins, grassy swales, and others. Offsite discharges of particulate-associated pollutants are controlled by controlling erosion and sediment transport. The second category shall consist of stormwater flow control management measures that will result in runoff peak flows and volumes similar to those under existing conditions. These flow controls shall be designed and implemented to manage runoff volumes and peak flows to within 10 percent of existing conditions for the 2-year 24-hour storm event up to the 10-year 24-hour storm event. By controlling storm flow rates and volumes to be similar to existing conditions, changes in drainage and drainage patterns will be minimized, along with their potential effects on water quality and erosion. Consequently, on- and off-site erosion and sediment transport may be mitigated. Finally, permanent post-construction BMPs shall include measures to capture and treat the first flush of stormwater runoff (0.5 inches) and to allow for infiltration and uptake of pollutants not associated with particulate material such as nutrients, oils and greases, salts, and others. All BMPs shall be designed according to Caltrans or CASQA (California Stormwater Quality Association) guidelines and design standards, or other methods approved by STA or the Solano County District Engineer and approval of the Water Board.

Solano County shall be responsible for long-term inspection and maintenance of the permanent BMPs within its jurisdictional right-of-way to ensure that the BMPs are maintained in good working order. The Cities of Vacaville, Fairfield, and Suisun City shall be responsible for long-term inspection and maintenance within their rights-of way.

Table 3.10-2
Potential Pollutant Removal Efficiency of
Pre- and Post-construction Best Management Practices

BMP Type	Typical Pollutant Removal (Percent)				
	Suspended Solids	Total Nitrogen	Total Phosphorus	Pathogens	Total Metals
Structural					
Dry extended detention basins	40 to 72	14	15 to 39	-12 to -122	27 to 73
Wet basins	94	51	5	99	91 to 98
Constructed wetlands (vegetated rock filter) ^a	81 to 88	63	82.5	N/A	21 to 80
Infiltration basins ^b	50 to 80	50 to 80	50 to 80	65 to 100	50 to 80
Infiltration trenches, dry wells ^b	50 to 80	50 to 80	15 to 45	65 to 100	50 to 80
Porous pavement ^b	65 to 100	65 to 100	30 to 65	65 to 100	65 to 100
Biofiltration swale	49	30	-106	-30	65 to 72
Biofiltration strip	69	-10	-46	92	65 to 72
Surface sand filters	81 to 90	9 to 32	39 to 44	72 to 79	50 to 92
Storm Filter	44	13	17	47	51 to 53
MCCT	75	0	18	14	35 to 75
CDS	0	5	15	-121	8 to 17
Construction Site					
Silt fence	50 to 80	-	-	-	-
Sediment basin	55 to 100	-	-	-	-
Sediment trap	60	-	-	-	-

Source: Caltrans, 2004⁷ except where noted.

Notes:

- a. Caltrans, 2007. p. B-247.⁸
- b. EPA 1993, 1999.

⁷ Caltrans. BMP Retrofit Pilot Program. Final Report. Report ID CTSW-RT-01-050. January 2004.

⁸ Caltrans. Caltrans Treatment BMP Technology Report: BMP Fact Sheet Wetland Systems – Vegetated Rock Filter (Subsurface Flow Wetland). April 2007. p. B-247.

3.11 Geology, Soils, Seismicity, and Paleontology

The analysis of geology, soils, seismicity, topography, and paleontology is based on a review of the California Geological Survey (CGS) regional mapping, Solano County General Plan, local general plans, and a reconnaissance-level survey to provide an overview of the rock types, seismicity, potential soil constraints, and geologic formations that may contain paleontological resources. No geotechnical or paleontological reports have been prepared at this time.

3.11.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.”

This section discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

Paleontology, which is also addressed in this section, is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. (e.g., Antiquities Act of 1906 [16 USC 431-433], Federal-Aid Highway Act of 1935 [20 USC 78]).

The following acts, regulations, and codes pertain to the project:

- Seismic Hazards Mapping Regulations (14 CCR 3720–3725)
- Caltrans Regulations: The major State regulations protecting public roadways and bridges from geo seismic hazards are contained in Caltrans’ *Seismic Design Criteria Version 1.2* (December 2001) and Caltrans’ *Highway Design Manual*, Section 110.6, Earthquake Consideration (November 2001). Bridge design is required to be in accordance with Caltrans’ *Bridge Design Specifications*, *Bridge Memos to Designers*, *Bridge Design Practices Manual*, and *Bridge Design Aids Manual*. Bridge design is required to be based on the “Load Factor Design methodology with HS20-44 live loading”. Seismic design is required to conform to the Bridge Design Specifications, and Section 20 of the memos to Designers, including the Caltrans Seismic Design Criteria.
- California Public Resources Code: PRC 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (lands under the jurisdiction of a state, county, city, district, or public authority or under the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. PRC 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

3.11.2 Affected Environment

Geology

Regional Geology

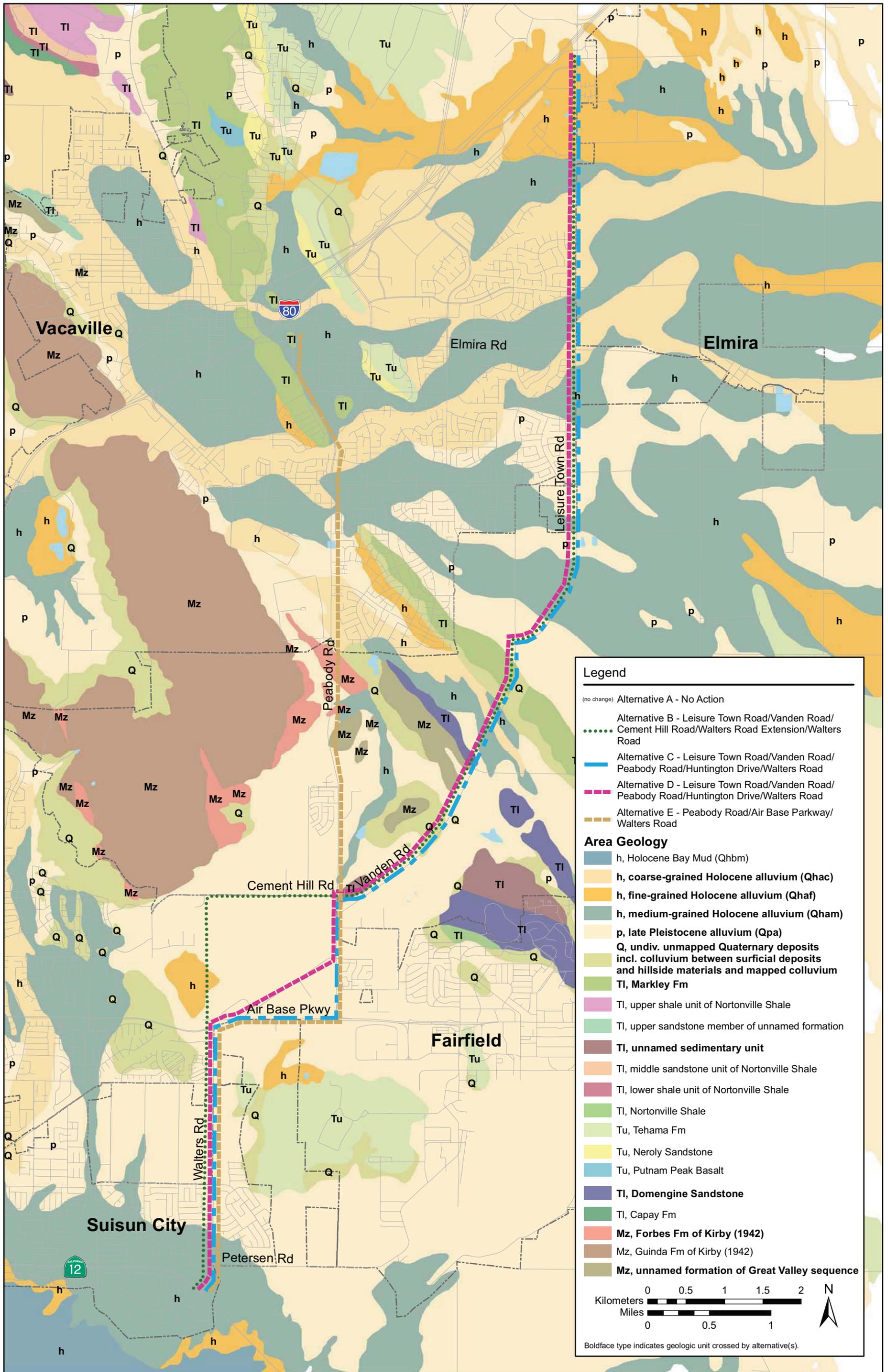
Solano County's diverse geological setting spans 144 million years, from the early Jurassic Period through today. Geologically, the western portion of the county is made up of the north-south trending Sacramento and San Joaquin Valleys, as well as a small portion of the Northern California Coast Ranges. The Northern California Coast Range in Solano County is known as the Vaca Mountains, which consist of Cretaceous and Tertiary strata that has been uplifted and tilted eastward. A large predominantly Quaternary plain lies to the east of the Vaca Mountains. In the southwestern portion of the county, Pliocene and late Miocene volcanic deposits are common. The Pleistocene Montezuma Hills lie just north of the confluence of the Sacramento and San Joaquin Rivers, where they drain to Suisun Bay. Suisun and Montezuma Sloughs mark a large tidal wetland that enters Grizzly Bay along the southern border of the county.

The east-central and northeastern parts of Solano County that the project corridor traverses are relatively flat and are characterized by a Holocene and Pleistocene alluvial plain. Sporadic exposures of northwest-trending sedimentary rocks associated with the development of the Coast Ranges form rolling hills that separate the northern part of the corridor (generally, along Leisure Town Road) from the southern part (Peabody Road/Air Base Parkway/Walters Road). Figure 3.11-1 (Geologic Map) shows the geology in the general area between I-80 and SR-12. The geologic units crossed by the alternatives are indicated in boldface type. Table 3.11-1 lists the geologic formations, the age of the formations and their general composition, and approximate location of each unit relative to each alternative's proposed alignment.

Soils

Solano County soils were mapped and described by the U.S. Soil Conservation Service. The general soil map produced from this effort indicates that there are 17 soil associations in the County. Each association comprises one or more major soil components, which typically characterize the association, and at least one minor soil component. The U.S. Soil Conservation Service categorized each association as one of four groups (described below) based on the changes in slope, drainage class, and landscape position:¹

¹ Bates, L. A. 1977. Soil Survey of Solano County, California. U.S. Department of Agriculture Soil Conservation Service, in cooperation with the University of California Agricultural Experiment Station. Washington, DC.



Source: USGS, 1997.

Figure 3.11-1
Geologic Map

**Table 3.11-1
Geologic Unit Summary**

Geologic Unit (abbreviation corresponding to Figure 3.11-1)	Age	Composition	General Location
Holocene Alluvium (Qhaf, Qham, Qhac)	Recent -10,000 years	fine-, medium, and coarse-grained sand, silt, and gravel deposited in alluvial fan, valley fill, terrace, or basin environments	Leisure Town Road between Fry Road and I-80 (Alternatives B, C, and D) Qham northern part of Peabody Road (Alternative E)
Pleistocene Alluvium (Qpa)	Pleistocene: 10,000 to 1.8 million years	less permeable sediments in basin, landslide intertidal, terrace, or riverbank environments	Leisure Town Road between Fry Road and I-80 (Alternatives B, C, and D) Peabody Road, Air Base Parkway, Walters Road (Alternative E)
undivided unmapped Quaternary deposits (Q)	Quaternary: < 1.6 million years	Primarily unconsolidated non- marine alluvium, lake, playa, and terrace deposits as colluviums between surface deposits and hillside materials	isolated sections along Vanden Road (Alternatives B, C, and D)
Markley Shale and an unnamed sedimentary unit (Tl)	Eocene: 35 to 55 million years	light gray to white shale	Vanden Road south of Leisure Town Road (Alternatives B, C, and D) northern section of Peabody Road (Alternative E)
Domengine Sandstone (Tl)	Eocene: 35 to 55 million years	cross-bedded white sandstone	small area approximately midway along Vanden Road (Alternatives, B, C, and D)
Forbes Formation (Mz)	Late Cretaceous: 65 to 100 million years	massive beds of fine- to coarse-grained wacke (sandstone) with shell fragments grading into interbedded siltstone and shale	small areas along Vanden and Peabody roads (Alternatives, B, C, D, and E)
unnamed formation of Great Valley sequence (Mz)	Late Cretaceous: 65 to 100 million years	sandstone, shale, conglomerate	small area approximately midway along Peabody Road (Alternative E)

Source:

Solano County, 2008 Draft General Plan EIR, Section 4.7 (Geology and Soils); California Geological Survey, 2010 Geologic Map of California.

- **Soils on Nearly Level to Moderately Sloping Alluvial Fans:**² This group of soils comprises the Yolo-Brentwood, Yolo-Sycamore, and Rincon-Yolo soil associations, which occur throughout Solano County. The dominant soil components are typically very deep, well drained to somewhat poorly drained loams³ to silty clay loams formed from mixed alluvium.⁴ Slopes typically range in steepness from 0 to 9 percent. Runoff is typically slow to medium. The erosion hazard is slight, largely because of the low slope gradients that prevail in these areas. The shrink-swell potential (expansive) associated with the dominant soil components typically ranges from moderate to high.
- **Soils on Nearly Level to Gently Sloping Basin Rims, Alluvial Fans, and Deltas, and in Basins, Dredge Spoil Areas, and Salt Water Marshes:** This group of soils comprises the Capay-Clear Lake, Sacramento, Egbert-Ryde, Valdez, Joice-Suisun, and Reyes-Tamba soil associations, which occur primarily in and adjacent to the Delta. The dominant soil components are fine-textured mineral soils and organic soils formed from mixed alluvium or wetland vegetation remains. Slopes typically range from 0 to 5 percent. Runoff is typically slow. The erosion hazard ranges from nonexistent to slight, largely because of the low slopes that prevail in these areas. Except for some organic soils, the shrink-swell potential associated with the dominant soil components typically ranges from moderate to high.
- **Soils on Nearly Level to Moderately Steep Alluvial Terraces and in Basins:** This group of soils comprises the San Ysidro-Antioch, Corning, and Solano-Pescadero soil associations, which occur primarily in the central and north-central portions of Solano County. The dominant soil components are typically somewhat poorly drained to well-drained gravelly loams to clays formed from alluvium derived mostly from sedimentary rocks. Slopes typically range from 0 to 30 percent. Runoff ranges from very slow to medium. The erosion hazard ranges from nonexistent to moderate. The shrink-swell potential associated with the dominant soil components typically ranges from low to high.
- **Soils on Gently Sloping to Very Steep Alluvial Terraces and Mountainous Uplands:** This group of soils comprises the Altamont-Diablo, Dibble-Los Osos, Millsholm, Maymen-Los Gatos, and Hambright-Toomes soil associations, which occur primarily in the westernmost and southernmost portions of Solano County. The dominant soil components of these soil associations are typically somewhat excessively drained to well-drained stony loams to clays formed from weakly consolidated sediments, sandstone, and basic igneous rocks. Slopes range from 2 to 75 percent. Runoff ranges from slow to very rapid. The erosion hazard ranges from slight to very high. The shrink-swell potential associated with the dominant soil components in these soil associations typically ranges from low to high.

The corridor passes through areas containing each of the four soil groups identified above. Although each of the four identified groups is represented in the corridor, the corridor is largely dominated by two of the four soil groups. The southern portion of the corridor primarily includes the Capay-Clear

² An alluvial fan is a fan-shaped pile of sediment that forms where a rapidly flowing mountain stream enters a relatively flat valley. As water slows down, it deposits sediment (alluvium) that gradually builds a fan.

³ Loam is soil composed of sand, silt, humus, and clay in relatively even concentration.

⁴ Alluvium is soil or sediments deposited by a river or other running water. Alluvium is typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel.

Lake, Sacramento, Egber-Ryde, Valdez, Joice-Suisun, and Reyes-Tamba associations, and the northern portion of the corridor primarily includes the San Ysidro-Antioch, Corning, and Solano-Pescadero associations.⁵

Geologic and Seismic Hazards

The known geologic and seismic hazards in Solano County, as identified in the Health and Safety Element of the Solano County General Plan, are discussed below.⁶ Additional detail is provided from local general plans, where applicable.

Slope Instability

Slope stability is a function of many factors, including rainfall, how steep the slopes are, rock and soil type, slope orientation, vegetation, seismic conditions, and human activities. The Health and Safety Element of the Solano County General Plan contains a map showing portions of the County where slope failures (landslides, debris flows, and mudslides) are most likely to occur based on available geologic information on geologic units, the location and extent of past slope failures, and mapping criteria developed by the U.S. Geologic Survey (USGS). In general, areas rated as potentially unstable, unstable, and highly unstable (slope instability categories 3, 4, and 5, respectively) are located on geologic units that are known to be susceptible to landsliding or have slopes more than 15 percent. These areas are located almost entirely in the uplands that compose the western third of the County (e.g., the Vaca Mountains) and in the Montezuma and Potrero Hills. The remaining portions of the County have slopes that are less than 15 percent and show no evidence of landslide activity. Accordingly, these areas are considered to have greater relative stability. These findings are generally consistent with a more recent slope stability analysis conducted by USGS.⁷ The majority of the corridor is in an area of the County with slopes of less than 15 percent. A small portion of the Alternative E alignment on Peabody Road, near the Vacaville city limits, briefly crosses through the eastern edge of the Vaca Mountains, an area with slopes in excess of 15 percent.⁸

Land Subsidence and Settlement

Land subsidence is the gradual lowering or downward sinking of the ground surface. It can be induced by natural processes or certain human activities. The most common causes of subsidence are groundwater withdrawal, oil and natural gas withdrawal, and oxidation of peat soils. The peat soils of the Delta are generally susceptible to subsidence and represent a potential hazard for road construction and development in southern Solano County.

⁵ EDAW. 2006. Solano County General Plan Geology and Soils Background Report. August 28, 2006. Prepared for Solano County Resource Management Department. Fairfield, CA.

⁶ Sedway/Cook. 1977. Solano County General Plan. Adopted April 21, 1977. Prepared for the Solano County Planning Commission. Fairfield, CA.

⁷ Ellen, S. D., R. K. Mark, G. F. Wiczorek, C. F. Wentworth, D. W. Ramsey, and T.E. May. 1997. Map showing principal debris-flow source areas in Solano County, California. Scale 1:125,000. In U.S. Geological Survey Open File Report 97-745. Washington, DC.

⁸ EDAW. 2006. Solano County General Plan Geology and Soils Background Report. August 28, 2006. Prepared for Solano County Resource Management Department. Fairfield, CA.

Land settlement is a gradual lowering of the ground surface that results from the compression or consolidation of soft, poorly consolidated fine-textured deposits (clays and silts). Settlement can be induced by dewatering and placing heavy loads on potentially compressible soils and sediments. Many of the fine-textured bay mud deposits that exist in and adjacent to the Delta are susceptible to settlement and present a potential hazard for road construction and development in southern Solano County.⁹ The bay mud deposits susceptible to settlement are generally south of the corridor.

Expansive Soils and Sediments

Soils with high shrink-swell potential (expansive) typically contain a high percentage of expansive phyllosilicate clay minerals (e.g., montmorillonite).¹⁰ Expansive soils swell when wet and shrink when dry. In the process, they can cause substantial damage to structures and roadways. However, most damage resulting from expansive soils and sediments can be avoided through proper foundation and roadway design.

As described above, soils with moderate to high shrink-swell potential occur throughout Solano County. The Solano County General Plan indicates that perhaps as much as 20 to 30 percent of the flat land in the County is underlain by soils that have high shrink-swell potential.¹¹ Similarly, the City of Fairfield General Plan identifies expansive soils as a common on both the hillsides and valleys of Fairfield.¹² Soils with a high shrink-swell potential are present throughout the majority of corridor.¹³

Surface Fault Rupture

The California State Geology and Mining Board has established policies and criteria for the classification of known earthquake faults in California based on the presence or absence of a detectable fault trace and the recency of fault displacement.¹⁴ The categories are described below:

- **Active Faults:** Detectable fault traces that show evidence of displacement during the last 10,000 to 11,000 years (i.e., Holocene faults) are defined as “active” and are considered to have the greatest potential for surface rupture.
- **Potentially Active Faults:** Detectable fault traces that show evidence of displacement 10,000 to 1.6 million years ago (i.e., Quaternary faults) are defined as “potentially active” and are considered to have less potential for surface rupture.

⁹ Sedway/Cook. 1977. Solano County General Plan. Adopted April 21, 1977. Prepared for the Solano County Planning Commission. Fairfield, CA.

¹⁰ Phyllosilicates occur when the silica tetrahedra join together to form flat sheets. These sheets are held together by weak bonding between the free oxygen on the tetrahedra and so cleave easily. Phyllosilicates include both micas (biotite & muscovite), talc, and clay minerals.

¹¹ Sedway/Cook. 1977. Solano County General Plan. Adopted April 21, 1977. Prepared for the Solano County Planning Commission. Fairfield, CA.

¹² City of Fairfield, Fairfield General Plan, February 2004.

¹³ EDAW. 2006. Solano County General Plan Geology and Soils Background Report. August 28, 2006. Prepared for Solano County Resource Management Department. Fairfield, CA.

¹⁴ Hart, E. W. and W. A. Bryant. 1997. Fault-rupture hazard zones in California: Alquist-Priolo Earthquake Fault Zoning Act with index to earthquake fault zone maps. Special Publication 42. California Division of Mines and Geology. Sacramento, CA.

- **Other Faults:** The board has not established an official category for faults that show no evidence of displacement during the last 1.6 million years (i.e., pre-Quaternary faults). Although such faults are not deemed “inactive,” they are considered to have a relatively low potential for surface rupture.

Solano County contains several known faults. Currently, segments of only two faults, the Green Valley fault and the Cordelia fault are known to be active. Both faults have each been zoned under the Alquist-Priolo Act, meaning that development in the immediate vicinity of the fault trace must be preceded by detailed fault investigations.¹⁵ The Green Valley fault and the Cordelia fault are in western Solano County, and do not present any risk of surface fault rupture in the corridor. The corridor crosses the Vaca-Kirby Hills fault; however, this fault is not identified as an active fault.

Seismic Groundshaking

In 1996, the California Department of Mines and Geology (CDMG) (now referred to as the California Geological Survey [CGS]) released a probabilistic seismic hazard assessment for California to aid in the assessment of seismic groundshaking hazards in the State.¹⁶ The report suggests that the groundshaking hazard in the County ranges from very low to severe. The most severe groundshaking hazards are located in the western half of the County. The findings of the report are generally consistent with the findings of the shaking hazard assessment conducted by the Association of Bay Area Governments (ABAG), which also indicated that the most intense seismic groundshaking in Solano County is likely to result from an earthquake on the Green Valley fault.¹⁷ The corridor is just east of the area identified as having the highest potential for earthquake damage.¹⁸

Liquefaction

Liquefaction is a process by which soils and sediments lose shear strength and fail during episodes of intense seismic groundshaking. As a consequence of liquefaction, soils act like fluids rather than solids. The most recent seismic hazard maps published by ABAG indicate that the susceptibility of soils and sediments in Solano County to liquefaction ranges from very low in areas such as the Montezuma Hills, which are underlain by clayey sand, to very high in areas such as the Delta and the large alluvial plain south of Dixon, which are underlain by unconsolidated sediments of variable composition or shallow groundwater. The corridor crosses through areas with very low, low, and moderate liquefaction potential.¹⁹

¹⁵ EDAW. 2006. Solano County General Plan Geology and Soils Background Report. August 28, 2006. Prepared for Solano County Resource Management Department. Fairfield, CA.

¹⁶ Peterson, M. D., W. A. Bryant, C. H. Cramer, T. Cao, and M. Reichle. 1996. Probabilistic seismic hazard assessment for the state of California. (Open-File Report 96-706.) U.S. Geological Survey. Washington, DC.

¹⁷ Association of Bay Area Governments (ABAG). 1995. The San Francisco Bay Area—on shaky ground. Publication P95001EQK. Oakland, CA.

¹⁸ EDAW. 2006. Solano County General Plan Geology and Soils Background Report. August 28, 2006. Prepared for Solano County Resource Management Department. Fairfield, CA.

¹⁹ EDAW. 2006. Solano County General Plan Geology and Soils Background Report. August 28, 2006. Prepared for Solano County Resource Management Department. Fairfield, CA.

Paleontological Resources

Paleontology is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. (e.g., Antiquities Act of 1906 [16 USC 431-433], Federal-Aid Highway Act of 1956 [23 USC 305]).

3.11.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Methodology

The determination of effects of the proposed action on geology, soils, seismicity, topography, and paleontological resources was based on a review of relevant publications and a reconnaissance-level survey of the corridor.

Summary of Geologic Impacts

Each of the build alternatives has similar potential to encounter geologic hazards associated with seismic activity, expansive soils, and/or unique geologic features. Existing regulations would prevent adverse geologic impacts from occurring with implementation of any of the alternatives. Details regarding these impacts are provided below.

Impact GEO-1: Would the Alternatives Expose People to Injury or Structures to Damage from Potential Rupture of a Known Earthquake Fault, Strong Groundshaking, Seismic-Related Ground Failure, Liquefaction, or Landslides?

Alternative A. Under this alternative, the project would not be constructed. Therefore, there would be no potential for impacts.

Alternatives B, C, D, and E. For Alternatives B, C, D, and E, impacts related to exposure of people to injury or structures to damage from potential rupture of a known earthquake fault, strong groundshaking, seismic-related ground failure, liquefaction, or landslides would be similar because the alternative alignments generally travel along the same geographic area with the same geologic features.

Groundshaking caused by an earthquake on the Green Valley fault or other active and potentially active faults in the region could damage project facilities and result in injury to people using these facilities. Although the corridor is not in the portion of Solano County identified as at risk for severe groundshaking, substantial and damaging groundshaking could still occur along the alternative alignments. Slope failures caused by project construction or operation, earthquakes, high rainfall, human activities, or other means, could cause damage to project facilities and result in injury to people using these facilities.

Table 3.11-2
Preliminary Summary of Paleontological Resource Sensitivity for Geologic Units
in the Jepson Parkway Project

Geologic Unit	Fossil Content	General Location in Project Corridor	Sensitivity
Holocene Alluvium (Qhaf, Qham, Qhac)	generally contain vertebrate and invertebrate fossils of extant, modern taxa	Leisure Town Road between Fry Road and I-80 (Alternatives B, C, and D) Qham: northern part of Peabody Road (Alternative E)	Low; however, may form only a thin veneer over sensitive Pleistocene sediments
Pleistocene Alluvium (Qpa)	diverse vertebrate faunas collected from other similar alluvial units in northern California	Leisure Town Road between Fry Road and I-80 (Alternatives B, C, and D) Peabody Road, Air Base Parkway, Walters Road (Alternative E)	High
undivided unmapped Quaternary deposits (Q)	NA	isolated sections along Vanden Road (Alternatives B, C, and D)	NA
Markley Shale and an unnamed sedimentary unit (Tl)	carbonized plant remains and microfossils such as foraminifer and diatoms. Bony fishes recorded in adjacent Contra Costa County	Vanden Road south of Leisure Town Road (Alternatives B, C, and D) northern section of Peabody Road (Alternative E)	High
Domengine Sandstone (Tl)	invertebrate shells, including the highest diversity of mollusks reported from the Pacific Coast.	small area approximately midway along Vanden Road (Alternatives, B, C, and D)	High
Forbes Formation (Mz)	contains shell fragments; foraminifera and may contain significant invertebrate marine fossils	small areas along Vanden and Peabody roads (Alternatives, B, C, D, and E)	High
unnamed formation of Great Valley sequence (Mz)	strata of Great Valley complex in other areas known to contain marine fossils, including invertebrates and marine reptiles	small area approximately midway along Peabody Road (Alternative E)	High

Sources:

Solano County, 2008 Draft General Plan EIR, Section 4.10 (Cultural and Paleontological Resources); Caltrans. 2010. Draft EIR/EIS I-80/I-680/SR-12 Interchange Project, Section 3.2.4 (Paleontology).

Note:

NA = Not available, not identified in readily available literature or UCMP records.

The USGS and CGS identify a design earthquake and the associated peak horizontal ground accelerations (or “shaking”) for the project area based on an earthquake on the Green Valley fault. The amount of ground disturbance from an earthquake on the Green Valley fault could cause damage to roads and infrastructure (primary effects), and could cause ground failures in alluvium and poorly compacted fill, as well as seismically induced landslides on steep slopes (secondary effects).

The amount of surface alteration necessary to accommodate the construction of any of the build alternatives is not considered a substantial geologic change in itself. However, the alteration of topography for construction of the roadways raises issues of slope and soil instability in the corridor. Substantial amounts of material would be needed to fill low areas along the alternative alignments, and deep cuts are proposed through the bedrock ridges of the foothills, depending on the alternative selected. The creation of cuts in alluvium, and the placement of fill under new or widened roadways in the corridor would have the potential to create unstable slopes if the cuts and fills are not specifically designed for stability.

Impact GEO-2: Would the Alternatives Result in Damage to Facilities and Injury to the Public from Presence of Expansive Soils?

Alternative A. Under this alternative, the project would not be constructed. Therefore, there would be no potential for impacts.

Alternatives B, C, D, and E. The Soil Survey of Solano County indicates that soils with high shrink-swell potential (i.e., potentially expansive soils) are present in the corridor, for all alternative alignments. The existence of soils with high shrink-swell potential throughout the corridor makes it necessary to ensure the soils used for road base or trench support are sound. The creation of road base in unsuitable soils would have the potential to create future problems of settlement and utility line disruption if the soils were not specifically engineered for stability. The presence of expansive soils could result in damage to project facilities and injury to people using these facilities. Avoidance and minimization measures have been identified to ensure that project facilities are designed to avoid or minimize the potential for damage or injury associated with expansive soils.

Impact GEO-3: Would the Alternatives Result in Cumulative Geology Effects?

Construction in the corridor could lead to an increase in the potential for seismic or expansive soil related hazards. Compliance with existing laws and regulations, however, would avoid or minimize this potential effect. Implementation of Mitigation Measure GEO-1 would minimize the potential for the project alternatives to destroy paleontological resources or geologic features by ensuring the resources are evaluated, recovered, and documented in accordance with Caltrans guidelines and professional standards. Therefore, the project is not anticipated to have a cumulatively considerable contribution to these impacts.

3.11.4 Avoidance, Minimization, and/or Mitigation Measures

As discussed in Impacts GEO-1 and GEO-2, avoidance and minimization measures have been identified to address the potential for adverse effects associated with seismic and slope stability hazards, as well as the presences of expansive soils in the corridor. The local lead agency is required to conduct the necessary site-specific studies, in compliance with the Uniform Building Code and Caltrans Standards seismic design criteria and bridge standards, to ensure that project facilities avoid alignments on active fault zones and areas with expansive soils.

The implementing local agency would be required to design the roadway and associated improvements in conformance with the applicable jurisdiction's *Design and Construction Standards*. For bridges or other concrete structures, structural design shall be in accordance with Caltrans' *Bridge Design Specifications*, *Bridge Memos to Designers*, *Bridge Design Practices Manual*, and *Bridge Design Aids Manual*. Bridge design shall be based on the "Load Factor Design" methodology with HS20-44 live loading. Seismic design shall conform to the *Bridge Design Specifications*, and Section 20 of the *Memos to Designers* including "Caltrans Seismic Design Criteria".

Prior to approval of the project design, the appropriate local agency would require a completed report of soil and/or rock conditions along the alignment that evaluates potential slope instability conditions. The evaluations would be conducted in accordance with the applicable jurisdiction's Design and Construction Standards. The evaluations must be conducted by registered professionals, and measures to reduce or eliminate slope instability be applied, depending on the soil and/or rock conditions. At a minimum, the investigations must describe the characteristics of the soil and/or materials at the location of the cut or fill; the most appropriate type of support systems for the proposed slopes; the design criteria for the recommended support system, including the estimated ground settlement rate beneath the support system; the necessary subgrade preparation; the lateral pressures for retaining walls; the drainage conditions; the design slopes for cut and fill sections; and, the suitability of on-site soils for use as backfill. The recommendations of the slope and/or structural reports are required to be incorporated in the Plans and Specifications for the design of the project.

An acceptable degree of cut-slope or fill-slope stability along the various alignments can be achieved by designing the project to site-specific geologic conditions. Site-specific stability analysis would be the basis for slope design in areas where instability is suspected. Such slope stability analyses contain recommendations for ground preparation, earthwork, foundation design, etc., specific to the location that become an integral part the construction design.

Site-specific treatments to eliminate expansion of soils include, but are not limited to, grouting, recompaction and replacement with non-expansive material. Site-specific analysis is the mainstay of road base design in areas where unsuitable conditions are suspected. Such analyses contain recommendations for ground preparation and earthwork specific to the site, which become an integral part the construction design. The selected alignment would be evaluated to determine the particular treatment that would be most appropriate.

3.11.4.1 Mitigation Measure Regarding Paleontological Resources

Paleontological resources or unique geologic features may be discovered during construction under Alternatives B, C, D, and E. Activities such as excavation and grading into native soils, trenching for drainage systems, and pile driving for elevated structures or any type of piling or footing could damage such resources.

Avoidance would not be possible in paleontologically sensitive units for Alternatives B, C, D, or E because the geologic units cover a broad area relative to each alternative's alignment. Any improvements involving excavation for footings and trenching, in particular, would need to be placed in specific locations to ensure design criteria are met.

Mitigation Measure GEO-1: Prepare and Implement Paleontological Mitigation Plan. STA shall ensure a Paleontological Mitigation Plan is prepared by a qualified paleontologist (M.S. or PhD in paleontology or geology familiar with paleontological procedures and techniques) that addresses, at a minimum the following: pre-excavation survey, literature review, repository review; training for construction personnel; monitoring and data recover; recovery; specimen curation; and documentation requirements. In conjunction with project construction activities, the following shall be implemented.

- STA will retain a qualified paleontologist to conduct preconstruction studies to ensure that paleontological materials exposed at the surface are recovered and properly prepared and curated, or protected from damage using exclusion fencing or other appropriate means, and to further assess potential for impacts.
- A qualified principal paleontologist experienced in teaching non-specialists will be retained to be present at pre-grading meetings to consult with grading and excavation contractors. STA will ensure that all construction personnel receive training provided by the qualified professional paleontologist, to ensure that they can recognize fossil materials in the event any are discovered during construction.
- In accordance with the Department's recommended mitigation procedures for construction in units with the potential to contain fossils, STA will retain a qualified professional paleontologist, working under the direction of the qualified principal paleontologist, to monitor activities with the potential to disturb units sensitive for paleontological resources. Data gathered during preconstruction surveys for paleontological resources, and detailed project design, will be used to identify potential activities that will require the presence of a monitor. In general, these activities include any ground-disturbing activities involving excavation in areas with high potential to contain fossils or excavation deeper than three feet in areas with low or unknown potential to contain fossils.
- In accordance with the Department's recommended mitigation procedures for construction in units with the potential to contain fossils, when requested by the paleontological monitor, earth-disturbing activities will be stopped in an area or diverted to allow for the safe recovery of fossil specimens. Additionally, if construction personnel observe fossils in an area where paleontological resources were not anticipated, and paleontological monitors are, therefore, not present, earth-

disturbing activities within a 100-foot radius will be stopped until the material can be evaluated by a monitor and appropriate treatment taken.

- When fossils are discovered, the paleontologist (or paleontological monitor) will recover them. Construction work in these areas will be halted or diverted to allow recovery of fossil remains in a timely manner. Fossil remains collected during the monitoring and salvage portion of the mitigation program will be cleaned, repaired, sorted, and cataloged. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, will then be deposited in a scientific institution with paleontological collections. A final Paleontological Mitigation Plan Report will be prepared that outlines the results of the mitigation program. STA will be responsible for ensuring that monitor's recommendations regarding treatment and reporting are implemented.

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3.12 Hazardous Waste and Materials

The description of hazardous waste and materials is summarized from the two Initial Site Assessments (ISA) prepared for the project. The first ISA was completed in 2005, and an updated ISA was completed in 2008. Both ISAs are incorporated by reference and are available for review at the Solano Transportation Authority's (STA's) and Caltrans' offices.

3.12.1 Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many State and federal laws. 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 relevant federal laws include:

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

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.

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.

3.12.2 Affected Environment

Phase I Environmental Site Assessments (ESAs) are used to assess whether potentially hazardous materials are located on a property. Standards for Phase I ESAs have been developed by the American Society for Testing and Materials (ASTM) and are used routinely to determine the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that

indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products, onto the surface or into the ground, groundwater, or surface water of the property. If a Phase I ESA finds that hazardous materials found on the property may have been released, then a Phase II ESA is usually recommended. A Phase II investigation, known as a Preliminary Site Assessment (PSA), typically includes collection and analysis of soil and water samples. Based on the results, the Phase II ESA may recommend additional testing, remediation, or other controls to address contamination. The Phase I ESA for the corridor is the ISA.

The ISA characterized the corridor as a mix of rural areas, residential properties, and commercial businesses. For a complete description of existing land uses in the corridor, please refer to Section 3.1, Land Use, on page 3.1-1.

Aerial photograph review, combined with site reconnaissance, indicated that portions of the corridor have undergone substantial changes (residential and commercial development), while others have undergone few changes between 1962 and the present. Potential environmental concerns identified in the ISA include: aerially applied chemicals in agricultural production, PCBs associated with electrical transformers, petroleum hydrocarbons associated with current and former railroad alignments, petroleum hydrocarbons from leaking underground storage tank (LUST) sites, underground utilities carrying petroleum hydrocarbons and sewage, and aerially deposited lead in exposed soils from historic vehicle emissions.

The ISA grouped adjacent features according to their potential impact to the environmental integrity of the site. The four groups include the following:

- Areas of Moderate Potential Environmental Concern
- Areas of Low Potential Environmental Concern
- Areas of Unknown Potential Environmental Concern
- Areas of Exposed Soil

Sites of moderate potential environmental concern include currently active or historic underground storage tanks (USTs); currently active or historic gasoline service stations; currently active or historic automobile service/repair facilities; and documented locations of a release/spill of hazardous materials. Each site of potential concern is identified in Table 3.12-1 and shown graphically on Figure 3.12-1. The database search completed for the corridor identified sites not listed in Table 3.12-1 or depicted on Figure 3.12-1; however, these sites would not affect the project due to their locations or other factors, such as the nature of the site.

The ISA also identified the following hazardous materials/waste conditions in the corridor:

- **Pesticides, Herbicides, and Fungicides.** Pesticides, herbicides, and fungicides are used on the properties where crops are grown. Agricultural lands are adjacent to portions of Leisure Town Road from south of I-80 to Vanden Road (Alternatives B, C, and D) and a portion of Peabody Road between the Fairfield and the Vacaville city limits (Alternative E). Furthermore, a landscape supply facility is located adjacent to Peabody Road (Alternatives B, C, and D). Although

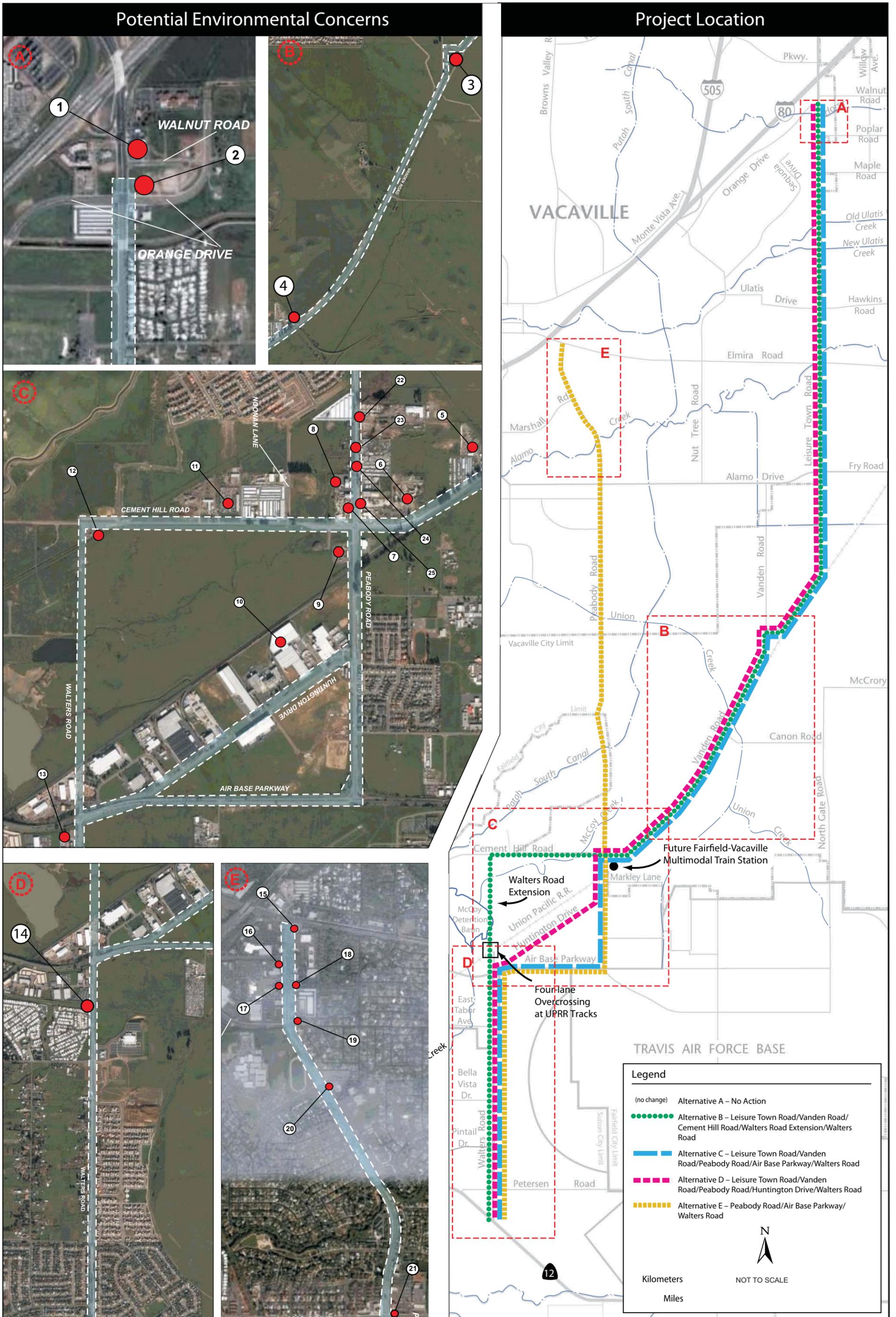


Figure 3.12-1
Potential Environmental Concerns by Location

applications, handling, and storage of restricted materials are regulated to minimize potential hazards, pesticides and pesticide residuals can be present in the soil, air, and water near areas where they were applied. Pesticide toxicity and longevity in the environment varies with the type, amount, and form of pesticide used.

**Table 3.12-1
Summary of Potential Environmental Concerns by Location**

Location	Level of Concern	Alternatives Affected	Notes
1. Union 76 Gasoline Service Station (817 Leisure Town Road, Vacaville)	Moderate	B, C, D	The gas station is listed as an open LUST and several vapor extraction and groundwater monitoring wells were observed on the property. This is a location of hazardous material release.
2. Quick Stop Car Wash and Service Station (1091 Leisure Town Road, Vacaville)	Moderate	B, C, D	This facility was not listed on any database.
3. Southern Pacific Railroad	Low	B, C, D	The railroad was not listed on any database.
4. Railway Line Connecting Union Pacific and Sacramento Northern Railroads	Low	B, C, D	This railroad was not listed on any database, and is no longer in use.
5. Paul's Engine and Machine Shop (5001 Vanden Road, Vacaville)	Unknown	B, C, D	This towing facility/car maintenance shop was listed on the RCRA-GN database.
6. Syar Readymix Plant (4969 Vanden Road, Fairfield)	Moderate	B, C, D	This concrete manufacturing facility is listed on the LUST database as a closed case.
7. Cement Hill Ready Mix (4961 Peabody Road, Fairfield)	Moderate	B, C, D, E	This commercial/industrial facility was listed as a closed LUST case.
8. Northwest Pipe (4989 Peabody Road, Fairfield)	Moderate	E	This commercial/industrial facility was listed as a closed LUST case.
9. PG&E Electrical Substation (Peabody Road and Cement Hill Road, Fairfield)	Unknown	B, C, D, E	This electrical substation was not listed on any database.
10. Owens-Illinois Plastics Product Plant (2500 Huntington Drive)	Moderate	D	This manufacturing facility was listed as an open LUST case. This is a location of hazardous material release/spill.
11. S & W Paving, AAA Sales, and Adco Auto Wrecking (2400 Cement Hill Road, Fairfield)	Moderate	B	Hazardous materials handled in auto wrecking yards are generally related to vehicular fluids, including petroleum hydrocarbons, antifreeze and coolants. Parts cleaning solvents may also have been used. This facility is listed on the UST database. This is a potential location of hazardous material release or spill.
12. Sacramento Northern Railroad	Low	B	This railroad was not listed on any database, and is no longer in use.
13. Bonfare Market (2301 Walters Road, Fairfield)	Moderate	B, C, D, E	This gas station and food market is listed as an open LUST case. This is a location of hazardous material release.

**Table 3.12-1
Summary of Potential Environmental Concerns by Location**

Location	Level of Concern	Alternatives Affected	Notes
14. Railway Line Connecting Travis AFB to the Union Pacific Railroad	Low	B, C, D, E	The railroad was not listed on any database.
15. Former Shell Service Station (101 Peabody Road, Vacaville)	Moderate	E	This facility was listed as an open LUST case in the State Regional Water Quality Control Board (RWQCB) Geotracker Database report. This is a location of hazardous material release.
16. Dick Lewis Ford (148 Peabody Road, Vacaville)	Moderate	E	This facility was listed as a closed LUST case in the State Regional Water Quality Control Board (RWQCB) Geotracker Database report. The case was closed in November 1997.
17. PG&E Vacaville Service Center (158 Peabody Road, Vacaville)	Moderate	E	This facility was listed as a closed LUST case in the State Regional Water Quality Control Board (RWQCB) Geotracker Database report. The case was closed in May 1996.
18. Flying J (177 Peabody Road, Vacaville)	Moderate	E	This facility was listed as an open LUST case in the RWQCB Geotracker Database report. This is a location of hazardous material release.
19. Spee Dee Oil Change (221 Peabody Road, Vacaville)	Moderate	E	This facility was not listed in the RWQCB Geotracker Database report.
20. Chevron #9-1668 (501 Peabody Road, Vacaville)	Moderate	E	This site is now occupied by a Valero Service Station. This facility was listed as a closed LUST case in the RWQCB Geotracker Database report. The case was closed in August 2007.
21. Chevron (1991 Peabody Road, Vacaville)	Moderate	E	This facility was not listed RWQCB Geotracker Database report.
22. Cassil Truck and Trailer Storage (Peabody Road, Fairfield)	Low	E	This facility was not listed RWQCB Geotracker Database report.
23. Fairvac Auto and Truck Wrecking/North Bay Trucking/City Towing and Transport (5016 Peabody Road, Fairfield)	Unknown	E	Hazardous materials handled in auto wrecking yards are generally related to vehicular fluids, including petroleum hydrocarbons, antifreeze, and coolants. Parts cleaning solvents may also have been used. This facility was not listed in the RWQCB Geotracker or EFS Database report. This is a potential location of hazardous material release or spill.
24. American Auto Body Specialists (1950 Walters Court, Fairfield)	Unknown	E	Hazardous materials stored and handled in auto body repair include paints, lacquers, and solvents. This facility was not listed in the RWQCB Geotracker or EFS Database report.
25. Cemex (4064 Peabody Road, Fairfield)	Low	B, C, D, E	It is unknown if hazardous materials are stored on this property.
26. Green Tree Golf Club (999 Leisure Town Road, Vacaville)	Moderate	B, C, D	This operating golf course was listed on the UST database.

**Table 3.12-1
Summary of Potential Environmental Concerns by Location**

Location	Level of Concern	Alternatives Affected	Notes
27. Papin Farms Inc. (6388 Leisure Town Road, Vacaville)	Moderate	B, C, D	This agricultural area was listed on the UST database.
28. Hilden Farm (6275 Leisure Town Road, Vacaville)	Moderate	B, C, D	This agricultural area was listed on the UST database.
29. RMC Lonestar (4964 Peabody Road, Fairfield)	Moderate	B, C, D, E	This commercial/industrial building was listed on the UST database.
30. Frontier Tours (4958 Peabody Road, Fairfield)	Moderate	B, C, D, E	This commercial/industrial building was listed on the UST database.
31. Frito-Lay (2500 Crocker Circle, Fairfield)	Moderate	B, D	This commercial/industrial building was listed on the UST database.
32. Ashland Chemical (2461 Crocker Circle, Fairfield)	Moderate	B, D	This commercial/industrial building was listed on the UST and RCRAGN databases.
33. Robbins and Myers Inc. (2100 Huntington Drive, Fairfield)	Moderate	B, C, D, E	This commercial/industrial facility was listed on the UST, CERCLIS NFRAP, RCRACOR, RCAGN, RCRA TSD Site, and State Spills Site.
34. The Hofmann Company (1980 Huntington Court, Fairfield)	Moderate	B	This facility, which was observed to be a fire station during site reconnaissance, was listed on the UST database.
35. Fire Station #11 (1975 Huntington Court, Fairfield)	Moderate	B	This fire station was listed on the UST database.
36. Farallon Plastics Limited (1941 Walters Court, Fairfield)	Moderate	B, C, D, E	This facility was listed on the RCAGN and UST databases.
37. Cheaper #31 (1500 Walters Road, Fairfield)	Moderate	B, C, D, E	This facility was listed on the UST database.
90 percent of corridor shoulders	Exposed Soil	B, C, D, E	Areas of exposed soil include the east and west shoulders of Leisure Town Road, Vanden Road, Peabody Road, Huntington Drive, and Walters Road, and the north and south shoulders of Cement Hill Road and Air Base Parkway.

Note: The database search identified additional sites in the corridor; the results of the database search are provided as an appendix to the ISA. Only those sites that present a potential concern to the project are listed in this table.

- **Aerially Deposited Lead (ADL).** The U.S. Environmental Protection Agency (EPA) recognizes that ADL may be present in soils within 50 feet of heavily traveled highways built before about 1987 because of the former use of lead additives in commercially available gasoline. Lead's relative immobility means that it generally remains where it was deposited in the soil. Thus, concentrations of lead on a site tend to be highest at the surface where it was deposited. Concentrations generally decrease with depth, with exceptions where cleaner fill was placed on top of contaminated soils, or where contaminated material was buried. Lead concentrations at four feet below grade are generally less than half of the levels at one foot below grade. Lead is not mobile in soils under most conditions because it exists in or forms insoluble compounds.

Portions of the corridor that were constructed after 1987 and are not likely to be impacted by ADL include:

- The east-west segment of the Cement Hill Road alignment (Alternative B);
- Walters Road from Bella Vista Drive to Tabor Avenue (Alternatives B, C, D and E);
- The Huntington Drive segment (Alternative D);
- The portion of Walters Road located south of the intersection with Petersen Road (Alternatives B, C, D, and E);
- The segment of Leisure Town Road from Vanden Road to Alamo Drive (Alternatives B, C, and D); and
- The west side of Leisure Town Road from Alamo Drive to Orange Drive (Alternatives B, C, and D).

All other paved segments of the corridor are likely to have ADL contamination in adjacent soils.

- **Petroleum/Sanitary Sewer Pipelines.** Underground utility pipelines are known to exist within, adjacent to, or cross under segments of all the build alternatives. These pipelines may be potential sources of petroleum hydrocarbons or biological contamination (fecal coliforms). Other unknown pipelines may also exist within or adjacent to the corridor.
- **Indications of Polychlorinated Biphenyls (PCBs).** Electrical transformers (pad- or pole-mounted), which may contain PCB's, were observed along segments of all the build alternatives, adjacent to the existing roadways.

3.12.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

3.12.3.1 Methodology

This analysis of potential impacts below is a summary of information in the ISA. The ISA was based on information derived from the following sources:

1. Environmental records review, conducted using a commercial database search, of current and past areas (0.25-mile to 1-mile corridor) with records of hazardous material storage, use, generation, spills, disposal, investigations, and remediation as readily available in selected agency records;

2. Personnel interviews with pertinent agency and site personnel regarding site use and history of potential hazardous materials use, spills, investigations, and remediation;
3. Aerial photograph review of historical aerial photographs over several different time periods for evidence of past land uses involving disposal and other practices;
4. Windshield survey of the alternative alignments for obvious signs of hazardous material use, storage, and spills; and
5. Previously conducted hazardous materials studies.

3.12.3.2 Summary of Hazardous Materials Impacts

This section compares the potential impact of hazardous waste and materials for each alternative. As described in detail below, all four build alternatives could result in construction hazardous waste and materials impacts within the corridor. Construction-related impacts would be temporary and intermittent; therefore, there would be short-term hazardous materials impacts associated with each of the alternatives. However, none of the alternatives would have hazardous waste and materials impacts when the listed mitigations measures are implemented. Table 3.12-2 shows the potential impacts for each alternative.

Impact HAZ-1: Would the Alternatives Expose Construction Workers or Nearby Land Uses to Previously Unknown Hazardous Materials?

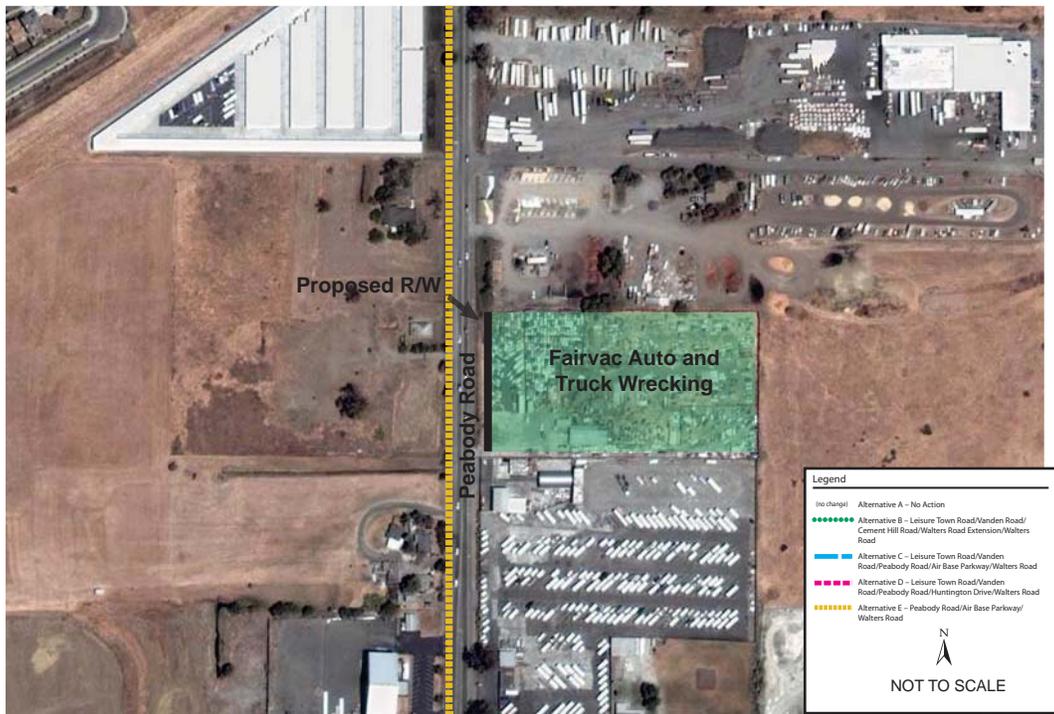
Alternative A. This alternative would not involve the use of or the potential unearthing of any hazardous materials because no construction or excavation would occur. There would be no potential for exposure of humans or the environment to hazardous materials in excess of whatever potential already exists.

Alternative B. The S&W Paving, AAA Sales, and ADCO Auto Wrecking site is located at 2400 Cement Hill Road in the City of Fairfield. The site is shown in Figure 3.12-2. Portions of this site are used as an auto wrecking yard, which potentially stores and/or uses several types of hazardous materials, including gasoline, diesel fuel, solvents for parts cleaning, batteries, antifreeze, coolants, and lubricants. The facility was listed as an UST on the EFS database report. No right-of-way is required from this site and the auto wrecking yard is several hundred feet from the proposed project construction limits. However, unknown hazardous materials associated with soil and groundwater contamination may be encountered during construction. Mitigation has been identified for this effect (Mitigation Measure HAZ-1, HAZ-2, HAZ-3, and HAZ-8).

In addition, construction activities could disturb previously unidentified hazardous materials. Mitigation has been identified for this effect (Mitigation Measure HAZ-1).

Table 3.12-2
Summary of Potential Hazardous Waste and Materials Impacts by Location and Alternative Without Implementation of Mitigation

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Expose Construction Workers or Nearby Land Uses to Previously Unknown Hazardous Materials.	No Impact.	Potential to encounter previously unreported hazardous materials during project construction.	Low risk to encounter previously unreported hazardous materials during project construction.	Low risk to encounter previously unreported hazardous materials during project construction.	Potential to encounter previously unreported hazardous materials during project construction.
Expose Known Hazardous Materials to Humans or the Environment.	No Impact.	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.	Potential for exposure to ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.
Expose Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials.	No Impact.	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.	Potential exposure through the use of heavy equipment materials and potentially hazardous road construction materials. Sanitary sewer and petroleum pipelines, as well as unknown abandoned pipelines may cross or exist within the planned roadway alignment.



**Figure 3.12-2
Sites with Previously Unknown Hazardous Materials**

Alternatives C and D. The ISA indicates that these build alternatives generally have a low risk to encounter previously unreported hazardous materials during project construction. However, such materials could be discovered during project construction. Mitigation has been identified for this effect (Mitigation Measure HAZ-1).

Alternative E. Fairvac Auto and Truck Wrecking/North Bay Trucking/City Towing and Transport site is located at 5016 Peabody Road in the City of Fairfield. The site is shown in Figure 3.12-2. Portions of this site are used as an auto wrecking yard, which potentially stores and/or uses several types of hazardous materials, including gasoline, diesel fuel, solvents for parts cleaning, batteries, antifreeze, coolants, and lubricants. This facility was not listed on the RWQCB or EFS Database Report. A small strip of right-of-way on the east side of the site would be required for Alternative E. The area of right-of-way to be acquired includes portions of land that are currently being used as storage sites for wrecked cars. The elimination of this storage area and removal of the wrecked cars may reveal contaminated soil. Additional unknown hazardous materials associated with soil and groundwater contamination may be encountered. Mitigation has been identified for this effect (Mitigation Measures HAZ-1, HAZ-2, HAZ-3, HAZ-8, and HAZ-9).

In addition, Alternative E could encounter previously unreported hazardous materials, as described above for Alternatives B, C, and D. Mitigation has been identified for this effect (Mitigation Measure HAZ-1).

Impact HAZ-2: Would the Alternatives Expose Known Hazardous Materials to Humans or the Environment?

Alternative A. This alternative would not involve the use of or potential unearthing of any known hazardous materials because no construction or excavation would occur. There would be no potential for exposure of humans or the environment to known hazardous materials in excess of whatever potential already exists.

Alternatives B and C. The ISA indicates that the Alternative B and Alternative C alignments generally have the potential for exposure to hazardous materials in the form of ADL, polychlorinated biphenyls (PCBs) in transformers, heavy metals such as chromium and lead in yellow street striping, and petroleum hydrocarbons from leaking storage tanks, petroleum pipelines, and railroad use.

ADL could be present at levels above regulatory thresholds along heavily traveled roadways because of lead additives in gasoline used up until approximately 1987. Such roadways in the corridor include Walters Road north of the intersection with Petersen Road, Vanden Road, and Leisure Town Road north of its intersection with Alamo Drive, and Peabody Road. Mitigation has been identified for this effect (Mitigation Measures HAZ-3 to HAZ-8).

The ISA identified two leaking storage tank sites along the alignment shared by Alternative B and Alternative C: 817 Leisure Town Road and 2301 Walters Road.

The Union 76 Gasoline Service Station site is located at 817 Leisure Town Road in the City of Vacaville. This site is used as a gas station and is listed as an open LUST on the EFS database report. The site is located on the east side of Leisure Town Road. Recent groundwater monitoring reports indicate gasoline range organics (GRO), Benzene, and methyl tertiary butyl ether (MTBE) contaminants. A proposed remediation system was installed on the site in early 2008 and is expected to be in place for four years. Groundwater depth is between 10 and 15 feet below ground surface and flows to the southeast. No right-of-way is required and no physical improvements are proposed adjacent to or within 500 feet of this site; therefore, it is not anticipated that the Union 76 site would impact the project.

The Bonfare Market site is at 2301 Walters Road in the City of Fairfield. This site is used as a gas station and is listed as an open LUST on the EFS database report. The site is located on the west side of Waters Road as shown in Figure 3.12-3a. Recent groundwater monitoring reports indicate the presence of total petroleum hydrocarbons gasoline (TPH-g), MTBE, tert-butyl alcohol (TBA), and tert-amyl methyl ether (TAME). It appears that the groundwater contamination extends beneath Walters Road. An ozone sparge remediation system was installed in early 2007 and it is likely that a separate system will be required for plume treatment and could be in place for at least five years. Groundwater depth is relatively shallow in the 3 to 7 feet range. No right-of-way is required from this site; however roadway and trenching operations would occur adjacent to the site within Walters Road. It is probable that contaminated soil and groundwater would be encountered. Mitigation for the contaminated soil and groundwater has been identified (Mitigation Measure HAZ-8).

Other potential sources of contamination include aerially applied chemicals during agricultural use of adjacent parcels that could present a respiratory irritant to construction workers. Construction may require the movement or disposal of soils or materials containing some or all of these hazardous materials. Mitigation has been identified for this effect (Mitigation Measures HAZ-3 to HAZ-8).

Alternative D. The potential for exposure to hazardous materials under Alternative D would be similar to that described above for Alternatives B and C. However, in addition to the two leaking storage tank sites identified above, the alignment of Alternative D would also pass near a leaking underground storage tank on Huntington Drive.

The Owens-Illinois Plastics Product Plant is located at 2500 Huntington Drive. This site is shown in Figure 3.12-3a. This manufacturing facility has an open LUST case on the EFS database report. Recent reports indicate concentrations of 1,1-DCE, 1,1-DCA and 1,1,1-TCA. A request for closure was denied in early 2006 by RWQCB because of 1,1-DCE concentrations in one of the wells. Remediation appears to be working based on test results; however, there is no information on the length of the cleanup. It appears only groundwater monitoring is occurring at this time. The depth of groundwater and information on the plume was not available from RWQCB Geotracker Database. It is possible that contaminated soil and groundwater would be encountered during construction of Alternative D. A strip of right-of-way on the southeast side of the site adjacent to Huntington Road is required for Alternative D. Roadway construction activities including trenching would be required adjacent to the site. Mitigation for the contaminated soil and groundwater has been identified (Mitigation Measures HAZ-8 and HAZ-9).

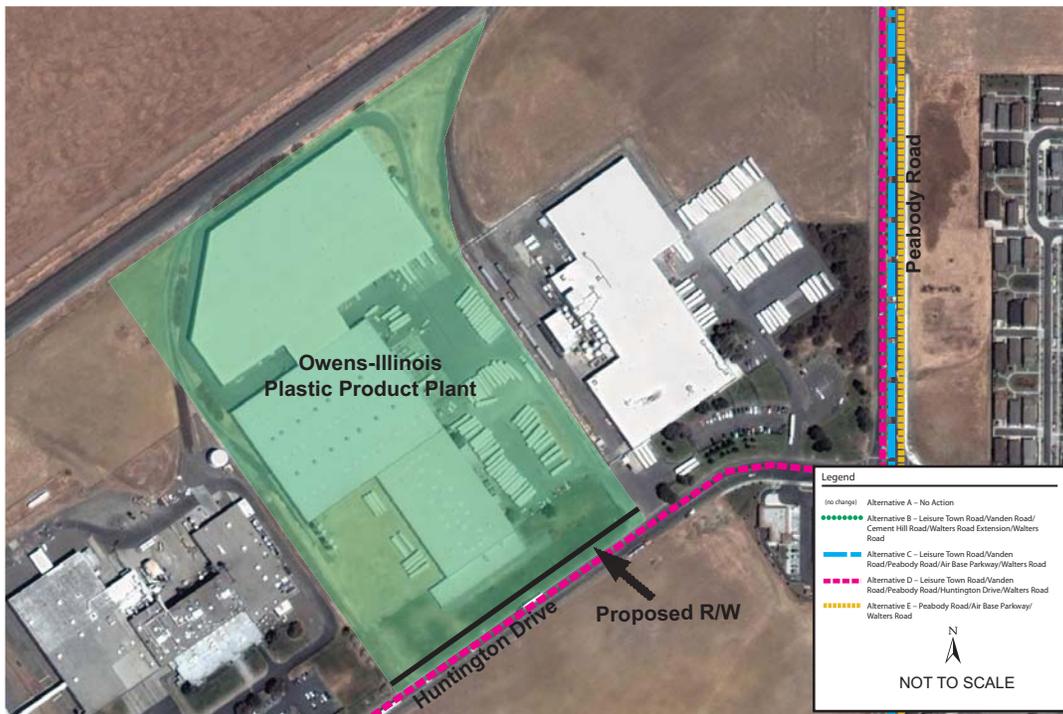


Figure 3.12-3a
Sites with Known Hazardous Materials

Alternative E. The potential for exposure to hazardous materials under Alternative E would be similar in nature to that described above for Alternatives B and C. Leaking storage tanks present along the alignment of Alternative E include: 2301 Walters Road, 101 Peabody Road, and 177 Peabody Road. In addition, roadways along the alignment with the potential for ADL would also include Peabody Road. Mitigation has been identified for this effect (Mitigation Measures HAZ-3 to HAZ-6).

The former Shell Service Station site is located at 101 Peabody Road on the southeast corner of Peabody Road and Elmira Road in the City of Vacaville, as shown in Figure 3.12-3b. This site, currently a closed gas station, was listed as an open LUST on the RWQCB Geotracker database report. Recent reports indicate concentrations of MTBE and other contaminants in two of the six groundwater monitoring wells. The highest concentrations of groundwater contaminants are located on the northwest corner of the site adjacent to Peabody Road. The groundwater is relatively deep, in the range of 17 to 20 feet, and the plume flows towards the east, away from Peabody Road. The site does not appear to have any ongoing clean up efforts. A strip of right-of-way on the west side of the site adjacent to Peabody Road is required for Alternative E. Roadway construction activities, including trenching, would be required adjacent to the site. Mitigation for the contaminated soil and groundwater has been identified (Mitigation Measures HAZ-8 and HAZ-9).

The Flying J site is located at 177 Peabody Road in the City of Vacaville. This site is shown in Figure 3.12-3b. This active gas station was listed as an open LUST on the RWQCB Geotracker database report. Recent reports indicate concentrations of MTBE, benzene, TPHg and other contaminants in the Upper Water Bearing Zone. The highest concentrations of groundwater contaminants are located on the center and eastern portions of the site. The groundwater is relatively deep, in the range of 8 to 16 feet, and the plume flows towards the east away from Peabody Rod. The site is under remediation, but the clean up duration is unknown. A strip of right-of-way on the west side of the site adjacent to Peabody Road is required for Alternative E. Roadway construction activities, including trenching, would be required adjacent to the site. Mitigation for the contaminated soil and groundwater has been identified (Mitigation Measures HAZ-8 and HAZ-9).

Impact HAZ-3: Would the Alternatives Expose Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials?

Alternative A. This alternative would not involve the use or potential unearthing of any hazardous materials because no construction or excavation would occur. There would be no potential for exposure of humans or the environment to hazardous materials in excess of whatever potential already exists.

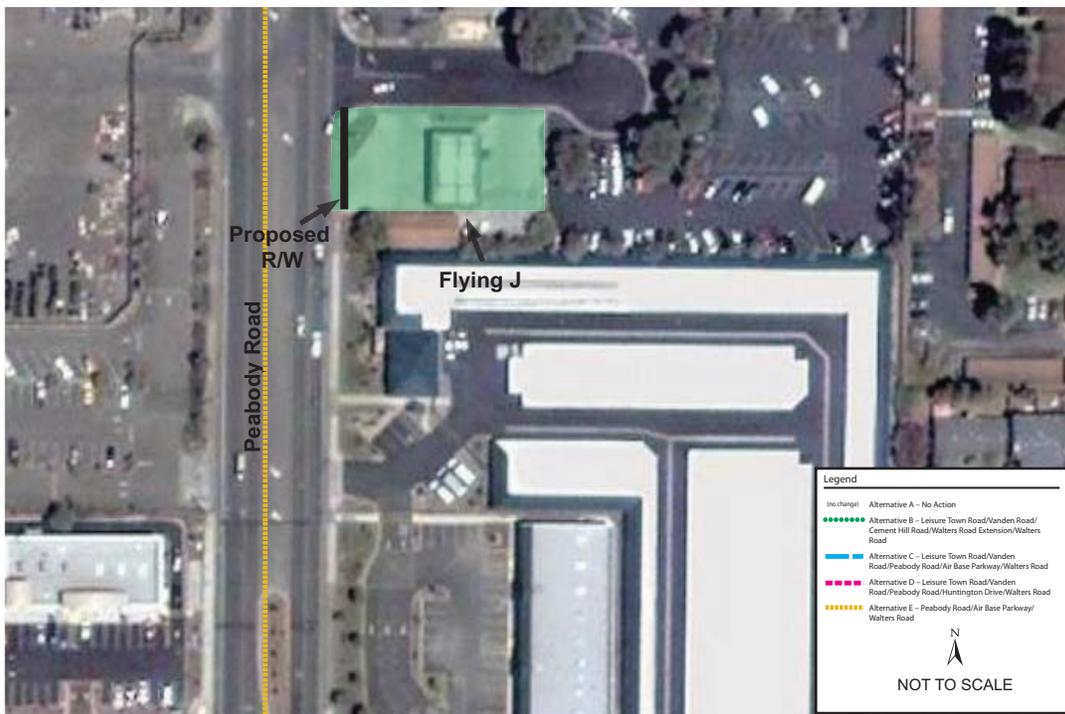
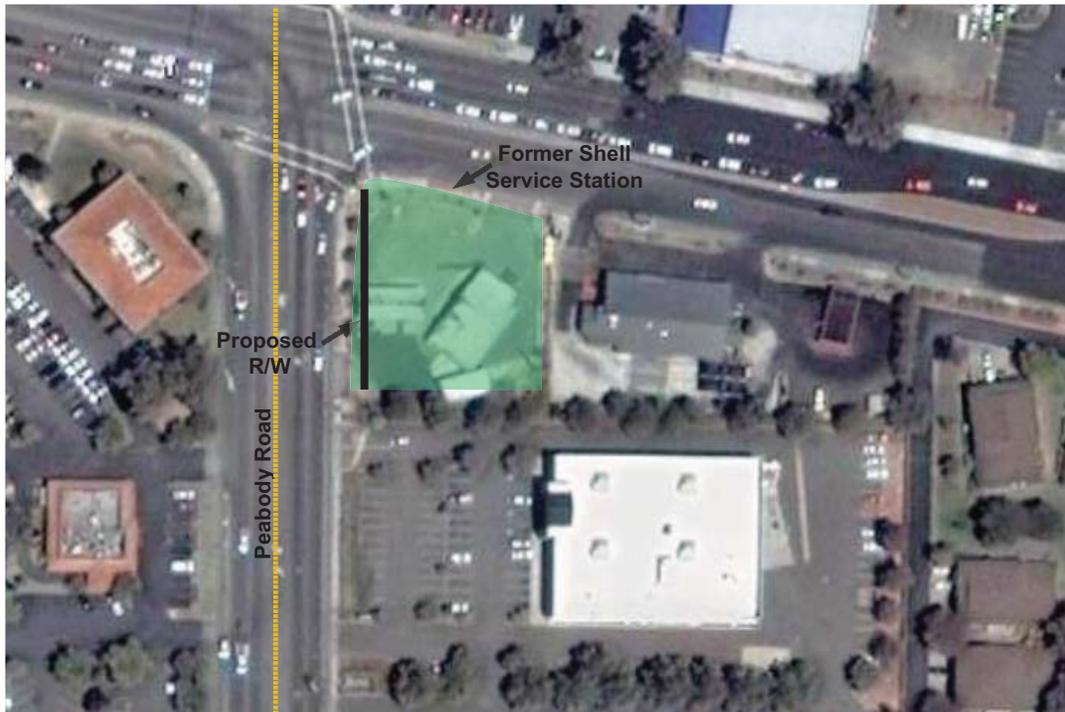


Figure 3.12-3b
Sites with Known Hazardous Materials
 3.12-16

Alternatives B, C, D, and E. Construction of all the build alternatives would involve the use of heavy equipment, small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment), and larger quantities of potentially hazardous road construction materials (i.e., black-topping materials) that may result in hazardous conditions onsite. In addition, sanitary sewer and petroleum pipelines may cross or exist within the planned roadway alignment for these alternatives. Furthermore, other unknown abandoned pipelines may exist within the corridor. If pre-existing leaks are encountered or if pipelines are ruptured during construction, construction workers or nearby land uses could be exposed to biological or hazardous material contamination. Mitigation has been identified for this effect (Mitigation Measure HAZ-1).

Impact HAZ-4: Would the Alternatives Result in Cumulative Hazardous Materials Effects?

Additional cumulative development in the corridor could disturb existing hazardous materials and generate additional hazardous materials. For each of the build alternatives, however, mitigation measures will require STA or the appropriate local agency to conduct site-specific hazardous materials investigations, prepare and implement a safety plan, and design and construct the project to avoid or minimize the potential exposure of humans and the environment to hazardous conditions. With implementation of Mitigation Measures HAZ-1 to HAZ-8, the project is not anticipated to make a considerable contribution to cumulative impacts related to hazardous materials.

3.12.4 Avoidance, Minimization, and/or Mitigation Measures

Options to avoid areas of known and potential contamination areas will continue to be investigated during the design phase. Of the four build alternatives, only Alternative D and Alternative E require right-of-way from known or potentially contaminated sites. Alternative D and Alternative E have right-of-way and physical constraints on both sides of the proposed roadway that make alignment modifications unfeasible to avoid the contaminated sites. The design of proposed storm sewer facilities in and around potential contaminated soil sites would include minimization and avoidance measures to reduce the potential to come in contact with contaminated soil.

Mitigation Measure HAZ-1: Develop a Health and Safety Plan to Address Worker Health and Safety.

A Health and Safety Plan (HSP) shall be prepared to address worker safety when working with potentially hazardous materials, including biological contaminants, potentially lead-based paint, transformer fluids, soils potentially containing ADL, and other construction-related materials within the right-of-way for any soil disturbance. Proper worker safety for handling and removal of contaminated soil materials shall also be included in the HSP and the HSP shall address worker safety when working in areas with agricultural chemicals.

Furthermore, the STA or the appropriate local agency shall confirm the location of underground pipeline crossings and prepare and implement the HSP for excavation work at these pipeline crossings prior to excavation activities. Critical locations may require a private utility location or special excavation techniques. The HSP shall address worker safety when working near pipeline crossings and

emergency plans in the event of a pipeline rupture or if a pre-existing leak is encountered during construction.

Mitigation Measure HAZ-2: Perform Additional Literature Review to Identify Potential for Historical Contamination. During the design phase, STA shall perform a literature review, including a file review at the Solano County Resource Management Agency, to determine past site uses and the extent of any hazardous materials issues that may exist at the auto wrecking facilities (Adco Auto Wreckers on Cement Hill Road and Fairvac Auto and Truck Wrecking on Peabody Road). If there is a potential for contamination from these sites within the proposed alignment in this area, soil sampling and screening for potential contaminants shall be conducted at representative locations according to a Solano County Resource Management Agency approved Sampling Plan for a Phase II site assessment. If contaminated soil and/or groundwater is encountered during the site screening, a Health and Safety Plan shall be completed to address potential worker health and safety issues while working with contaminated soil and/or groundwater and a Soil Management Plan shall be completed to address excavation, removal, and disposal of contaminated soil. These plans shall be approved by the Solano County Resource Management Agency or other appropriate regulatory agency prior to grading of the project segment within this area.

Mitigation Measure HAZ-3: Conduct Soil Sampling and Analysis to Identify and Remove Contaminated Soil. STA or the appropriate local agency shall require the construction contractor to perform a detailed walking reconnaissance of the Union Pacific Railroad (UPRR) and former Sacramento Northern Railroad tracks immediately adjacent to or intersected by the planned roadway alignment. This reconnaissance shall be performed to identify potentially stained soil, and lubricator and battery boxes containing oil, grease, and other petroleum hydrocarbons along project segments within 50 feet of existing or former railroad alignments. The contractor shall also inspect leaking storage tank sites (all alternatives) and the Kinder Morgan petroleum pipeline alignment in the corridor (Alternatives B, C, and D). Leaking storage tanks at the Bonfare Market, Owens-Illinois Plastic Products Plant, Flying J, and former Shell service station shall be inspected and sampled for contamination.

If potentially contaminated sites are encountered, a Soil Management Plan shall be completed to address testing, excavation, removal, and disposal of contaminated soil. If soil staining or visible contaminants are encountered during construction, soil sampling and analysis shall be performed and contaminated soil removed from the site and transported to an approved disposal facility in compliance with Occupational Safety and Health Administration (OSHA) safety regulations under the direction of the agency overseeing the project. The Solano County Resource Management Agency and local fire departments shall be notified immediately if contamination is encountered during construction.

Mitigation Measure HAZ-4: Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway. Before construction, STA or the appropriate local agency shall ensure that sampling and testing of yellow pavement striping scheduled for removal is performed to determine whether lead is present. If lead is present, the striping shall be removed according to regulatory procedures. If the existing pavement would be buried by new pavement as part of the project, this mitigation measure would not be required. Burying existing pavement would

effectively eliminate precipitation contact with the lead-contaminated paint and the potential for lead to leach from the paint into soils and runoff. All aspects of the proposed action associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations. Lead-containing stripe materials shall be disposed of at a Class 1 disposal facility.

Mitigation Measure HAZ-5: Conduct Sampling and Analysis of Transformer Fluid from Electrical Transformers. If leaks from electrical transformers that will either remain within the project construction zone or require removal or relocation are encountered before or during construction, STA or the appropriate local agency shall ensure that the transformer fluid is sampled and analyzed by qualified personnel for detectable levels of PCBs. The owner of the transformers shall verify the contents of the transformer before relocation and take proper mitigation actions, if required. If PCBs are detected, the transformer shall be removed and disposed of in accordance with regulatory agency requirements. Any stained soil encountered below electrical transformers with detectable PCB levels shall also be handled and disposed of in accordance with regulatory agency requirements.

Mitigation Measure HAZ-6: Conduct Testing for Aerially Deposited Lead in Surface and Near-Surface Soils. During the design phase of the project, STA or the appropriate local agency shall ensure that the contractor conducts a preliminary investigation and screening for ADL for portions of the project located immediately adjacent to Leisure Town Road (north of Alamo Drive), Peabody Road, Air Base Parkway, and Walters Road (from south of Air Base Parkway to Petersen Road) to determine the levels of lead in the surface and near-surface soils. If ADL is encountered above the regulatory thresholds, a Soil Management Plan, approved by the Solano County Resource Management Agency or other appropriate regulatory authority, shall be completed to address excavation, removal, and disposal of contaminated soil. Lead-impacted soils shall be handled or disposed of in accordance with regulatory agency requirements.

Mitigation Measure HAZ-7: Time Construction to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals. Construction activities adjacent to agricultural fields shall not occur during aerial application of chemicals and for at least 24 hours following application or for as long as recommended by the chemical label, whichever time period is greater. STA or the appropriate local agency shall ensure that the contractor coordinates with individual growers on the timing of aerially applied chemicals on parcels within or adjacent to the corridor to avoid effects on workers during construction.

Mitigation Measure HAZ-8: Test Soil and Groundwater at LUST and UST Sites and Remove Contaminated Soil. Soil and groundwater samples will be taken using direct push Geoprobe equipment within the vicinity of the UST and LUST sites. The samples will be tested for petroleum hydrocarbons and California Administrative Manual (CAM)-17 metals. Leaking storage tanks at the Bonfare Market, Owens-Illinois Plastic Products Plant, Flying J, and former Shell service station shall be inspected and sampled for contamination. A report will be submitted to STA upon receipt of analytical results. Areas of contaminated soil will be transported off site, if necessary. Impacted groundwater will be containerized in a Baker tank and analyzed prior to evaluating disposal options. An environmental report summarizing field activities and analytical results will be prepared for sites. This report will include a summary of excavation and disposal activities for impacted soil and/or groundwater.

Based on preliminary engineering requirements for excavation, ground water depths, and site conditions, potential contaminated soil and groundwater volumes and associated remediation costs were developed for each hazardous release site discussed in the impacts section and shown in Figures 3.12-2, 3.12-3a, and 3.12-3b. Table 3.12-3 presents the potential volume of contaminated soil and groundwater and the potential costs for remediation of each site. Remediation costs for soil includes removing the contaminated soil, transporting the contaminated soil to a Class II hazardous waste site, and importing clean soil.

**Table 3.12-3
Summary of Potential Soil and Groundwater Contamination Mitigation Costs by Location**

Location	Volume of Potential Contaminated Soil / Remediation Costs	Volume of Potential Groundwater Contamination / Remediation Costs
10. Owens-Illinois Plastics Product Plant (2500 Huntington Drive) – Alternative D	3,300 CY / \$485,300	Not Applicable
11. S & W Paving, AAA Sales, and Adco Auto Wrecking (2400 Cement Hill Road, Fairfield) – Alternative B	1,130 CY / \$186,800	22,800 Gallons / \$14,500
13. Bonfare Market (2301 Walters Road, Fairfield) – Alternatives B, C, D, and E	710 CY / \$127,600	24,000 Gallons / \$15,300
15. Former Shell Service Station (101 Peabody Road, Vacaville) – Alternative E	480 CY / \$85,400	9,600 Gallons / \$6,100
18. Flying J (177 Peabody Road, Vacaville) – Alternative E	630 CY / \$105,500	7,800 Gallons / \$5,000
23. Fairvac Auto and Truck Wrecking/North Bay Trucking/City Towing and Transport (5016 Peabody Road, Fairfield) Alternative E	960 CY / \$202,000	18,000 Gallons / \$11,400

Notes: CY = Cubic Yards

Mitigation Measure HAZ-9: Phase 2 Environmental Site Assessments (ESA). As part of the design process, site specific Phase 2 ESAs will be conducted for each parcel that requires a full or partial right-of-way take. The Phase 2 ESA will be conducted in accordance with requirements of the Final Rule for All Appropriate Inquires promulgated as an amendment to CERCLA. Areas potentially impacted with contaminants will be investigated and sampled, the constituents of concern identified, and any impacts delineated in the Phase 2 ESA. STA or the local agency will make every effort to have the property owner, or responsible party, investigate and clean-up the contamination prior to acquisition.

3.13 Air Quality

The following information is summarized from the air quality technical report prepared for the proposed action. This report is incorporated by reference and is available for public review at the Solano Transportation Authority's (STA's) and Caltrans' offices.

3.13.1 Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), lead (Pb), and sulfur dioxide (SO₂).

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

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) 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 the Metropolitan Transportation Commission (MTC) for the nine-county Bay Area, which includes Solano County, and the appropriate federal agencies, such as the Federal Highway Administration (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 “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or

particulate matter analysis performed for NEPA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

A regional conformity analysis covering the San Francisco Bay Area Air Basin for ozone was carried out that includes this project and all reasonably foreseeable and financially constrained regionally significant projects for at least 20 years from the date that the analysis was started. The analysis used the latest planning assumptions, and the most recent emission models and appropriate analysis methods, as determined by Interagency Consultation concluding on February 23, 2005. Based on this analysis, the region will be in conformity with the SIP, including this project, based on the motor vehicles emissions budget contained in the 2001 1-Hour Ozone Attainment Plan for the ozone precursors conformity test and analysis procedures, as described in 40 CFR 93.109(l). The design concept and scope of the proposed project is consistent with the project design concept and scope used in the regional conformity analysis. Timely Implementation evaluation reviewed by Interagency Consultation on October 2, 2006.

The air quality management agencies of direct importance in the project corridor are the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), the Yolo Solano Air Quality Management District (YSAQMD), and the Bay Area Air Quality Management District (BAAQMD). YSAQMD has jurisdiction over air quality issues in all of Yolo County and northern and eastern Solano County. BAAQMD has jurisdiction over air quality issues in the counties surrounding San Francisco Bay and southwestern Solano County. The corridor straddles the two air districts, the northern portion being in the YSAQMD, the southern portion in the BAAQMD.

3.13.2 Affected Environment

3.13.2.1 Climate and Topography

Ambient air quality is affected by climatological conditions, topography, and types and amounts of pollutants emitted. The project spans an area from Fairfield to Vacaville. It is within both the San Francisco Bay Area Air Basin (SFBAAB) and Northern Sacramento Valley Air Basin (NSVAB). The average annual high temperatures in the corridor and vicinity range from the 50s °F in the winter and high 80s and 90s °F in summer. The annual precipitation averages about 25 inches. Winds in Fairfield range from 9 mph in winter to 17 mph in summer. It is less windy in Vacaville, with winds ranging from 4 mph in winter to 8 mph in summer.

The corridor lies just northeast of the Carquinez Strait and Suisun Bay. Prevailing winds are from the west, particularly during summer. During summer and fall, offshore high pressure, coupled with thermal low pressure in the Central Valley, caused by high inland temperatures, sets up a pressure pattern that draws marine air eastward through the Carquinez Strait. The wind is strongest in the afternoon because that is when the pressure gradient between the East Pacific high and the low pressure areas is greatest.

Sometimes, the pressure gradient reverses and flow from the east occurs. In summer and fall, this can cause elevated pollutant levels. Typically, for this to occur, high pressure is centered over the Great Basin or Pacific Northwest, setting up an east to west or northeast to southwest pressure gradient. These high-pressure periods have low wind speeds and shallow mixing depths, thereby allowing the localized emissions to build up. Furthermore, the air mass from the east is warmer, thereby increasing photochemical activity, and contains more pollutants than the usual cool, clean marine air from the west. During winter, easterly flow through the Carquinez Strait is more common. Between storms, with the high-pressure system no longer offshore, high pressure over inland areas causes easterly flow.

3.13.2.2 Pollutants of Concern

EPA has established NAAQS for several pollutants, including CO, NO₂, SO₂, ozone, inhalable particulate matter, and lead, for which ARB, YSAQMD, and BAAQMD have primary implementation responsibility. ARB, YSAQMD, and BAAQMD are also responsible for ensuring that California ambient air quality standards (CAAQS) are met. The current NAAQS and CAAQS are listed in Table 3.13-1, along with the attainment status for each of the air basins within Solano County. The attainment status is discussed below under “Attainment Status.” Ozone, CO, and inhalable particulate matter are the pollutants of greatest concern for the project area. As discussed in the air quality report, there is no evidence to suggest that the project location would be routed in asbestos-containing rocks.¹

Ozone

Ozone is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors—reactive organic gases (ROG) and oxides of nitrogen (NO_x)—react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer problem.

Ozone is considered a regional pollutant. Because photochemical reactions take time to occur, high ozone levels often occur downwind of the emission source. Because the predominant wind direction in the corridor and vicinity is from the west, Solano County is a receptor of regional pollutants such as ozone from the Bay Area. Therefore, ozone conditions in Solano County result from a combination of locally generated and transported emissions.

¹ PBS&J, Updated Air Quality Technical Report, Jepson Parkway Project, May 2008.

**Table 3.13-1
Ambient Air Quality Standards Applicable in California and the Attainment Status of Solano County**

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Solano County	
			California	National	California	National	California	National	California	National
Ozone	O ₃	1 hour	0.09	-	180	-	If exceeded	-	SFBAAB and NSVAB: Nonattainment	No federal standard
		8 hours	0.07	0.08	137	-	If exceeded	If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor within an area	SFBAAB and NSVAB: Nonattainment	SFBAAB and NSVAB: Nonattainment
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	SFBAAB and NSVAB: Attainment	SFBAAB: Attainment NSVAB: Unclassified/ Attainment
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	SFBAAB and NSVAB: Attainment	SFBAAB: Attainment NSVAB: Unclassified/ Attainment
Nitrogen dioxide	NO ₂	Annual average	0.03	0.053	56	100	If exceeded	If exceeded	SFBAAB and NSVAB: No designation	SFBAAB and NSVAB: Attainment
		1 hour	0.18	-	338	-	If exceeded	-	SFBAAB and NSVAB: Attainment	No federal standard
Sulfur dioxide	SO ₂	Annual average	-	0.03	-	80	-	If exceeded	No state standard	SFBAAB and NSVAB: Attainment
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year	SFBAAB and NSVAB: Attainment	SFBAAB and NSVAB: Attainment

**Table 3.13-1
Ambient Air Quality Standards Applicable in California and the Attainment Status of Solano County**

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Solano County	
			California	National	California	National	California	National	California	National
		1 hour	0.25	-	655	-	-	-	SFBAAB and NSVAB: Attainment	No federal standard
Hydrogen sulfide	H ₂ S	1 hour	0.03	-	42	-	If equaled or exceeded	-	SFBAAB: Unclassified NSVAB: Attainment	No federal standard
Vinyl chloride	C ₂ H ₃ Cl	24 hours	0.010	-	26	-	If equaled or exceeded	-	SFBAAB No designation NSVAB: Attainment	No federal standard
Inhalable particulate matter	PM ₁₀	Annual arithmetic mean	-	-	20	-	If exceeded	-	SFBAAB and NSVAB: Nonattainment	No federal standard
		24 hours	-	-	50	150	If exceeded	If average 1% over 3 years is exceeded	SFBAAB and NSVAB: Nonattainment	SFBAAB and NSVAB: Unclassified
	PM _{2.5}	Annual arithmetic mean	-	-	12	15	If exceeded	If exceeded	SFBAAB: Nonattainment NSVAB: No designation	SFBAAB and NSVAB: Attainment
		24 hours	-	-	-	35	-	-	If average 2% over 3 years is exceeded	No state standard
Sulfate particles	SO ₄	24 hours	-	-	25	-	If equaled or exceeded	-	SFBAAB and NSVAB: Attainment	No federal standard

**Table 3.13-1
Ambient Air Quality Standards Applicable in California and the Attainment Status of Solano County**

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Solano County	
			California	National	California	National	California	National	California	National
Lead particles	Pb	Calendar quarter	-	-	-	1.5	-	If exceeded no more than 1 day per year	No state standard	SFBAAB and NSVAB: Attainment
		30 days	-	-	1.5	-	If equaled or exceeded	-	SFBAAB and NSVAB: Attainment	No federal standard

Source: ARB, "Area Designations for State and National Ambient Air Quality Standards."

Notes: All standards are based on measurements at 25°C and 1 atmosphere pressure; National standards shown are the primary (health effects) standards; - = not applicable; SFBAAB = San Francisco Bay Area Air Basin; NSVAB = Northern Sacramento Valley Air Basin.

Carbon Monoxide

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

Inhalable Particulate Matter

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials. The NAAQS and CAAQS for particulate matter applies to two classes of particulates—particulate matter less than or equal to 10 and 2.5 microns in diameter (PM₁₀ and PM_{2.5}, respectively). PM₁₀ sources in Solano County comprise both rural and urban sources, including agricultural burning, tilling of agricultural fields, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

Nitrogen Dioxide

NO₂ is a reddish brown gas that is a by-product of fuel combustion, mostly from motor vehicle and industrial sources. Aside from its contribution to ozone formation, NO₂ can increase the risk of acute and chronic respiratory disease and reduce visibility. NO₂ may be visible as the active coloring agent in a brown cloud on high pollution days, especially when both NO₂ and high ozone levels are present.

Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The 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 toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17229; March 29, 2001). This rule was issued

under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent.

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(1) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

This EIS includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives under the proposed project. Due to these limitations, the discussion is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information.

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

Monitoring Data

The stations closest to the corridor that monitor ozone and PM₁₀ are located in Vacaville, Fairfield, and Napa. The closest station that measures CO and NO_x is in Davis. No stations monitoring PM_{2.5} are near or representative of the project area. Monitoring data from these stations for 2004 to 2006 is summarized in Table 3.13-2. During the monitoring period, Vacaville experienced occasional violations of the State ozone standard.

The CCAA requires local and regional air pollution control districts that are not attaining the CAAQS for ozone, CO, SO₂, or NO₂ to expeditiously adopt plans specifically designed to attain these standards. Each plan must be designed to achieve an annual five percent reduction in district-wide emissions of each nonattainment pollutant or its precursors. ARB is responsible for developing plans and projects that achieve compliance with the State PM₁₀ standards.

**Table 3.13-2
Ambient Air Quality Monitoring Data from Area Monitoring Stations**

Pollutant Standards	2004	2005	2006
Ozone (O₃) (ppm)			
Maximum 1-Hour Concentration	0.096	0.090	0.106
Days Standard Exceeded			
CAAQS (1 Hour) > 0.09	1	0	3
Maximum 8-Hour Concentration	0.077	0.073	0.087
Days Standard Exceeded			
NAAQS (8-Hour) > 0.08	0	0	1
Carbon Monoxide (CO) (ppm)			
Maximum 8-Hour Concentration	0.98	0.69	0.56
Days Standard Exceeded			
NAAQS (8 Hours) ≥ 9.0	0	0	0
CAAQS (8 Hours) ≥ 9.0	0	0	0
Nitrogen Dioxide (NO₂) (ppm)			
Maximum 1-Hour Concentration	0.057	0.043	0.045
Days Standard Exceeded			
CAAQS (1 Hour) ≥ 0.18	0	0	0
Annual Average Concentration	0.009	0.009	0.009
Particulate Matter (PM₁₀) (µg/m³)			
Maximum 24-Hour Concentration	44.0	33.0	22.0
Second-Highest 24-Hour Concentration	40.0	32.0	21.0
Average Arithmetic Mean Concentration	18.2	16.1	8.2
Days Standard Exceeded			
NAAQS (24 Hours) > 150	0	0	0
CAAQS (24 Hours) > 50 ^a	0	0	0

Sources: ARB 2007; EPA 2007.

Notes: Ozone measurements were taken from the Fairfield Chadbourne Road station.

PM₁₀ measurements were taken from the Vacaville Merchant Street station.

CO and NO₂ measurements were taken from the Vallejo Tuolumne Street station in Davis. These two pollutants are not monitored in Vacaville or Fairfield.

Measurements expressed as ppm (parts per million) or µg/m³ (micrograms per cubic meter) as indicated.

a. Recorded every 6 days.

Attainment Status

If a pollutant concentration is lower than the respective State or federal standard, the area is classified as being in attainment of that standard. If a pollutant exceeds the standard in the manner prescribed by the appropriate federal or State regulatory agency, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated as unclassified; this occurs in nonurbanized areas where levels of the pollutant are not a concern. Table 3.13-1 summarizes the attainment status of Solano County for each pollutant within each of the air basins within the County (SFBAAB and NSVAB). The project area is currently designated as

“nonattainment” for the federal ozone and PM_{2.5} standards and for the State ozone, PM₁₀, and PM_{2.5} standards. The BAAQMD is considered a "maintenance" attainment area for CO, which indicates that the area was once designated as a non-attainment area for that pollutant, but is now designated as an attainment area in light of improved conditions. Except for West Sacramento, the YSAQMD is in attainment for this pollutant. Since the project area is in nonattainment for federal ozone and PM_{2.5} standards, and is a CO maintenance area, the project is subject to general conformity regulations.

3.13.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

3.13.3.1 Methodology

Construction

Construction activity is a source of dust and exhaust emissions that can have substantial temporary impacts on local air quality. These emissions would result from earthmoving, use of heavy equipment, as land clearing, ground excavation, cut-and-fill operations, and construction of roadways. Daily emissions can vary substantially, depending on the level of activity, specific operations, and prevailing weather. A major portion of dust emissions for the project would likely be caused by construction traffic on temporary construction roads. The primary emissions of concern from construction activities are PM₁₀ and ozone precursors from diesel-fueled equipment.

YSAQMD and BAAQMD have construction emissions standards. However, federal conformity regulations (40 CFR 93.123 (c)(5)) only require analysis of construction impacts for construction activities that will last for more than five years. The proposed project’s construction activities are expected to last less than five years; therefore the project impacts are considered temporary. To the extent possible, measures will be implemented to reduce construction emissions (see Section 3.13.4).

Operation

The primary operational emissions associated with the project are CO, PM₁₀, and ozone precursors emitted as vehicle exhaust. The effects of CO emissions were evaluated through CO dispersion modeling. The effects of PM₁₀ and ozone precursors were evaluated through the conformity process.

Carbon Monoxide Dispersion Modeling

Predicting the ambient air quality impacts of pollutant emissions requires an assessment of the transport, dispersion, chemical transformation, and removal processes that affect pollutant emissions after their release from a source. Gaussian dispersion models are frequently used for such analyses. The term “Gaussian dispersion” refers to a general type of mathematical equation used to describe the horizontal and vertical distribution of pollutants downwind from an emission source.

Future ambient CO concentrations from traffic emissions were evaluated using CALINE4 (Benson 1989), a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway segment analyzed in the model is treated as a sequence of “links.” CALINE4

uses worst-case meteorological data to predict a concentration that would never be exceeded, thereby producing a conservative estimate of a project's potential impacts.

Traffic volumes and operating conditions used in the modeling were obtained from the traffic analysis prepared for this project (PBS&J 2007). Conditions for 2010 and 2030 under Alternatives A to E were modeled using CALINE4. In general, only PM peak traffic was modeled because the level of service (LOS) and delays would be worse in the PM peak than in the AM peak. At the intersection of Peabody and Cement Hill Roads, however, both peaks were modeled to obtain the highest concentration because the LOS would be worse in the AM peak at that location. Based on LOS and peak hourly volumes, the intersections with the potential for causing the highest CO concentrations are the intersections of Canon Road and Vanden Road, Peabody Road and Cement Hill Road, Peabody Road and Elmira Road, and Depot Street and Elmira Road. CO concentrations were estimated at four receptors located 0 feet away from the edge of the roadway, at each intersection.

A background concentration of 6 parts per million (ppm) was added to the modeled 1-hour values to account for sources of ambient CO not included in the modeling (BAAQMD 1999). Eight-hour modeled values were calculated from the 1-hour values using a persistence factor of 0.7. A background concentration of 4.2 ppm was added to the modeled 8-hour values. One-hour background concentration data were taken from isopleths of ambient CO concentrations from the BAAQMD CEQA guidelines. One-hour CO monitored data in Solano County are not available from ARB. Actual 1- and 8-hour background concentrations in future years would likely be lower than those used in the CO modeling analysis because the trend in CO emissions and concentrations is decreasing because of continuing improvements in engine technology and the retirement of older, higher-emitting vehicles from the vehicle fleet.

Transportation Conformity

Transportation conformity requires that no federal money be used to fund a transportation project unless it can be clearly demonstrated that the project would not cause or contribute to violations of the NAAQS. Typically, conformity is assessed by evaluating whether a project is included in a conforming RTP and TIP. In addition, a local pollutant impact analysis is usually required.

The project is located in an area designated as nonattainment for the federal ozone standards. Because ozone and its precursors are considered regional pollutants, the project must be evaluated under the transportation conformity requirements. An affirmative regional conformity determination must be made before the project can proceed.

The regional transportation conformity regulations require, in addition to the regional conformity determination, that CO, PM₁₀, and PM_{2.5} hotspots be evaluated for projects in federal nonattainment and maintenance areas. The project is in a CO maintenance area; therefore, CO modeling was conducted to evaluate potential CO hotspots. The project is also in a federal PM_{2.5} nonattainment area. However, the proposed project is not considered a project of air quality concern for PM_{2.5} (POAQC) because it does not meet the definition of a POAQC as defined in EPA's Transportation Conformity Guidance. PM hot-spot analysis is not required. The project has undergone Interagency Consultation

(IAC). IAC participants concurred that the project is not a POAQC. Public Notice of the conformity determination was provided on February 4, 2011 through notifications published in the Fairfield and Vacaville newspapers. No comments were received on the determination during the 15-day public comment period, which ended on February 22, 2011. Subsequent to the close of the comment period, FHWA concurred with the conformity determination (see Appendix K).

Summary of Air Quality Impacts

Table 3.13-3 summarizes the potential for each alternative to result in air quality impacts. As shown, each of the alternatives, including Alternative A, would not result in a violation of the CO standards for any intersections within the corridor. Construction of the build alternatives would result in construction-related emissions of ROG, NO_x, and PM₁₀. The project, including the associated alternatives, was included in a Regional Conformity Plan. There would be no impact from mobile source air toxics. Demolition under the build alternatives would potentially result in the release of asbestos-containing materials, which would be covered by existing regulations.

Impact AQ-1: Would the Alternatives Result in Violations of Carbon Monoxide NAAQS?

Alternative A. Traffic conditions for the year 2010 without the project were modeled to evaluate CO concentrations relative to the CAAQS. Modeled CO concentrations for the intersections of Canon Road and Vanden Road, Peabody Road and Cement Hill Road, Peabody Road and Elmira Road, and Depot Street and Elmira Road are shown in Table 3.13-4. Concentrations for these intersections are shown because the impacts at these locations would be higher than at any other project-affected intersections. Based on the data contained in Table 3.13-4, modeled CO concentrations under Alternative A are below the CAAQS. There would be no violations of the CO standards under Alternative A.

Alternative B. Based on the data contained in Table 3.13-4, modeled CO concentrations under Alternative B are below the CAAQS. There would be no violations of the CO standards under Alternative B.

Alternative C. Based on the data contained in Table 3.13-4, modeled CO concentrations under Alternative C are below the CAAQS. There would be no violations of the CO standards under Alternative C.

Alternative D. Based on the data contained in Table 3.13-4, modeled CO concentrations under Alternative D are below the CAAQS. There would be no violations of the CO standards under Alternative D.

Alternative E. Based on the data contained in Table 3.13-4, modeled CO concentrations under Alternative E are below the CAAQS. There would be no violations of the CO standards under Alternative E.

**Table 3.13-3
Summary of Air Quality Impacts**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Violations of Carbon Monoxide NAAQS	No violations of CO standards	No violations of CO standards	No violations of CO standards	No violations of CO standards	No violations of CO standards
Increase ROG, NO _x , and PM ₁₀ Construction-Related Emissions	No Impact	Increased construction-related emissions	Increased construction-related emissions	Increased construction-related emissions	Increased construction-related emissions
Regional Conformity	No Impact	Included in a Regional Conformity Plan			
Mobile Source Air Toxics	No impact	No impact	No impact	No impact	No impact
Naturally Occurring Asbestos/Structural Asbestos	No impact	Demolition of potential asbestos containing materials would be covered by existing regulations	Demolition of potential asbestos containing materials would be covered by existing regulations	Demolition of potential asbestos containing materials would be covered by existing regulations	Demolition of potential asbestos containing materials would be covered by existing regulations

**Table 3.13-4
Modeled Carbon Monoxide Concentrations at the Intersection Location of Maximum Impact for Alternatives A to E**

Intersection	Alternative (ppm) (Project Start Year 2010)									
	A		B		C		D		E	
	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours
Canon Road/Vanden Road	6.0	4.2	6.4	4.5	6.4	4.5	6.4	4.5	6.0	4.2
Peabody Road/Cement Hill Road	7.7	5.4	8.0	5.6	8.8	6.2	8.0	5.6	7.7	5.4
Peabody Road/Elmira Road	8.6	6.0	7.8	5.5	8.2	5.7	8.8	6.2	8.8	6.2
Depot Street/Elmira Road	7.8	5.5	7.7	5.4	7.7	5.4	7.7	5.4	7.8	5.5
<i>State Ambient Standards*</i>	<i>20.0</i>	<i>9.0</i>	<i>20.0</i>	<i>9.0</i>	<i>20.0</i>	<i>9.0</i>	<i>20.0</i>	<i>9.0</i>	<i>20.0</i>	<i>9.0</i>

Note: Background concentrations of 4.7 and 1.7 ppm were added to the modeling 1- and 8-hour results, respectively.

* The federal 1- and 8-hour standards are 9 and 35 ppm, respectively.

Impact AQ-2: Would the Alternatives Increase ROG, NO_x, and PM₁₀ Construction-Related Emissions?

Alternative A. Because the project would not be constructed under Alternative A, there would be no air quality impacts from construction activities.

Alternative B, C, D, and E. Construction of the project would occur over a period of approximately four years. Federal conformity regulations (40 CFR 93.123 (c) (5)) require analysis of construction impacts for construction activities that will last for more than five years.

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

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM₁₀, PM_{2.5}, and small amounts of CO, SO₂, NO_x, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM₁₀ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM₁₀ emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Caltrans' Standard Specifications (Section 10) pertaining to dust minimization requirements requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM₁₀ emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO₂, NO_x, VOCs and some soot particulate (PM₁₀ and PM_{2.5}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Impact AQ-3: Would the Alternatives Meet Regional Conformity?

Alternative A. Under Alternative A, roadway improvements for constructing the parkway would not be made; therefore, there would be no regional conformity conflicts.

Alternatives B, C, D, and E. Regional conformity is based on whether a project would cause or contribute to violations of the NAAQS. Regional conformation also requires a project-level hot spot analysis for projects that are within a federal nonattainment or maintenance area. The corridor is in a non-attainment area for federal ozone standards. Ozone is a regional pollutant. Ozone precursors are converted into ozone by photochemical reactions some distance downwind, over several hours. It is therefore unlikely for most transportation projects to create a localized ozone “hot spot.” Increases in traffic would contribute to the regional ozone precursor emissions, and analysis of such emissions and their impact is normally done for regional planning. The project is also in a federal PM_{2.5} nonattainment area. However, the proposed project is not considered a project of air quality concern for PM_{2.5} (POAQC) because it does not meet the definition of a POAQC as defined in EPA’s Transportation Conformity Guidance. Therefore, a PM hot-spot analysis is not required.

If a project is part of a Regional Transportation Plan, which has been shown to contribute to annual emission reductions, then the project would not reduce a region’s ability to reach attainment. Air quality conformity analysis were conducted for the current Regional Transportation Plan for the Bay Area (the Transportation 2035 Plan), and for the 2011 TIP using the latest planning assumptions. The conformity determination was made under the motor vehicles emissions budget contained in the 2001 1-Hour Ozone Attainment Plan for the ozone precursors.

The project is fully funded and is in the 2035 RTP which was found to conform by the MTC on April 22, 2009. The project is also included in the MTC financially constrained 2011 TIP, page 366 and 367. The MTC TIP was found to conform by FHWA and FTA on December 14, 2010. The design concept and scope of the project is consistent with the project description in the 2035 RTP, 2011 TIP, and the assumptions in the MTC’s regional emissions analysis. The project is listed in the 2035 RTP and 2011 TIP with the following project descriptions:

- “RTP ID Solano 94151 – Construct 4-lane Jepson Parkway from Route 12 to Leisure Town Road.”
- “TIP ID SOL110003 – Jepson Parkway segment: Vanden Road project from Peabody Road to Leisure Town Road.”
- “TIP ID SOL110004 – Jepson Parkway segment: Walters Road Extension – Peabody Widening.”
- “TIP ID SOL110005 – Jepson Parkway segment: Leisure Town Road from Vanden Road to Alamo Road”
- “TIP ID SOL110006 – Jepson Parkway segment: Leisure Town Road from Alamo Road to Orange Road”

While this project would not implement a Transportation Control Measure (TCM)² identified in the SIP and RTP, it would not interfere with implementation of any TCMs. The build alternatives therefore meet the regional tests for conformity with the SIP.

Impact AQ-4: Would the Alternatives Result in an Increase in Mobile Source Air Toxics?

Alternative A. The FHWA's MSAT guidance considers projects like the proposed project to have low potential MSAT effects because it is intended to improve roadway operations without adding substantial new capacity and without creating a facility that is likely to increase emissions. For the purposes of this analysis, the roadway alignment for Alternative A has been separated into segments, where each segment has an associated traffic volume. From the traffic study, the segment with the highest Average Annual Daily Traffic (AADT) would be on Airbase Parkway, in the section between Walters Road and Peabody Road, with an AADT of 42,300 under Alternative A (the No Build Alternative). The amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. VMT are determined based on the AADT of each segment within the project corridor and the length of each segment.

Alternative B, C, D, and E. According to the traffic study for the proposed project, the segment within the project boundaries with the highest traffic volumes under the No Build Alternative would be on Airbase Parkway, in the section between Walters Road and Peabody Road. This segment would have a maximum AADT of 42,300 under Alternative A in 2030. While this roadway segment would have the highest background volumes, only Alternatives C and E would be located along this roadway segment. Under Alternative B and D, the project would not be located in this area, and would therefore have higher traffic volumes in other segments of the corridor. The maximum AADTs under each alternative in year 2030 are shown in Table 3.13-5. As shown in the table, the maximum AADT under Alternative B would be similar to the No Build Alternative, and Alternatives C, D, and E would result in an increase in AADTs higher than the No Build Alternative for each of the identified roadway segments.

According to the traffic study, the proposed project would be expected to result in similar truck percentage of total vehicles for all alternatives in 2030. The VMT estimated for each of the build alternatives is slightly higher than that for the Alternative A, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network (see Table 3.13-5). This increase in VMT would lead to higher MSAT emissions for the each of the build alternatives along the corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due a reduction in congestion. According to EPA's MOBILE6 emissions model, emissions of all of the priority MSATs, except for diesel particulate matter, decrease as speed increases. The extent to which these speed-related emissions decreases would offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

² Transportation Control Measures are regional measures used to reduce emissions. They are a broad array of strategies and can range from specific traffic control measures to the incorporation of carpool programs.

**Table 3.13-5
Projected Average Annual Daily Traffic and Vehicle Miles Traveled Year 2030**

Alternative	Maximum Average Annual Daily Traffic¹	Vehicle Miles Traveled (1,000 miles)²	Percent Increase in Vehicle Miles Traveled over No Build Conditions
Alternative A	42,300	462.9	–
Alternative B	35,600	533.1	15%
Alternative C	53,000	519.2	12%
Alternative D	41,100	500.1	8%
Alternative E	48,100	542.7	17%

Notes:

1. Based on the segment within the corridor with the highest 24-hour volume.
2. Based on average annual daily traffic and length of the segments within the corridor.

Regardless of the alternative chosen, emissions would likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the build alternatives would have the effect of moving some traffic closer to nearby homes and businesses; therefore, under each build alternative there may be localized areas where ambient concentrations of MSATs could be higher under certain build alternatives than Alternative A. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built along Walters Road, under all alternatives, along Leisure Town Road, under Alternatives B, C, and D, and along Peabody Road under Alternative E. However, as discussed above, the magnitude and the duration of these potential increases compared to the Alternative A cannot be accurately quantified due to the inherent deficiencies of current models. In sum, when a roadway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions for the build alternative could be higher relative to the Alternative A, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs would be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, would over time cause substantial reductions that, in almost all cases, would cause region-wide MSAT levels to be substantially lower than today.

Impact AQ-5: Would the Alternatives Result in the Release of Naturally Occurring Asbestos (NOA) or Structural Asbestos?

Alternative A. Under Alternative A, roadway improvements for constructing the parkway would not be made; therefore, there would be no potential for the release of naturally occurring asbestos or structural asbestos.

Alternatives B, C, D, and E. As discussed in the air quality report, there is no evidence to suggest that the project location would be routed in asbestos-containing rocks. Therefore, the potential for naturally occurring asbestos is low. Under each of the build alternatives, the project would require relocation of underground utilities, potential relocation of buildings, and bridge improvements. These structures have the potential to include asbestos-containing materials (ACMs). Should the project geologist encounter asbestos or ACMs during construction, handling and disposal of these materials would be subject to existing regulations.

Impact AQ-6: Would the Alternatives Result in Cumulative Air Quality Effects?

Construction activities associated with the project would generate emissions of ROG, NO_x, and PM₁₀. The emissions generated would contribute to the already degraded cumulative air quality conditions in Solano County. Implementation of Mitigation Measures AQ-1 and AQ-2 would reduce the project's contribution to the cumulative impact.

Traffic conditions for the years 2010 and 2030 without the project were modeled to evaluate CO concentrations relative to the CAAQS. Modeled concentrations for the year 2010 are higher than those for the year 2030, although peak-hour traffic volumes are higher in the year 2030. This is due to the decrease in EMFAC2007 emission factors for carbon monoxide from the year 2010 to the year 2030. Based on the data contained in Table 3.13-4 above, modeled CO concentrations under all alternatives are below the CAAQS. Therefore, there would be no violations of the CO standards under cumulative years 2010 and 2030 conditions.

3.13.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure AQ-1: Implement Construction Mitigation Measures to Reduce Construction Equipment Exhaust Emissions.

To the extent possible, STA or the appropriate local agency may require construction contractors to reduce construction-related emissions by implementing the following:

- restricting unnecessary vehicle idling to 5 minutes;
- requiring use of late model engines;
- requiring use of low-emission diesel products;
- requiring use of alternative fuels;
- requiring use of engine retrofit technology;

- requiring use of after-treatment products; and/or
- implementing other options as they become available.

Mitigation Measure AQ-2: Implement Construction Mitigation Measures to Reduce Construction Emissions, as Required by the BAAQMD. As discussed, BAAQMD requires implementation of control measures to reduce a project's construction impacts. Therefore, the following measures will be implemented to the extent possible as part of the project:

- Water exposed surfaces twice daily;
- Cover all trucks hauling soil, sand, and other loose materials or maintain at least 2 feet of freeboard;
- Pave, apply water three times daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites;
- Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites;
- Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets;
- Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more);
- Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unpaved roads to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways; and/or
- Replace vegetation in disturbed areas as quickly as possible.

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3.14 Noise

Information presented in this section is based on the Noise Study and Noise Abatement Decision Report (NADR) prepared for the project. The Noise Study and NADR are incorporated by reference and are available for review at the Solano Transportation Authority’s (STA’s) and Caltrans’ offices.

3.14.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 provides the broad basis for analyzing and abating highway traffic noise effects. The intent of this law is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement under NEPA are described below.

3.14.1.1 National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA involvement (and the Department, as assigned), 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). The following table lists the noise abatement criteria for use in the NEPA-23 CFR 772 analysis.

**Table 3.14-1
Activity Categories and Noise Abatement Criteria**

Activity Category	NAC, Hourly AWeighted 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	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: California Department of Transportation Environmental Program. *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects*. Table 2-1, Activity Categories and Noise Abatement Criteria, 2006.

Figure 3.14-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise-levels discussed in this section with common activities.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
<u>Jet Fly-over at 300m (1000 ft)</u>	110	<u>Rock Band</u>
<u>Gas Lawn Mower at 1 m (3 ft)</u>	100	
<u>Diesel Truck at 15 m (50 ft), at 80 km (50 mph)</u>	90	<u>Food Blender at 1 m (3 ft)</u>
<u>Noisy Urban Area, Daytime</u>	80	<u>Garbage Disposal at 1 m (3 ft)</u>
<u>Gas Lawn Mower, 30 m (100 ft)</u>	70	<u>Vacuum Cleaner at 3 m (10 ft)</u>
<u>Commercial Area</u>		<u>Normal Speech at 1 m (3 ft)</u>
<u>Heavy Traffic at 90 m (300 ft)</u>	60	
<u>Quiet Urban Daytime</u>	50	<u>Large Business Office</u>
		<u>Dishwasher Next Room</u>
<u>Quiet Urban Nighttime</u>	40	<u>Theater, Large Conference Room (Background)</u>
<u>Quiet Suburban Nighttime</u>		
	30	<u>Library</u>
<u>Quiet Rural Nighttime</u>		<u>Bedroom at Night,</u>
	20	<u>Concert Hall (Background)</u>
		<u>Broadcast/Recording Studio</u>
	10	
<u>Lowest Threshold of Human Hearing</u>	0	<u>Lowest Threshold of Human Hearing</u>

Figure 3.14-1
Representative Environmental Sound Levels

In accordance with the Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006*, 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 document discusses noise abatement measures that would likely be incorporated in the project.

The Department's *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. 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.

3.14.2 Affected Environment

Noise Background and Terminology

The following is a brief discussion of general noise terminology.

- **Sound:** A vibratory disturbance created by a vibrating object that when transmitted by pressure waves through a medium such as air is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise:** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB):** A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound-pressure amplitude to a reference sound-pressure amplitude. The reference pressure is 20 micro-pascals.
- **A-Weighted Decibel (dBA):** An overall frequency-weighted sound level in dB that approximates the frequency response of the human ear.
- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq}[h]$), is the energy average of the A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by Caltrans and FHWA.

- **Percentile-Exceeded Sound Level (L_x):** L_x represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, L_{90} is the sound level exceeded 90 percent of the time).
- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of the A-weighted sound levels occurring during a 24-hour period with 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.
- **Community Noise Equivalent Level (CNEL):** CNEL is the energy average of the A-weighted sound levels occurring during a 24-hour period with 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m. and 5 dB added to the A-weighted sound levels occurring between 7:00 p.m. and 10:00 p.m.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

- **Geometric Spreading:** Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance. Highway noise is not a single, stationary point source of sound. The movement of the vehicles on a highway makes the source of the sound appear to emanate from a line (i.e., a line source) rather than a point. This line source results in cylindrical spreading rather than the spherical spreading that results from a point source. The change in sound level from a line source is 3 dBA per doubling of distance.
- **Ground Absorption:** The noise path between the highway and the observer is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is done for simplification only because prediction results based on this scheme are sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., those sites with a reflective surface, such as a parking lot or a smooth body of water, between the source and the receiver), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, between the source and the receiver), an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source.
- **Atmospheric Effects:** Research by Caltrans and others has shown that atmospheric conditions can have an adverse effect on noise levels within 200 feet of a highway. Wind has been shown to be the most important meteorological factor within approximately 500 feet of the source, whereas vertical

air-temperature gradients are more important for greater distances. Other factors such as air temperature, humidity, and turbulence also have adverse effects. Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Increased sound levels can also occur as a result of temperature inversion conditions (i.e., increasing temperature with elevation).

- **Shielding by Natural or Human-Made Features:** A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A taller barrier may provide as much as 20 dB of noise reduction.

Existing Noise Environment

The existing noise environment in the corridor is dominated by noise from traffic traveling on roadways within the corridor, industrial activities, and aircraft overflights from Travis AFB. Table 3.14-2 summarizes short-term sound-level measurements taken in the corridor. As shown, noise levels at most of the measured locations within the corridor approach or exceed the NAC of 67 dBA under existing conditions. Long-term measurements were also taken in the corridor, which resulted in noise levels of 70.4 to 71.5 dBA L_{dn} .

3.14.3 Impacts (including Permanent, Temporary, Direct, Indirect, and Construction)

Methodology

Construction Noise

There are no commonly accepted thresholds for acceptable levels of noise from construction activities. However, noise guidelines recommended by the U.S. Department of Transportation (Federal Transit Administration, 1995) for construction noise are shown below for reference. These guidelines state that there may be an adverse community reaction if the 1-hour L_{eq} value (measured in dBA) from construction noise would exceed the values shown in Table 3.14-3.

Table 3.14-4 summarizes noise levels produced by construction equipment that are commonly used for roadway-construction projects. As shown in the table, most construction equipment is expected to generate noise levels ranging from 70 to 90 dB at a distance of 50 feet. Pile driving is expected to generate noise levels up to 101 dB at a distance of 50 feet. Construction equipment is considered a stationary source; therefore, noise produced by construction equipment would be reduced at a rate of about 6 dB per doubling of distance.

**Table 3.14-2
Summary of Field-Measured Data (Short-Term Monitoring Results)**

Receiver ^a	Roadway Segment	Measurement ^b	Measured Sound Level (dBA-L _{eq}) ^c
A	Peabody Road between Berryessa Drive and Cliffside Drive about 100 feet from eastern roadway edge	1	66.2
		2	66.3
B	Peabody Road between Marshall Road and Beelard Drive about 50 feet from western roadway edge	1	65.7
		2	66.1
C	Peabody Road between Beelard Drive and Southwood Drive about 40 feet from western roadway edge	1	69.2
		2	69.4
D	Peabody Road between California Drive and Caldwell Drive about 50 feet from western roadway edge	1	66.1
		2	66.3
E	Peabody Road between Morning Glory Drive and Foxboro Parkway about 250 feet from eastern roadway edge	1	56.3
		2	56.6
G	Walters Road between Montebello Drive and Peterson Road about 80 feet from eastern roadway edge	1	59.9
		2	60.4
H	Leisure Town Road south of Fallbrook Avenue about 20 feet from eastern roadway edge	1	67.9
		2	68.5
I	Leisure Town Road south of Ulatis Road about 50 feet from eastern roadway edge	1	66.2
		2	66.4
J	Leisure Town Road south of Poplar Drive about 50 feet from western roadway edge	1	63.0
		2	63.3

Notes:

- Receiver locations are identified in the noise technical report Appendix A.
- Measurements were repeated at all locations to verify the measurements. Measurements were taken in June 2004.
- These measurements were used primarily as calibration for the traffic noise modeling.

**Table 3.14-3
U.S. Department of Transportation Construction Noise Guidelines**

Land Use	1-Hour L _{eq} (dBA)	
	Day	Night
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: Federal Transit Administration, 1995.

Table 3.14-4
Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 feet from Source
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, derrick	88
Crane, mobile	83
Dozer	85
Generator	81
Grader	85
Impact wrench	85
Jack hammer	88
Loader	85
Paver	89
Pile driver (impact)	101
Pile driver (sonic)	96
Pneumatic tool	85
Pump	76
Rock drill	98
Roller/sheep's foot	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Truck	88

Source: FTA, 1995.

Operational Noise

Study methods and procedures used in this analysis are consistent with requirements and guidance provided in 23 CFR 772 and the *Protocol*. The steps to evaluate traffic-noise impacts and abatement are summarized below and are discussed in detail in the Noise Study for the project.

- 1. Identify Potential Receiver Locations:** Locations in the corridor that could be exposed to traffic-noise impacts resulting from the project were identified. Areas where receivers were identified are shown in Figure 3.14-2.

2. **Measure Existing Sound Levels:** Sound-level measurements were taken at locations potentially exposed to traffic-noise impacts (shown in Table 3.14-2, above). Traffic counts and speeds were measured simultaneously.
3. **Digitize Geometric Features:** Geometric features, including roadway lanes, receiver locations, existing terrain, and existing walls in the detailed impact assessment area, were digitized into a three-dimensional, scaled reference coordinate system for existing and project conditions. Figure 3.14-2 indicates the noise modeling locations for the identified receiver areas from Step 1, above.
4. **Calibrate Noise Model:** The traffic-noise model was calibrated as necessary using the measured sound-level data, actual traffic counts, and digitized geometric features for existing conditions from Steps 2 and 3, above.
5. **Predict Traffic-Noise Levels:** Using peak-noise-hour traffic volumes under existing, year 2010, and year 2030 cumulative conditions, the traffic-noise model was used to predict peak-noise-hour noise levels under existing, year 2010, and year 2030 conditions for each alternative. Traffic noise levels were predicted for each of the identified receiver locations.
6. **Identify Traffic-Noise Impacts and Consider Abatement:** The traffic-noise modeling results for existing, year 2010, and year 2030 conditions were used to determine whether traffic-noise impacts would occur under each alternative (i.e., where the project would exceed the NAC or result in an increase of 12 dB or more). Where impacts are identified, abatement is considered.

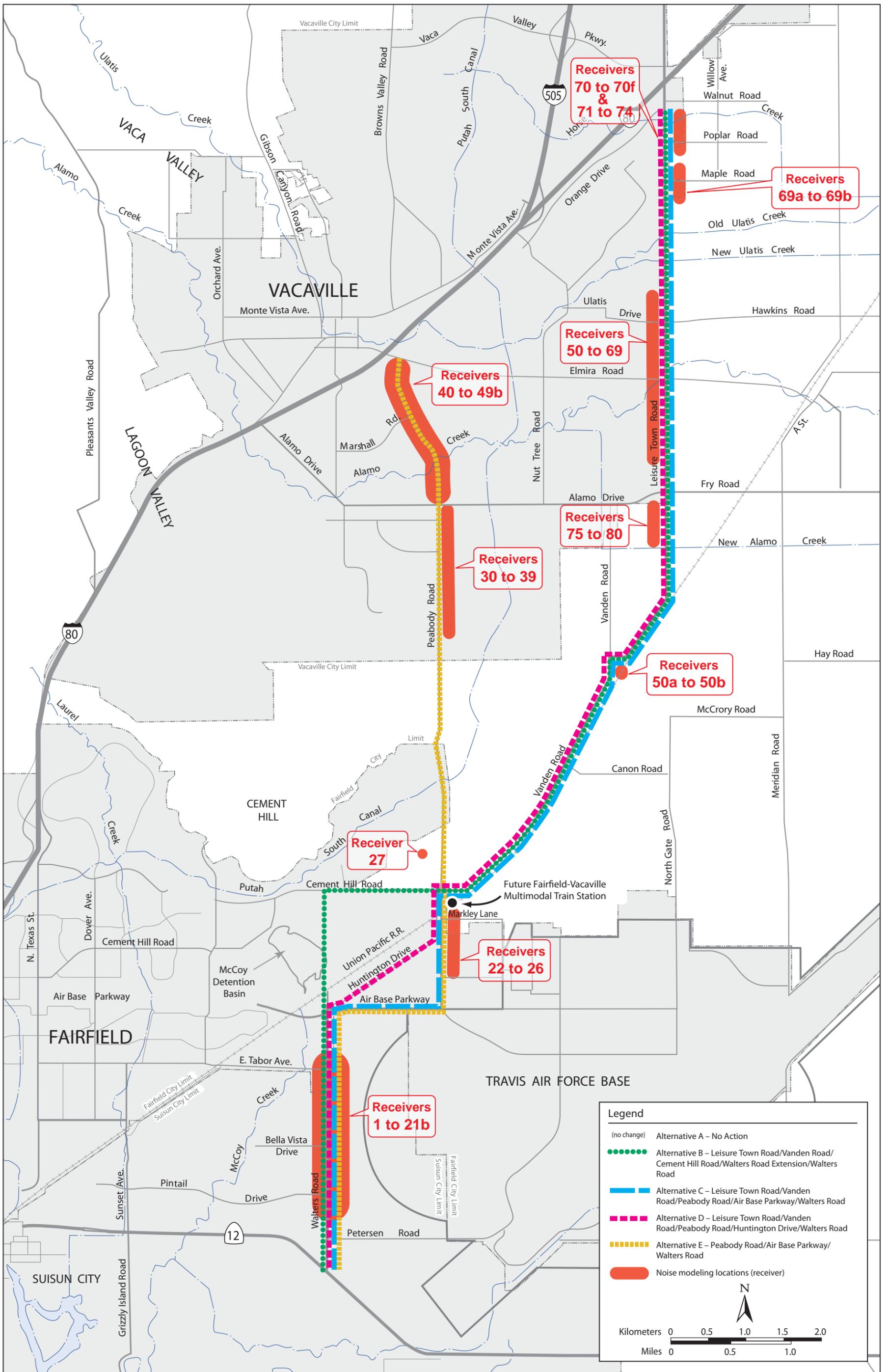
Noise Abatement

As discussed above, noise-abatement measures must be identified for all areas that are reasonable, feasible, and likely to be incorporated into the project. Noise impacts for which no apparent solution is available must also be identified. Primary consideration for abatement is given to exterior areas. In situations in which no exterior activities are affected by traffic noise, the interior criterion (Activity Category E) is used as the basis for noise-abatement consideration.

Based on the configuration and location of the project, noise barrier abatement is considered the primary form of noise abatement to be considered. Barrier heights ranging from 6 feet to 16 feet high in 2-foot increments are considered as part of this study. Barrier heights are relative to the elevation at the edge of shoulder. Based on guidance in Chapter 1100 of the Caltrans' *Highway Design Manual*, barriers at the edge of pavement are limited to 16 feet high. Additional studies will be conducted for residential areas that have been recently completed, are currently under construction, or are planned, designed, and programmed.

Summary of Impacts to Noise

Table 3.14-5 summarizes the potential for each alternative to result in noise impacts. All four build alternatives would result in construction noise impacts within the corridor. These construction activities would be temporary and intermittent; therefore, there would be short-term noise impacts associated with each of the alternatives.



Source: Jones & Stokes, 2006.

Figure 3.14-2
Noise Monitoring Locations

**Table 3.14-5
Impacts from Noise by Alternative**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Construction Noise	NA	Temporary, intermittent and short-term impacts to residents along Walters Road and Leisure Town Road	Temporary, intermittent and short-term impacts to residents along Walters Road and Leisure Town Road	Temporary, intermittent and short-term impacts to residents along Walters Road and Leisure Town Road	Temporary, intermittent and short-term impacts to residents along Peabody Road
Noise Levels above the NAC or a Substantial Increase in Traffic Noise Levels	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Leisure Town Road	Approach or exceed NAC along Walters Road and Peabody Road

As discussed above, in accordance with the Department’s *Protocol*, 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. None of the build alternatives would result in substantial increases in noise levels. However, as described below and in the Noise Study, Alternatives B, C, and D would result in areas of the corridor where noise levels would approach or exceed the NAC. These noise impacts would require noise abatement considerations. With implementation of Alternatives B, C, or D, noise levels would approach or exceed the NAC in four areas: one along Walters Road and three along Leisure Town Road. Four noise barriers were considered feasible for these alternatives. Implementation of Alternative E would also result in noise levels that would approach or exceed the NAC and noise abatement considerations would also be required. Alternative E would result in noise levels that approach or exceed the NAC in eight areas: one along Walters Road and seven along Peabody Road. Five noise barriers were considered feasible for this alternative.

Impact N-1: Would the Alternatives Result in the Exposure of Noise-Sensitive Land Uses to Construction Noise?

Alternative A. Under this alternative, the project would not be constructed. Therefore, there would be no effects related to construction noise.

Alternative B. During construction of the project, noise from construction activities (primarily operation of heavy equipment) may intermittently dominate the noise environment in the immediate area of construction. In general, adverse noise impacts from construction are not anticipated because construction would be short-term, intermittent, and dominated by local traffic noise.

A reasonable worst-case assumption is that the three loudest pieces of equipment anticipated for use on the project (paver, loader, and truck) would operate simultaneously and continuously for at least a 1-hour period. Under these conditions, at 50 feet from the source, the combined sound level would be 92 dBA. Table 3.14-6 summarizes predicted noise levels at various distances from an active construction site, assuming this combined source level, distance attenuation (6 dB per doubling of distance), and attenuation from ground absorption (1 to 2 dB per doubling of distance).¹

The results in Table 3.14-6 indicate that noise-sensitive land uses located within about 55 feet of an active construction site may be exposed to construction noise that exceeds the daytime construction threshold of 90 dBA for residential uses. Noise-sensitive land uses located within about 135 feet of an active construction site may be exposed to construction noise in excess of the nighttime construction threshold of 80 dBA. The table also indicates that commercial or industrial receptors within about 55 feet may be exposed to construction noise from pile driving that exceeds the daytime construction standard of 100 dBA. Noise sensitive uses within about 150 feet may be exposed to construction noise from pile driving that exceeds the daytime construction threshold of 90 dBA.

**Table 3.14-6
Estimated Construction Noise from Construction Activities**

Distance Between Source and Receiver	Calculated Sound Level (dBA)	
	Construction Equipment	Pile Driving
50 feet	92	101
100 feet	84	93
200 feet	76	85
300 feet	71	80
400 feet	68	77
500 feet	65	75
600 feet	63	72
700 feet	62	71
800 feet	60	70
900 feet	59	68
1,000 feet	58	67

Note: Calculations based on FTA 1995 guidance. This calculation includes geometric attenuation and ground effect; it does not include the effects, if any, of local shielding, which may reduce sound levels further.

However, there may be instances where construction activity in proximity to noise-sensitive land uses could result in noise levels that exceed the thresholds defined above. This would be considered an adverse effect for the following noise sensitive land uses, which are located along Leisure Town Road and Walters Road for the Alternative B alignment:

¹ Hoover, R.M., R.H. Keith. 1996. Noise control for buildings, manufacturing plants, equipment and products. Hoover & Keith, Inc. Houston, TX.

- Noise-sensitive land uses on both the east and west sides of Leisure Town Road in Vacaville. These include residential development on the west side of Leisure Town Road between Alamo Drive and Kingswood Avenue, and between Ulatis Drive and Stonegate Drive. These developments have existing barriers.
- The residential development on the west side of Leisure Town Road between Kingswood Avenue and approximately Arbor Oaks Drive, and a mobile-home park on the east side of Leisure Town Road between Poplar Drive and Horse Creek in Vacaville. These developments do not have any barriers in place.
- A residential subdivision on the west side of Leisure Town Road between Commerce Place and Ulatis Drive and between New Alamo Creek and Alamo Drive in Vacaville.
- Residential subdivisions and churches located on both sides of Walters Road between Petersen Road and Air Base Parkway in Fairfield. There are existing barriers from Petersen Road to approximately East Tabor Avenue.

Mitigation Measures N-1 to N-3 have been identified to reduce the effects of construction noise.

Alternative C. Noise levels for construction under Alternative C would be similar to that discussed for Alternative B. Noise-sensitive land uses under this alternative along Leisure Town Road and Walters Road are the same as under Alternative B, with the addition of the following along Peabody Road:

- A residential subdivision on the east side of Peabody Road between Dobe Lane and to the north of Whitney Drive just south of Markeley Lane in Fairfield. There is an existing noise barrier in this area.

As described for Alternative B, Mitigation Measures N-1 to N-3 has been identified to reduce this effect.

Alternative D. Noise levels for construction under Alternative D would be similar to that discussed for Alternative B. Noise-sensitive land uses under this alternative along Leisure Town Road and Walters Road are the same as under Alternative B, with the addition of the subdivision along Peabody Road between Whitney Drive and Markeley Lane, which is also listed under Alternative C.

As described for Alternative B, Mitigation Measures N-1 to N-3 has been identified to reduce this effect.

Alternative E. Noise levels for construction under Alternative E would be similar to that discussed for Alternative B. Noise-sensitive land uses under this alternative alignment along Peabody Road and Walters Road are listed below:

- Residential developments, a senior housing complex, Will C. Wood High School, and a bike path on both sides of Peabody Road north of Alamo Drive in Vacaville. There are no existing noise barriers.

- North of Caldwell Drive, various noise-sensitive land uses on both sides of Peabody Road, including the Al Patch Memorial Park on the west and residential subdivisions on the east in Vacaville. The subdivisions have an existing noise barrier.
- Residential subdivisions and parks primarily on the east side of Peabody Road north of Foxboro Parkway in Vacaville. These are surrounded by existing barriers.
- A residential subdivision on the west side of Peabody Road just south of the Putah South Canal in Fairfield. These are surrounded by existing barriers.
- A residential subdivision on the east side of Peabody Road between Dobe Lane and to the north of Whitney Drive just south of Markeley Lane in Fairfield. There is an existing noise barrier in this area.
- Residential subdivisions and churches on both sides of Walters Road between Petersen Road and Air Base Parkway in Fairfield. There are existing barriers from Petersen Road to approximately East Tabor Avenue.

As described for Alternative B, Mitigation Measures N-1 to N-3 has been identified to reduce this effect.

Impact N-2: Would the Alternatives Result in the Exposure of Noise-Sensitive Land Uses to Noise Levels above the NAC or a Substantial Increase in Traffic Noise?

Peak-noise-hour noise levels under existing, year 2010, and year 2030 conditions for each alternative were predicted for each of the identified receiver locations. Tables 3.14-7 and 3.14-8 provide a summary of the noise level predictions under year 2010 and year 2030 presented in the Noise Study, with a range of noise levels for each group of receivers. Individual receivers were analyzed in the Noise Study, and are grouped in the table based on location of the receiver along the project alignment. The locations of each receiver group are shown in Figure 3.14-2. As shown in the tables, areas along the project alignment exceed or approach the FHWA NAC for residential uses under existing conditions.

Alternative A. Traffic noise levels within the corridor under existing and future no project conditions would result in noise levels that approach or exceed the FHWA NAC. However, under this alternative, noise abatement measures would not be required. Because the project would not be constructed under this alternative, Alternative A would result in no substantial increases in traffic noise levels. Therefore, there would be no adverse impacts related to traffic noise.

Alternative B. Traffic noise levels within the corridor under existing and future no build conditions would result in noise levels that approach or exceed the FHWA NAC. Traffic noise levels within the corridor would increase compared to existing and future no-project conditions under Alternative B. The

**Table 3.14-7
Summary of Year 2010 Traffic Noise Impacts under 23 CFR 772 (L_{eq})**

Receiver Group ^{a, b}	Major Roadway	Existing Worst Noise Hour Noise Level (dB-L _{eq} [h])	Predicted Worst Noise Hour Noise Level (dB-L _{eq} [h]) ^c					Noise Increase (dB) Relative to Existing Conditions				
			Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
All Alternatives												
1-21b	Walters Road	53-64	54-65	54-64	54-65	54-65	54-65	0-2	0-2	0-2	0-2	0-2
Alternative E												
22-26	Peabody Road	57-62	58-63	—	—	—	57-61	1-2	—	—	—	-1-1
27	Peabody Road	63	64	—	—	—	64	1	—	—	—	1
30-39	Peabody Road	57-65	57-63	—	—	—	57-65	0-1	—	—	—	0-2
40-49b	Peabody Road	61-70	61-71	—	—	—	61-72	0-1	—	—	—	-1-2
Alternatives B, C, and D												
50a-50b	Vanden Road	61-71	63-72	64-71	64-71	64-71	—	1-2	0-3	0-3	0-3	—
50-69	Leisure Town Road	53-68	55-70	56-68	56-68	56-68	—	1-2	-1-3	-1-3	-1-4	—
69a-69b	Leisure Town Road	67-69	69-71	70-73	70-73	70-73	—	2	3-4	3-4	3-4	—
70-70f	Leisure Town Road	60-68	62-70	62-70	62-70	62-70	—	2	2	2	2	—
71-72	Leisure Town Road	56-59	58-60	60-63	—	—	—	1-2	4	—	—	—
73-74	Leisure Town Road	60-68	62-70	61-67	—	—	—	2	-1-1	—	—	—
75-80	Leisure Town Road	52-58	55-61	57-62	—	—	—	2-3	2-5	—	—	—

Notes:

— = not applicable

Bold = Impacts identified. Impacts only identified for noise abatement criterion thresholds which are approached or exceeded under existing and/or 2010 conditions. No impacts are identified under Alternative A, as this is the No Build Alternative.

- All receptor locations were residential developments that would be considered within the FHWA Activity Category B. Applicable Noise Abatement Criteria (NAC) for the residences would be 67 dBA.
- See Figure 3.14-2 for receiver locations.
- Predicted design year 2010.

**Table 3.14-8
Summary of Year 2030 Traffic Noise Impacts under 23 CFR 772 (L_{eq})**

Receiver Group ^{a, b}	Major Roadway	Existing Worst Noise Hour Noise Level (dB-L _{eq} [h])	Predicted Worst Noise Hour Noise Level (dB-L _{eq} [h]) ^c					Noise Increase (dB) Relative to Existing Conditions				
			Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
All Alternatives												
1-21b	Walters Road	53-64	57-68	56-67	57-67	57-67	57-67	3-5	2-4	2-5	2-4	3-4
Alternative E												
22-26	Peabody Road	57-62	60-66	—	—	—	57-61	3-4	—	—	—	-1-1
27	Peabody Road	63	66	—	—	—	67	3	—	—	—	4
30-39	Peabody Road	56-65	58-66	—	—	—	60-68	1-2	—	—	—	3-4
40-49b	Peabody Road	61-70	62-71	—	—	—	62-73	0-1	—	—	—	0-2
Alternatives B, C, and D												
50a-50b	Vanden Road	61-71	66-75	64-72	64-72	64-72	—	4-5	1-3	1-3	1-3	—
50-69	Leisure Town Road	53-68	58-73	58-71	58-71	58-71	—	4-5	3-6	2-6	2-6	—
69a-69b	Leisure Town Road	67-69	71-73	72-75	72-75	72-75	—	4	5-6	5-6	5-6	—
70-70f	Leisure Town Road	60-68	64-72	65-72	65-72	65-72	—	4	4-5	4-5	4-5	—
71-72	Leisure Town Road	56-59	60-63	63-65	—	—	—	4	6-7	—	—	—
73-74	Leisure Town Road	60-68	65-73	64-70	—	—	—	5	2-4	—	—	—
75-80	Leisure Town Road	52-58	58-64	59-64	—	—	—	5-6	5-7	—	—	—

Notes:

— = not applicable.

Bold = Impacts identified. Impacts only identified for noise abatement criterion thresholds which are approached or exceeded under existing and/or 2030 conditions. No impacts are identified under Alternative A, as this is the No Build Alternative.

- All receptor locations were residential developments that would be considered within the FHWA Activity Category B. Applicable Noise Abatement Criteria (NAC) for the residences would be 67 dBA.
- See Figure 3.14-2 for receiver locations.
- Predicted design year 2030.

noise levels for Alternative B under existing and future conditions are summarized in Tables 3.14-7 and 3.14-8 and shown in detail in the Noise Study. Information presented in Tables 3.14-7 and 3.14-8 and the Noise Study indicate that implementation of Alternative B would result in noise impacts at the following noise-sensitive areas as a result of noise levels that would approach or exceed the FHWA NAC:

- Residential land uses in Fairfield on the west side of Walters Road between East Tabor Avenue and approximately Granada Drive (Receiver Group 1 to 21b). This development has existing barriers near Granada Drive; these barriers end and there are no barriers approximately 150 feet and farther south of Granada Drive.
- Scattered residential land uses in unincorporated Solano County on the east side of Vanden Road near the intersection of Vanden Road and Leisure Town Road (Receiver Group 50a to 50b). These developments do not have any barriers in place.
- Residential developments in Vacaville on the west side of Leisure Town Road between Alamo Drive and approximately Stonegate Drive (Receiver Group 50 to 69). These developments do not have any barriers in place.
- Residential developments in unincorporated Solano County on the west side of Leisure Town Road between Kingswood Avenue and approximately Arbor Oaks Drive (Receiver Group 69a to 69b). These developments do not have any barriers in place.
- Mobile-home park in Vacaville on the east side of Leisure Town Road between Poplar Drive and Horse Creek (Receiver Group 70 to 70f). This development does not have any barriers in place.

For existing conditions in the corridor, existing peak-hour traffic noise levels are typically less than 67 dB- $L_{eq}(h)$. Existing peak-hour traffic noise levels more than 67 dB- $L_{eq}(h)$ occur predominantly in the areas along Peabody and Leisure Town Roads where the traffic-noise impacts listed above were identified. This indicates that where noise impacts are identified under FHWA 23 CFR 772 guidance, existing traffic noise levels already approach or exceed the NAC. At the identified locations where noise levels approach or exceed the NAC, the noise level increase due to the project would not result in a substantial increase. Noise levels at these locations would result in increases of less than 3 dB under Alternative B. Therefore, even though there would be noise impacts at these locations, the impacts would not be considered a substantial adverse impact compared to existing conditions.

FHWA requires that noise abatement be considered for all areas that exceed the NAC, even when the project would not result in a substantial change in the existing noise environment. Because noise levels under existing conditions and under Alternative B exceed the NAC, noise abatement measures must be considered with implementation of the project.

Alternative C. Traffic noise levels within the corridor under existing and future no build conditions would result in noise levels that approach or exceed the FHWA NAC. Traffic noise levels within the corridor would increase compared to existing and future no build conditions under Alternative C. The noise levels for Alternative C under existing and future conditions are shown in Tables 3.14-7 and

3.14-8 and in detail in the Noise Study. Traffic noise impacts under Alternative C would be similar to that discussed above for Alternative B. Because noise level increases under this alternative would not be substantial, this alternative would not result in substantial adverse impacts compared to existing conditions.

Abatement considerations would also be similar to those for Alternative B.

Alternative D. Traffic noise levels within the corridor under existing and future no project conditions would result in noise levels that approach or exceed the FHWA NAC. Traffic noise levels within the corridor would increase compared to existing and future no-project conditions under Alternative D. The noise levels for Alternative D under existing and future conditions are shown in Tables 3.14-7 and 3.14-8 and in detail in the Noise Study. Traffic noise impacts under Alternative D would be similar to that discussed above for Alternative B. Because noise level increases under this alternative would not be substantial, this alternative would not result in substantial adverse impacts compared to existing conditions.

Abatement considerations would also be similar to those for Alternative B.

Alternative E. Traffic noise levels within the corridor under existing and future no build conditions would result in noise levels that approach or exceed the FHWA NAC. Traffic noise levels within the corridor would increase compared to existing and future no build conditions under Alternative E. The noise levels for Alternative E under existing and future conditions are shown in Tables 3.14-7 and 3.14-8 and in detail in the Noise Study. Traffic noise impacts under Alternative E would be similar to that discussed above for Alternative B. Noise-sensitive land uses that would result in noise impacts under this alternative in the following noise-sensitive areas:

- Residential land uses in Fairfield on the west side of Walters Road between East Tabor Avenue and approximately Granada Drive (Receiver Group 1 to 21b). This development has existing barriers near Granada Drive; these barriers end and there are no barriers approximately 150 feet and farther south of Granada Drive.
- Residential developments in Vacaville on the east side of Peabody Road from approximately the Solano County Society for the Prevention of Cruelty to Animals (SPCA) to approximately California Drive (Receiver Group 30-39). These developments have existing noise barriers.
- Residential developments on the east and west side of Peabody Road from Alamo Drive to approximately Berryessa Drive, and Will C. Wood High School on the west side of Peabody Road north of Marshall Road in Vacaville (Receiver Group 40-49b). These developments do not have existing noise barriers.

For existing conditions in the corridor, existing peak-hour traffic noise levels are typically less than 67 dB- $L_{eq}(h)$. Existing peak-hour traffic noise levels more than 67 dB- $L_{eq}(h)$ occur predominantly in the areas along Peabody Road and Leisure Town Road where the traffic-noise impacts listed above were identified. This indicates that where noise impacts are identified under FHWA 23 CFR 772 guidance, existing traffic noise levels already approach or exceed the NAC. At the identified locations where

noise levels approach or exceed the NAC, the noise level increase due to Alternative E would not result in a substantial increase. Noise levels at these locations would result in increases of less than 3 dB under Alternative E. Therefore, even though there would be noise impacts at these locations, the increases would not be considered a substantial adverse impact compared to existing conditions.

Abatement considerations would be required, as described for Alternative B.

Impact N-3: Would the Alternatives Result in Cumulative Noise Effects?

Traffic levels for the years 2010 and 2030 that were used to determine the traffic noise within the corridor include traffic levels from cumulative projects. Based on the noise levels determined in the Noise Study, the project plus cumulative development would result in noise levels that would approach or exceed the NAC for the areas identified above under Impact N-2. The cumulative noise levels with the project would not result in a substantial increase of 12 dB over existing noise levels. Therefore, even though there would be noise impacts because the project would approach or exceed the NAC, the increases would not be considered a substantial adverse cumulative impact. However, because there would be an exceedance of the NAC, noise abatement was considered for the project at the locations listed in Impact N-2. Prior to approval of the project, STA or the appropriate local agency would evaluate the cost reasonableness of noise barriers in these locations based on the estimated cost of the barrier and reasonableness allowances presented in the Noise Study.

3.14.4 Avoidance, Minimization, and/or Abatement Measures

FHWA requires that noise abatement be considered for all noise impacts, even when the project would not result in a substantial change in the surrounding noise environment. As discussed above, existing noise levels already exceed the NAC for the sensitive receptors within the project limits; therefore, noise abatement measures must be considered. Noise abatement in the form of noise barriers was considered in the Noise Study and was determined to be feasible at several locations along the corridor.

While there are areas with existing soundwalls which exceed the NAC, noise abatement was not considered for these locations. Noise abatement for these areas would require replacement of the existing soundwalls with higher walls. However, experience has shown that it is difficult to achieve an additional 5 dBA reduction beyond that which is provided by the existing soundwalls. Therefore, the new, higher walls would not be considered feasible.

Based on the studies completed to date, the STA or the appropriate local agency intends to incorporate noise abatement in the form of barriers along the west side of Leisure Town Road south of Kingswood Avenue to north of Arbor Oaks Drive and along the east side of Leisure Town Road from Poplar Drive to Horse Creek with average heights of up to eight feet. Calculations based on preliminary design data indicate that the barriers will reduce noise levels by 5 to 9 dBA for 36 residences at a cost of \$1,035,936. If during final design conditions have substantially changed, noise abatement may not be necessary. The final decision of the noise abatement will be made upon completion of the project design and the public involvement processes.

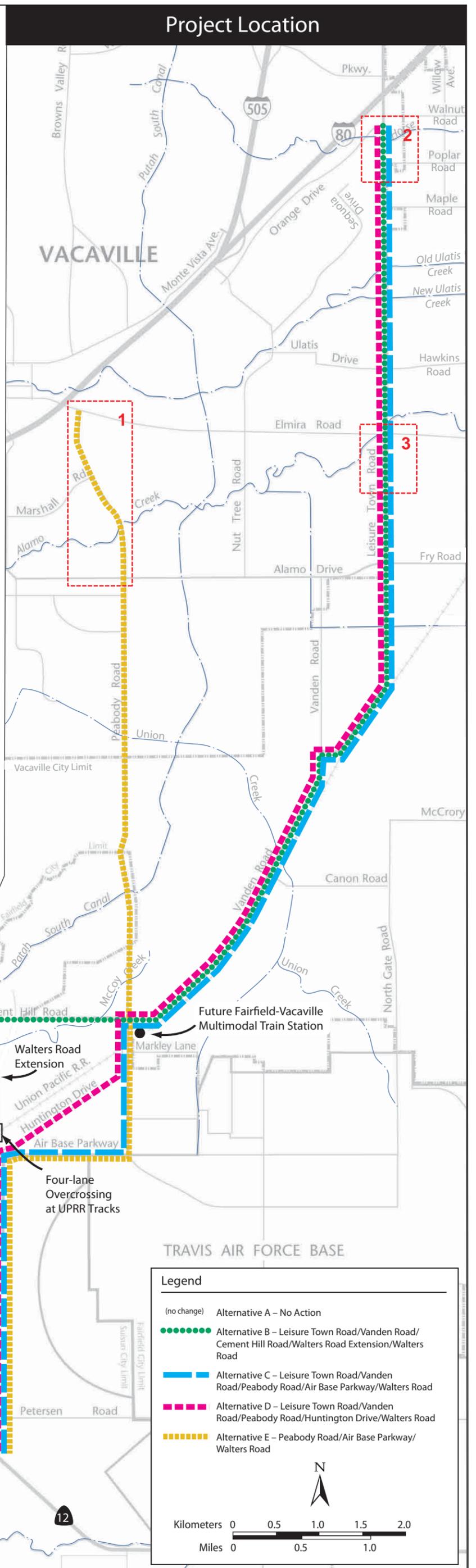
Details regarding these barriers are provided below.

Abatement Measures for Alternatives B, C, and D

Construction of new noise barriers under Alternatives B, C, and D was considered at four locations where there are currently no noise barriers. The locations of the prospective noise barriers are shown in Figure 3.14-3. Noise barriers between 6 feet and 16 feet, cost allowance, and projected cost for these barriers is shown in Table 3.14-9. The cost allowance for noise barrier walls of 6 feet and 8 feet are presented below, as Vacaville has committed to building walls of at least 6 to 8 feet at the locations identified. The following is a description of each preliminary noise barrier configuration considered:

- **West of Leisure Town Road—South of Kingswood Avenue:** This barrier would be constructed at the edge of the property line adjacent to southbound Leisure Town Road. The barrier would extend from the existing sound wall south of Kingswood Avenue to Kingswood Avenue. Vacaville has committed to construct concrete masonry unit walls along this stretch of roadway; with heights of 6 feet and 8 feet being proposed. However, as of publication of this document, the exact height of the wall the City has committed to construct is unknown. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6- or 8-foot wall would achieve a 5 dBA reduction at 2 of the 4 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$88,000. The current estimated cost of the wall at a height of 6 feet is about \$35,802. The total cost allowance for a 8-foot wall, calculated in accordance with the Department's *Protocol*, is also \$88,000. The current estimated cost of the wall at a height of 8 feet is about \$47,736.
- **West of Leisure Town Road—Kingswood Avenue to Fallbrook Avenue:** This barrier would be constructed at the edge of the property line adjacent to southbound Leisure Town Road. The barrier would extend from Kingswood Avenue to Fallbrook Avenue. Vacaville has committed to construct concrete masonry unit walls along this stretch of roadway; with heights of 6 feet and 8 feet being proposed. However, as of publication of this document, the exact height of the wall the City has committed to construct is unknown. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6- or 8-foot wall would achieve a 5 dBA reduction at 16 of the 37 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$672,000. The current estimated cost of the wall at a height of 6 feet is about \$271,620. The total cost allowance for a 8-foot wall, calculated in accordance with the Department's *Protocol*, is also \$672,000. The current estimated cost of the wall at a height of 8 feet is about \$362,160.

West of Leisure Town Road—Fallbrook Avenue to Arbor Oaks Drive: This barrier would be constructed at the edge of the property line adjacent to southbound Leisure Town Road. The barrier would extend from Fallbrook Avenue to Arbor Oaks Drive, and north of Arbor Oaks Drive along the property line. Vacaville has committed to construct concrete masonry unit walls along



3.14-21

Source: Jones & Stokes, 2006 / Google Earth 2007.

Figure 3.14-3
Prospective Noise Barriers

**Table 3.14-9
Summary of Jepson Parkway Project Soundwall Feasibility and Reasonableness Allowances under Alternatives B, C, and D**

Noise Barrier	Height (feet)	Provides 5 dB of Noise Reduction?	Impacted Residences	Benefited Residences	Reasonable Allowance per Residence ^a	Total Reasonable Allowance ^{a, b}	Projected Cost of Construction ^c	Reasonable and Feasible?
West of Leisure Town Road— South of Kingswood Avenue	6	Yes	4	2	\$44,000	\$88,000	\$35,802	Yes
	8	Yes		2	\$44,000	\$88,000	\$47,736	Yes
	10	Yes		2	\$44,000	\$88,000	\$59,670	Yes
	12	Yes		2	\$46,000	\$92,000	\$71,604	Yes
	14	Yes		2	\$46,000	\$92,000	\$83,538	Yes
	16	Yes		2	\$46,000	\$92,000	\$95,472	No
West of Leisure Town Road— Kingswood Avenue to Fallbrook Avenue	6	Yes	32	16	\$42,000	\$672,000	\$271,620	Yes
	8	Yes		16	\$42,000	\$672,000	\$362,160	Yes
	10	Yes		16	\$44,000	\$704,000	\$452,700	Yes
	12	Yes		21	\$46,000	\$966,000	\$543,240	Yes
	14	Yes		21	\$46,000	\$966,000	\$633,780	Yes
	16	Yes		24	\$46,000	\$1,104,000	\$724,320	Yes
West of Leisure Town Road— Fallbrook Avenue to Arbor Oaks Drive	6	Yes	13	7	\$44,000	\$308,000	\$185,787	Yes
	8	Yes		10	\$48,000	\$480,000	\$247,716	Yes
	10	Yes		10	\$50,000	\$500,000	\$309,645	Yes
	12	Yes		10	\$52,000	\$520,000	\$371,574	Yes
	14	Yes		10	\$52,000	\$520,000	\$433,503	Yes
	16	Yes		10	\$52,000	\$520,000	\$495,432	Yes
East of Leisure Town Road— Poplar Drive to Horse Creek	6	Yes	49	11	\$54,000	\$594,000	\$283,338	Yes
	8	Yes		11	\$54,000	\$594,000	\$377,784	Yes
	10	Yes		19	\$56,000	\$1,064,000	\$472,230	Yes
	12	Yes		26	\$58,000	\$1,508,000	\$566,676	Yes
	14	Yes		26	\$58,000	\$1,508,000	\$661,122	Yes
	16	Yes		26	\$58,000	\$1,508,000	\$755,568	Yes

Note:

- a. Cost in 2007 dollars.
- b. Based on Caltrans guidance, no modification to the reasonable allowance is required as the barrier costs for each alternative would be less than 50 percent of the construction cost without abatement; see Appendix B in the Noise Study.
- c. Cost prediction based on \$45 per square foot.

this stretch of roadway; with heights of 6 feet and 8 feet being proposed. However, as of publication of this document, the exact height of the wall the City has committed to construct is unknown. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6- or 8-foot wall would achieve a 5 dBA reduction at 7 to 10 of the 13 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$308,000. The current estimated cost of the wall at a height of 6 feet is about \$185,787. The total cost allowance for a 8-foot wall, calculated in accordance with the Department's *Protocol*, is \$480,000. The current estimated cost of the wall at a height of 8 feet is about \$247,716.

- **East of Leisure Town Road—Poplar Drive to Horse Creek:** This barrier would be constructed at the edge of the property line adjacent to northbound Leisure Town Road. The barrier would extend from Poplar Drive to Horse Creek. Vacaville has committed to construct concrete masonry unit walls along this stretch of roadway; with a height of 8 feet being proposed. However, as of publication of this document, the exact height of the wall the City has committed to construct is unknown. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6- or 8-foot wall would achieve a 5 dBA reduction at 11 of the 49 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6- or 8-foot wall, calculated in accordance with the Department's *Protocol*, is \$594,000. The current estimated cost of the 6-foot wall is \$283,338; the estimated cost of the 8-foot wall is \$377,784.

Abatement Measures for Alternative E

Construction of new noise barriers under Alternative E was considered at the following five locations where there are currently no noise barriers. Noise barriers between 6 and 16 feet were considered for the following locations, and cost allowance projected for these barriers is shown below in Table 3.14-10. The following is a description of each preliminary noise barrier configuration considered:

- **West of Peabody Road—Alamo Drive to north of Southwood Drive:** This barrier would be a new barrier constructed at the edge of the property line adjacent to southbound Peabody Road. The barrier would extend from the existing soundwall to the area north of Southwood Drive. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6-foot wall would achieve a 5 dBA reduction at 6 of the 19 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$312,000. The current estimated cost of the wall is \$323,676.

**Table 3.14-10
Summary of Jepson Parkway Project Soundwall Feasibility and
Reasonableness Allowances under Alternative E**

Noise Barrier	Height (feet)	Provides 5 dB of Noise Reduction?	Impacted Residences	Benefited Residences	Reasonable Allowance per Residence ^a	Total Reasonable Allowance ^{a, b}	Projected Cost of Construction ^c	Reasonable and Feasible?
West of Peabody Road— Alamo Drive to north of Southwood Drive	6	Yes	19	6	\$52,000	\$312,000	\$323,676	No
	8	Yes		6	\$54,000	\$324,000	\$431,568	No
	10	Yes		6	\$56,000	\$336,000	\$539,460	No
	12	Yes		9	\$56,000	\$504,000	\$647,352	No
	14	Yes		9	\$56,000	\$504,000	\$755,244	No
	16	Yes		9	\$56,000	\$504,000	\$863,136	No
East of Peabody Road— Southwood Drive to Old Alamo Creek	6	Yes	27	14	\$52,000	\$728,000	\$281,043	Yes
	8	Yes		14	\$52,000	\$728,000	\$374,724	Yes
	10	Yes		17	\$54,000	\$918,000	\$468,405	Yes
	12	Yes		17	\$56,000	\$952,000	\$562,086	Yes
	14	Yes		17	\$56,000	\$952,000	\$655,767	Yes
	16	Yes		17	\$56,000	\$952,000	\$749,448	Yes
East of Peabody Road— Beelard Drive to first subdivision entrance	6	Yes	16	2	\$52,000	\$104,000	\$56,079	Yes
	8	Yes		2	\$54,000	\$108,000	\$74,772	Yes
	10	Yes		2	\$56,000	\$112,000	\$93,465	Yes
	12	Yes		8	\$56,000	\$448,000	\$112,158	Yes
	14	Yes		8	\$56,000	\$448,000	\$130,851	Yes
	16	Yes		8	\$56,000	\$448,000	\$149,544	Yes
West of Peabody Road— Beelard Drive to single-family/ multi-family residential boundary	6	Yes	48	23	\$52,000	\$1,196,000	\$572,103	Yes
	8	Yes		25	\$52,000	\$1,300,000	\$762,804	Yes
	10	Yes		40	\$54,000	\$2,160,000	\$953,505	Yes
	12	Yes		40	\$56,000	\$2,240,000	\$1,144,206	Yes
	14	Yes		40	\$56,000	\$2,240,000	\$1,334,907	Yes
	16	Yes		44	\$56,000	\$2,464,000	\$1,525,608	Yes

Table 3.14-10
Summary of Jepson Parkway Project Soundwall Feasibility and Reasonableness Allowances under Alternative E

Noise Barrier	Height (feet)	Provides 5 dB of Noise Reduction?	Impacted Residences	Benefited Residences	Reasonable Allowance per Residence ^a	Total Reasonable Allowance ^{a, b}	Projected Cost of Construction ^c	Reasonable and Feasible?
East of Peabody Road—	6	Yes		16	\$52,000	\$832,000	\$235,197	Yes
Marshall Road to	8	Yes		16	\$54,000	\$864,000	\$313,596	Yes
Berryessa Drive	10	Yes	37	16	\$56,000	\$896,000	\$391,995	Yes
	12	Yes		16	\$56,000	\$896,000	\$470,394	Yes
	14	Yes		24	\$56,000	\$1,344,000	\$548,793	Yes
	16	Yes		24	\$56,000	\$1,344,000	\$627,192	Yes

Notes:

- a. Cost in 2007 dollars.
- b. Based on Caltrans guidance, no modification to the reasonable allowance is required as the barrier costs for each alternative would be less than 50 percent of the construction cost without abatement; see Appendix B in the Noise Study.
- c. Cost prediction based on \$45 per square foot.

East of Peabody Road—Southwood Drive to Old Alamo Creek: This barrier would be a new barrier constructed at the edge of the property line adjacent to northbound Peabody Road. The barrier would extend from Southwood Drive to the end of the subdivision south of Old Alamo Creek. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6-foot wall would achieve a 5 dBA reduction at 14 of the 27 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$728,000. The current estimated cost of the wall is \$281,043.

East of Peabody Road—Beelard Drive to first subdivision entrance: This new barrier would be constructed at the edge of the property line adjacent to northbound Peabody Road. The barrier would extend from Beelard Drive to the first entrance in the subdivision. No other sound barriers are proposed at this location, as gaps in the noise barrier for site access issues would make further extension of the barrier to the north infeasible. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6-foot wall would achieve a 5 dBA reduction at 2 of the 16 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$104,000. The current estimated cost of the wall is \$56,079.

- **West of Peabody Road—Beelard Drive to single-family/multi-family residential boundary:** This barrier would be a new barrier constructed at the edge of the property line adjacent to southbound Peabody Road. The barrier would extend from Beelard Drive to the area where residential land uses turn from single-family to multi-family. To achieve a 5 dBA reduction a wall of at least 6 feet would be needed. Construction of a 6-foot wall would achieve a 5 dBA reduction at 23 of the 48 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$1,196,000. The current estimated cost of the wall is \$572,103.
- **East of Peabody Road—Marshall Road to Berryessa Drive:** This barrier would be a new barrier constructed at the edge of the property line adjacent to northbound Peabody Road. The barrier would extend from Marshall Road to the Berryessa Drive, and from Berryessa Drive to the open lot north of Berryessa Drive. To achieve a 5 dBA reduction a wall of at least 16 feet would be needed. Construction of a 6-foot wall would achieve a 5 dBA reduction at 16 of the 37 impacted residences. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance for the 6-foot wall, calculated in accordance with the Department's *Protocol*, is \$832,000. The current estimated cost of the wall is \$235,197.

Construction Noise

The following construction noise mitigation measures would apply to all the build alternatives (Alternatives B, C, D, and E):

Mitigation Measure N-1: Employ Noise-Reduction Construction Measures. The construction contractor shall employ noise-reducing construction practices such that noise from construction does not exceed 90 dBA at noise-sensitive uses during daytime hours. Measures that can be used to limit noise may include the following:

- Locating equipment as far as practical from noise-sensitive uses
- Using sound-control devices such as mufflers on equipment
- Turning off idling equipment
- Using equipment that is quieter than standard equipment
- Selecting construction-access routes that affect the fewest number of people
- Using noise-reducing enclosures around noise-generating equipment
- Constructing barriers between noise sources and noise-sensitive land uses or taking advantage of existing barrier features (terrain, structures) to block sound transmission
- Temporarily relocating residents during periods of high construction noise that cannot be reduced effectively by other means

The construction contractor shall prepare a detailed noise control plan based on the construction methods proposed. This plan shall identify specific measures determined to be feasible by STA or the implementing agency that shall be taken to ensure compliance with the noise limits specified above. The noise control plan shall be reviewed and approved by STA before any noise-generating construction activity begins.

Mitigation Measure N-2: Prohibit Nighttime Construction Activities. Consistent with Vacaville Noise Ordinance, STA or the appropriate local agency shall ensure that construction activities are prohibited between 10:00 p.m. and 6:00 a.m. Monday through Saturday or until 8:00 a.m. on Sunday mornings. This stipulation shall be made part of the construction contract.

Mitigation Measure N-3: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program. The construction contractor shall notify residences within 500 feet of the construction areas of the construction schedule in writing before construction. The construction contractor shall designate a noise disturbance coordinator who will be responsible for responding to complaints regarding construction noise. The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem. A contact telephone number for the noise disturbance coordinator shall be posted conspicuously on construction site fences and shall be included in the written notification of the construction schedule sent to nearby residents.

3.15 Biological Environment

This section includes a discussion of natural communities; wetlands and other waters; native plant and wildlife species; threatened and endangered species; and invasive species. The information in this section is summarized from the following surveys or reports prepared for this project:

- Natural Environment Study (NES; 2006, 2009);
- NES Addendum for the Preferred Alternative (2009);
- *Habitat Assessment for the California Red-legged Frog, Jepson Parkway* (April 2007);
- Field surveys conducted by biologists on:
 - May 7, 17, 18, 20, 27, and 28; June 2, 3, and 4; and July 20, 1999;
 - March 20; April 11, 12, 14, 19, and 28; May 4 and 19; June 20, and 21; July 10, August 29, and 30; and September 20, 2000;
 - October 19, 2001;
 - May 8 and 9; and August 21, 2002;
 - May 3 and 4; July 7 and 8; and October 13, 2005; and
 - March 21, 27, and 28; and April 3, 2007;
- *Delineation of Waters of the United States Jepson Parkway Project*, (October 2005);
- Special status plant field surveys, conducted on July 8, 2008, for Suisun thistle and soft bird's-beak;
- Valley elderberry longhorn beetle surveys, conducted on October 9, 2001, October 13, 2005, and September 23, 2008;
- Protocol-level dry season (September 13, 2000) and wet-season (November through April, 2001) surveys of vernal pool crustaceans;
- Protocol-level burrowing owl surveys conducted on April 30, May 5, May 6 and May 7, 2008; and
- Wetland delineation data collected on May 30 and June 2, 2008.

These reports are incorporated by reference and are available for review at the Solano Transportation Authority's (STA's) and Caltrans' offices.

The *impact area* for the proposed project generally includes the existing road rights-of-way, and a 25-foot buffer on either side of the existing right-of-way to account for road widening, equipment access and construction staging areas. The *study area* for biological resources used in this section includes the impact area plus an additional 250 foot buffer on either side of the impact area, for a total study area of 600 feet along the majority of the alignments (i.e., 300 feet on either side of the centerline of the proposed alignments). Exceptions where the study area was reduced include currently urbanized areas or areas where physical barriers, such as the Union Pacific Railroad (UPRR) alignment along Vanden Road, are present. An additional exception to the study area width is along the Walters Road extension between Cement Hill Road and Huntington Drive (Alternative B) where the study area does not follow

an existing roadway. The study area along this segment was extended to a width of up to approximately 1,500 feet in an effort to identify an alignment which would result in the fewest biological resource impacts.

Large portions of the study area (particularly in the northern portion of the corridor, and portions of segment passing through Suisun City) are urbanized, and most of the natural communities in the study area have been subject to varying levels of disturbance. The most severely disturbed areas are along roadsides where the land has been scraped and is graveled, paved, or landscaped. Vegetation in roadside drainages is typically mowed or cleared regularly to maintain drainage, and the undeveloped land adjacent to major roadways or urban areas is disced to reduce fire hazards. Riparian woodlands and some freshwater marshes have been reduced or otherwise altered in the past during road construction, urban development, or for flood control. Although cattle graze over most of the large undeveloped annual grassland and seasonal wetland areas, moderate levels of grazing are actually beneficial to grasslands containing native grassland plant species, especially in vernal pools and other seasonal wetlands, as competition with non-native annuals is reduced.

The study area includes two major hydrologic units (Lower Sacramento and Suisun Bay) that contain several smaller watersheds. Portions of the study area, primarily in Fairfield and Suisun City, are connected to Suisun Slough, which drains to Suisun Bay via seasonal and perennial drainages in the study area. Therefore, these drainages may be under the jurisdiction of the U.S. Army Corps of Engineers (Corps). Wetlands and open waters in the northern portions of the study area, primarily in unincorporated areas of Solano County and in Vacaville, are not adjacent to navigable waters and therefore are unlikely to be regulated by the Corps (though these waters would still be subject to a variety of State wetland protection regulations). Several creeks in Vacaville, however, may qualify as other waters of the United States. Like the vegetation and hydrological characteristics, soil conditions in the study area vary. In many portions of the study area, the soil profile has been disturbed by ongoing or past agricultural practices (discing) or by construction of roads. The wetlands and waters of the United States in the study area consist of seasonal wetland, freshwater marsh, perennial drainage, and perennial pond.

Removing portions of uncommon and biologically unique habitats, such as seasonal wetlands/vernal pools and riparian woodlands, was considered to potentially lead to a localized decrease in those habitat types. The loss or disturbance of common natural communities, such as non-native annual grassland, agricultural land, and ruderal areas, is not considered adverse from a botanical perspective because of the regional abundance of the communities.

Biological resources could be directly or indirectly affected during construction, operation, and maintenance activities associated with the proposed project. Mechanisms that cause impacts on botanical resources could include:

- Scraping or grading during site preparation;
- Temporary stockpiling and sidecasting of soil, construction materials, or other construction wastes;
- Development of waste disposal areas to contain material from excavation for road construction;

- Equipment movement through waterway channels;
- Construction runoff containing petroleum products, causing degradation of water quality in wetlands and waterways;
- Stream dewatering or installation of temporary water-diversion structures;
- Soil compaction, dust generation, and runoff of sediment-laden water from the construction site;
- Construction of the new roadway and improvements, causing permanent or temporary losses of habitat; and
- Application of herbicide and removal of vegetation during operation and maintenance activities.

3.15.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors (including anadromous fish passage) and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section, Section 3.15.5. Wetlands and other waters are discussed below in Section 3.15.2, Wetlands and Other Waters of the United States.

3.15.1.1 Regulatory Setting

The following federal, State, and local policies and requirements pertain to natural communities in the corridor:

- U.S. Fish and Wildlife Service (USFWS) mitigation policy for California’s riparian habitats in Resource Category 2 (46 Federal Register [FR] 7644)
- Solano Multispecies Habitat Conservation Plan – Final Working Draft 2.2
- California Department of Fish and Game Code 1600 to 1616
- City of Vacaville Tree Preservation Ordinance

3.15.1.2 Affected Environment

Natural communities in the study area were identified and mapped as seven distinct vegetation community types and three unvegetated community types (seasonal and perennial drainages and ponds). The total areas of each community type in the study area are listed in Table 3.15-1. Natural communities of special concern in the corridor are depicted on Figure 3.15-1. These community types are divided into common natural communities and natural communities of special concern, as described in the following sections.

**Table 3.15-1
Natural Communities in the Study Area**

Community Type	Area (Acres)
Common Natural Communities	
Developed/landscaped area	600
Annual grassland	480
Agricultural land	110
Ruderal area	60
Natural Communities of Special Concern	
Seasonal wetlands	117
Perennial marsh*	4
Seasonal marsh*	0.2
Seasonal drainage*	2
Perennial drainage*	2
Pond*	4
Irrigation ditch*	1
Wetland ditch*	1
Riparian woodland	4
Total	1,385.2

*Source: Corps 2009.

Common Natural Communities

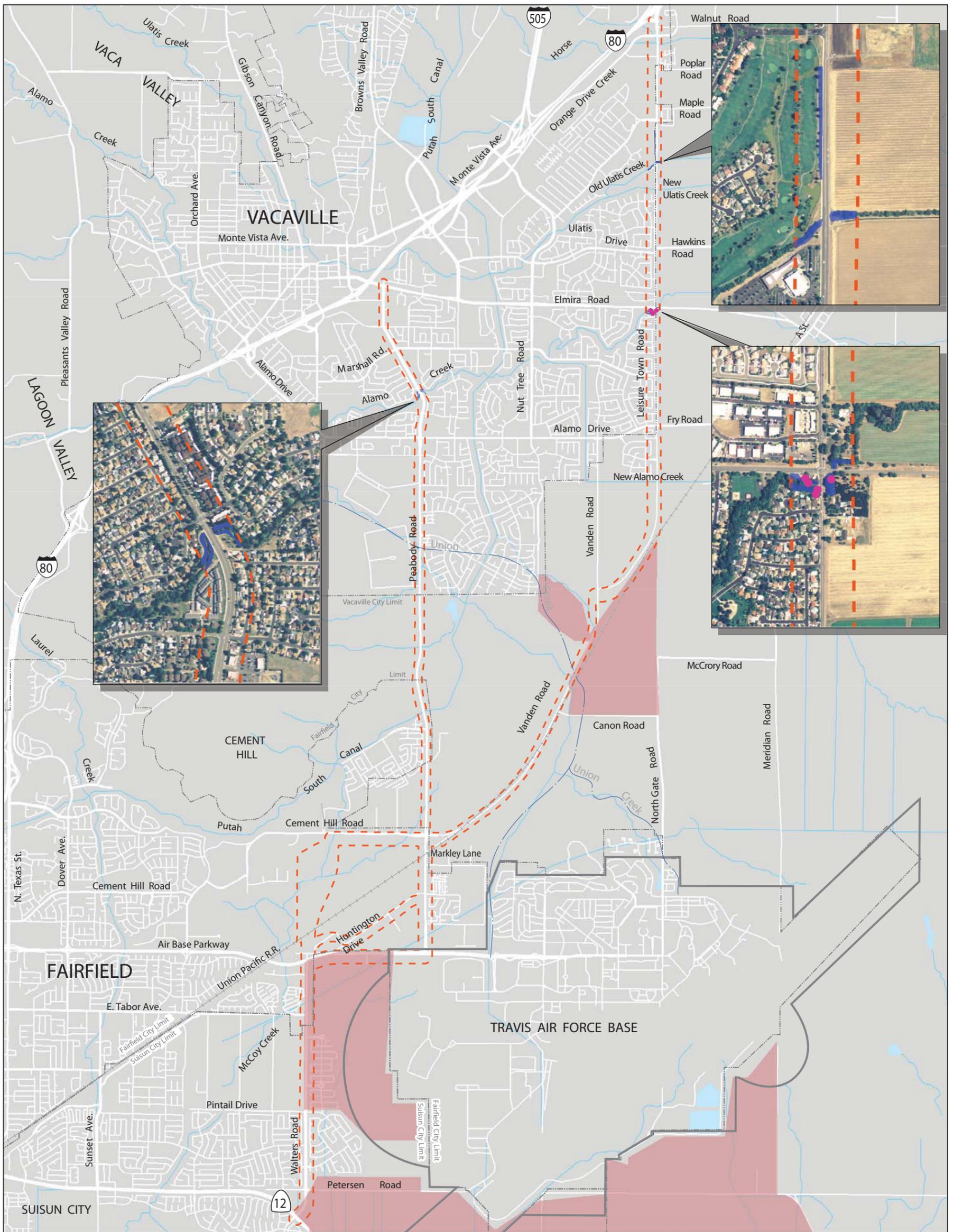
Common natural communities are habitats that have low species diversity, are widespread, reestablish naturally after disturbance, or support primarily non-native species. These communities are not generally protected by agencies unless the specific site is habitat for or supports special-status species (e.g., raptor foraging or nesting habitat, upland habitat in a wetland watershed).

Developed/Landscaped Area

Areas mapped as developed/landscaped include paved areas and buildings within the urbanized portions of the study area, as well as the associated landscaping vegetation. Parks are included in this community type because they comprise similar species and physical structures as landscaping. Landscape vegetation is usually located in areas that are disturbed by human activity and therefore provides relatively low-quality wildlife habitat.

Annual Grassland

Non-native annual grassland occurs throughout the study area and is the most prevalent community type in terms of total acreage (Table 3.15-1). Cattle graze on much of the annual grassland along Leisure Town Road, Vanden Road, along Peabody Road between Foxboro Parkway and Cement Hill Road, and on virtually all of the grassland in the proposed Walters Road extension area. Fields along



LEGEND

- Vernal pool fairy shrimp/Vernal pool tadpole shrimp critical habitat
- Riparian Woodland
- Valley Elderberry Longhorn Beetle Habitat
- Study Area



Figure 3.15-1
Natural Communities of Special Concern

Peabody Road in Fairfield are included in this vegetation community type because they support annual grassland species despite annual discing and would likely revert to grassland in the absence of discing. The edges of the annual grasslands along the existing roads in the study area, including Vanden Road, Peabody Road, Huntington Drive, Air Base Parkway, and parts of Walters Road, are disced annually or occasionally burned to minimize fire risk.

Agricultural Land

Agricultural land includes both cultivated cropland and irrigated pasture land. Actively cultivated agricultural land supporting alfalfa or grain crops occupies most of the study area east of Leisure Town Road. The natural vegetation here typically is minimal and weedy, usually occurring only on the fringes of agricultural fields, where it is subject to frequent disturbance. Irrigated pasture land occurs west of Leisure Town Road near its intersection with Vanden Road and in smaller areas near residences along Leisure Town Road.

Ruderal Area

Ruderal (weedy) vegetation occurs at the edges of the pavement along study area roads and in some undeveloped parcels. Ruderal vegetation consists of a sparse to dense cover of weedy plant species. It can be similar to annual grassland, but is subject to disturbances such as spraying, mowing, and vehicle encroachment. Because ruderal areas typically are disturbed on a regular basis by human activity, they provide low-quality habitat for wildlife.

Natural Communities of Special Concern

Natural communities of special concern are habitats considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, State, and federal agencies consider these habitats important. The California Natural Diversity Database (CNDDB) contains a current list of rare natural communities throughout the State. USFWS considers certain habitats, such as wetlands and riparian communities, important to wildlife. The Corps and the U.S. Environmental Protection Agency (EPA) consider wetland habitats important for water quality and wildlife. Natural communities of special concern found in the corridor include seasonal wetland, freshwater marsh, drainages, pond, and riparian woodland as they are covered in the next sections. Only riparian woodland is discussed in this section.

Riparian Woodland

The only portion of the corridor containing riparian woodland is in the northern portion of the corridor in the City of Vacaville. Riparian woodland is located along the banks of Old Alamo Creek at the Leisure Town Road and Peabody Road crossings and along a drainage between Leisure Town Road and Green Tree Golf Course. At the Old Alamo Creek crossing of Leisure Town Road, the riparian woodland supports several large valley oaks (*Quercus lobata*), Oregon ash (*Fraxinus latifolia*), Fremont's cottonwood (*Populus fremontii*), California wild rose (*Rosa californica*), and elderberry shrubs. Understory species include blackberry and sedge. At Peabody Road, Fremont's cottonwood is the dominant overstory tree, and elderberry shrubs are also present. Infestations of giant reed dominate

the riparian woodland west of Peabody Road. Willows are the dominant riparian trees along the drainage by the golf course. Riparian woodland is limited in the study area and present in small areas isolated by development and roads. Riparian woodland vegetation provides a variety of important ecological functions and values for wildlife.

The study area supports approximately 13 interior live oak and valley oak trees within riparian and landscaped/developed areas on Leisure Town Road at Old Alamo Creek in Vacaville. Several valley oaks occur outside the Old Alamo Creek riparian area on the east side of Leisure Town Road, including approximately five oaks within 650 feet north of the creek crossing and one oak about 2,625 feet south of the creek crossing. These oak trees range from approximately 25 to 75 inches in diameter at breast height (dbh). Many non-native trees of 31 inches or more dbh occur along Peabody Road between I-80 and Foxboro Parkway within landscaped areas associated with homes, businesses, and parks.

3.15.1.3 Environmental Consequences (including Permanent, Temporary, Direct, Indirect, and Cumulative Impacts)

Methodology

Removing portions of uncommon and biologically unique habitats, such as seasonal wetlands/vernal pools and riparian woodlands, was considered to potentially lead to a localized decrease in those habitat types. However, removing portions of common and widespread habitat types, such as annual grassland, was not considered to lead to substantial local decreases in those habitat types.

Summary of Impacts to Natural Communities

Table 3.15-2 summarizes impacts on natural communities of special concern for each alternative. As shown, Alternative E has the lowest potential to impact natural communities. Impacts to natural communities are further described below for each alternative.

Impact BR-1: Would the Alternatives Result in the Loss of Riparian Woodland?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on riparian communities would occur.

Alternatives B, C, and D. Alternatives B, C, and D would require placement of a portion of Old Alamo Creek into a concrete box culvert, resulting in direct impacts to riparian woodland along the creek. The riparian woodland associated with the culverted portion, including elderberry shrubs that provide potential habitat for valley elderberry longhorn beetle (VELB), would be removed. Additional woodland areas outside the culverted section could be indirectly affected by sedimentation at or near the waterline of Old Alamo Creek or by erosion of the bank (Table 3.15-2). There would be an adverse effect. Mitigation has been identified for this impact (Mitigation Measures BR-1 and BR-2).

**Table 3.15-2
Summary of Impacts to Natural Communities**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Loss of riparian woodland (acres)	No Impact	Direct: 2.1 acres (mitigation ratio 3:1)	Direct: 2.1 acres (mitigation ratio 3:1)	Direct: 2.1 acres (mitigation ratio 3:1)	Direct: 0.4 acres (mitigation ratio 3:1)
Loss of riparian woodland (acres)	No Impact	Indirect: 1.4 acres (mitigation ratio 3:1)	Indirect: 1.4 acres (mitigation ratio 3:1)	Indirect: 1.4 acres (mitigation ratio 3:1)	Indirect: 0.6 acres (mitigation ratio 3:1)
Habitat modification	No Impact	May result in modification of annual grassland, vernal pool, and pond habitat along the Walters Road extension alignment.	No Impact	No Impact	No Impact
Loss of protected Trees	No Impact	Removal of 19 native oaks; loss of landscape trees along Leisure Town Road	Removal of 19 native oaks; loss of landscape trees along Leisure Town Road	Removal of 19 native oaks; loss of landscape trees along Leisure Town Road	Removal of 4 native trees, loss of landscape trees along Peabody Road

Alternative E. Implementation of this alternative would result in slightly less impact on riparian woodland than Alternatives B to D (Table 3.15-2). Alternative E crosses Old Alamo Creek at Peabody Road, where the road is more perpendicular to the riparian corridor than at Leisure Town Road. A concrete box culvert would be extended to accommodate the road widening, and the riparian vegetation on the bank of this portion of Old Alamo Creek, which includes additional elderberry shrubs, would be removed. There would be an adverse effect. Mitigation has been identified for this impact (Mitigation Measures BR-1 and BR-2).

Impact BR-2: Would the Alternatives Result in Habitat Fragmentation?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related habitat fragmentation would occur.

Alternative B. Under Alternative B, a new roadway (Walters Road extension) would be constructed through currently undeveloped land. This land contains a large contiguous area of annual grassland/grazing land habitat with vernal pools, and seasonal drainages, and is identified as a High Value Conservation Area in the Version 2.2 Draft Solano County Multi Species Habitat Conservation Plan (Draft MSHCP). Construction of a roadway through this area would result in fragmentation and is likely to lessen the quality of that habitat. However, revisions to the alignment of Alternative B for the

Walters Road extension segment were made to minimize fragmentation and impacts to vernal pools and endangered species. These alignment revisions included a shift in the alignment to the west and the bridging of McCoy Creek and the Strassberger Detention Basin. These design changes would lessen the degree of modification by allowing wildlife movement through grassland areas occurring under spanned portions of the alignment adjacent to McCoy Creek and the Strassberger Detention basin.

Alternatives C, D, and E. Under these alternatives, construction activities would occur only along existing roadways. Therefore, no project-related habitat fragmentation would occur.

Impact BR-3: Would the Alternatives Result in the Loss of Trees Protected by Local Tree Ordinances?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on protected trees would occur.

Alternatives B, C, and D. Alternatives B, C, and D would result in the removal of non-native landscape trees and up to 19 native oak trees along Leisure Town Road. There would be an adverse effect. Mitigation has been identified for the effect (Mitigation Measure BR-3).

Alternative E. Up to four native oaks and cottonwood trees that would meet the criterion for protected trees under the City of Vacaville Tree Preservation Ordinance are located within the study area at the crossing of Peabody Road over Old Alamo Creek. The loss of riparian habitat at this location is discussed above. This alternative would also result in the loss of numerous non-native trees in landscaped areas along the urbanized portions of Peabody Road. There would be an adverse effect. Mitigation has been identified for the loss of oak trees (Mitigation Measure BR-3).

Impact BR-4: Would the Alternatives Result in Cumulative Impacts to Natural Communities?

Cumulative impacts on riparian woodland and loss of protected oak trees would result from construction of the other planned projects and general development projects in Solano County. Under Alternative A, the project would not be constructed; therefore, the project would not contribute to cumulative impacts. Under the build alternatives, the mitigation measures included in this section would reduce the impact of loss of riparian woodland and protected oak species associated with implementation of the proposed action. Therefore, with these mitigation measures in place, the proposed project would not contribute to cumulative impacts from implementation of any of the project alternatives.

3.15.1.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BR-1: Avoid and Minimize Potential Indirect Disturbance of Riparian Communities. To the extent possible, STA or the appropriate local agency will ensure that the contractor will avoid and minimize potential indirect disturbance of riparian communities by implementing the following measures:

- Riparian communities, such as those along Old Alamo Creek that are adjacent to all construction zones will be protected by installing temporary construction fencing to protect riparian vegetation outside the construction zone. The locations of the fencing will be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications will contain clear language that prohibits all construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive areas.
- The potential for long-term loss of riparian vegetation within the construction zone will be minimized by trimming vegetation rather than removing entire shrubs. Shrubs that need to be trimmed will be cut at least one foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary within the construction zone. Cutting will be allowed only for shrubs; all trees will be avoided. Also, cutting will be allowed only in areas that do not provide habitat for sensitive species. To protect nesting birds, STA or the appropriate local agency will not allow pruning or removal of woody riparian vegetation between February 15 and August 15.
- A certified arborist will be retained to perform any necessary pruning or root cutting of riparian trees within the construction zone to further minimize harm to vegetation and ensure rapid regeneration.
- Areas that undergo vegetative pruning and tree removal will be inspected immediately before construction, immediately after construction, and one year after construction to determine the amount of existing vegetative cover, cover that has been removed, and cover that resprouts. If after one year these areas have not resprouted sufficiently to return the cover to the pre-project level, the contractor will replant the areas with the same species to reestablish the cover to the pre-project condition.
- Work in riparian areas, such as those along Old Alamo Creek, will be conducted between June 15 and October 15, and disturbed areas will be stabilized with erosion control measures before October 15.

Mitigation Measure BR-2: Compensate for Permanent Loss of Riparian Communities. STA or the appropriate local agency will compensate for construction-related permanent loss of riparian communities, such as those along Old Alamo Creek, due to direct impacts at a minimum ratio of 3:1 (3 acres restored or created for every 1 acre permanently affected) as described in the Draft MSHCP. For Alternatives B, C, and D, compensation requirements are based on a total direct impact on 2.1 acres. For Alternative E, compensation requirements are based on a total direct impact on 0.4 acres. This compensation is being provided pursuant to National Environmental Policy Act (NEPA) and Federal Highway Administration (FHWA) policies on mitigating effects to natural lands.

Compensation may be a combination of on-site or off-site restoration/creation (i.e., restore riparian in areas disturbed by construction where possible, or at an agency-approved off-site mitigation area), contribution of funds to an approved mitigation bank for restoration activities on public lands, and mitigation credits. The resource agencies may require a higher compensation ratio as part of their permit authorizations. This ratio will be confirmed through coordination with State and federal agencies as part of the permitting process for the proposed action. One or more of the following compensation options will be implemented by STA or the appropriate local agency for any riparian vegetation that is removed.

- Funds will be contributed to an approved mitigation bank for riparian restoration activities along the Old Alamo Creek corridor or on other public lands in the project vicinity. STA or the appropriate local agency will contact appropriate individuals to determine whether there is a potential to create, restore, or enhance riparian habitat in appropriate preserves.
- A riparian restoration plan will be developed and implemented that involves creating or enhancing riparian habitat in the construction area or project vicinity. STA or the appropriate local agency will retain a restoration ecologist to develop a riparian restoration plan that identifies erosion control, habitat replacement, and maintenance and enhancement of riparian habitat as the primary mitigation goals. Potential restoration sites will be evaluated by STA or the appropriate local agency to determine whether this is a feasible option. If STA or the appropriate local agency determines that on-site or off-site restoration is possible, a restoration plan will be developed that describes where and when restoration will occur and who will be responsible for developing, implementing, and monitoring the restoration plan. Potential mitigation sites in the Old Alamo Creek corridor that could be used to create or enhance riparian habitat include riparian areas that currently support non-native species (e.g., giant reed). In these areas, non-native species would be removed and replanted with native riparian species, and sparsely vegetated or degraded riparian areas that could be enhanced by planting native woody species.

Potential mitigation sites in the Old Alamo Creek corridor will be evaluated as part of a formal riparian mitigation plan. The following factors will be assessed as part of the plan: soils, hydrology (including groundwater levels and surface inundation), land use, potential disturbances, habitat functions, costs associated with maintaining the plantings, and overall potential for survival.

The riparian restoration plan will also include a list of recommended plant species, design specifications, an implementation plan, a maintenance program, and a mitigation monitoring program that includes California Department of Fish and Game (CDFG)-approved performance standards (e.g., 70 percent survival of trees and shrubs planted after five years). The plan will also identify appropriate methods for eradicating infestations of weeds. At least five years of monitoring (longer if required as a condition of permits) will be conducted by STA or the appropriate local agency to document the degree of success or failure in achieving success criteria (to be determined in consultation with CDFG as part of the mitigation monitoring plan) and to identify remedial actions. Annual monitoring reports will be submitted to CDFG, the Corps, Caltrans, and other interested agencies. Each report will summarize data collected during the monitoring period, describe how the habitats are progressing in terms of the success criteria, and discuss any remedial actions performed. Additional reporting requirements

imposed by permit conditions will be incorporated into the mitigation plan and implemented as appropriate.

Mitigation Measure BR-3: Plant Native Trees in Rural Landscaping Areas. As proposed, STA or the appropriate local agency will plant native trees in rural areas as part of project landscaping. For rural areas in annual grassland communities, landscaping will include coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), and coyote brush (*Baccharis pilularis*). For drainages in rural areas, landscaping will include box elder (*Acer negundo* var. *californicum*), California black walnut (*Juglans californica* var. *hindsii*), valley oak (*Quercus lobata*), California sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), California blackberry (*Rubus ursinus*), and Goodding's willow (*Salix gooddingii*). STA or the appropriate local agency shall monitor planted trees for five years, and ensure survivorship of a minimum of 70 percent of planted trees after five years by replanting any trees that do not survive.

3.15.2 Wetlands and Other Waters of the United States

3.15.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 USC 1344) is the primary law regulating wetlands and surface 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 formed during 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 provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (Corps) with oversight by the U.S. Environmental Protection Agency (EPA).

The Department, FHWA, the Army Corps of Engineers (Corps), the U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service entered into a memorandum of understanding (MOU) to integrate NEPA and the Clean Water Act for EIS projects that have five or more acres of permanent impact to Waters of the United States. Under this MOU, the signatory agencies agree to coordinate at three checkpoints: 1) purpose and need, 2) identification of range of alternatives, and 3) preliminary determination of the least environmentally damaging practicable alternative (LEDPA) and conceptual mitigation plan. The goal of the MOU process is to allow the Corps to more efficiently adopt the EIS for their Section 404 permit action.

The Executive Order for the Protection of Wetlands (E.O. 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.

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

3.15.2.2 Affected Environment

Wetlands and other waters of the U.S. were delineated in the study area. The following information was reviewed before the field delineation was conducted:

- U.S. Geological Survey (USGS) 7.5-minute topographic maps of the study area;
- Aerial photographs and topographic maps (both at a scale of 1 inch = 100 feet) of the study area;
- Soil survey information; and
- *Wetland Delineation Report and Special Status Species Survey Report for the Strassberger Industrial Park, Cross Industrial Park, and McCoy Detention Basin Properties* (2000).

Wetland ecologists conducted field visits on eight days between May and December 2000, three days in August 2002, and five days in May 2005 to delineate waters of the United States and potentially non-jurisdictional wetlands and drainages in the study area. Sample points from 2000 were also revisited in August 2002 to confirm and update information gathered during the previous field visits. Wetlands were delineated using the routine on-site determination method outlined in the *Corps of Engineers Wetlands Delineation Manual*.¹ The delineation was submitted to the Corps on March 27, 2006 along with a letter requesting Corps verification of the delineation. Additional data were collected on May 30 and June 2, 2008 and provided to the Corps on July 25, 2008. A field visit to verify the delineation of wetlands was conducted with the Corps on July 30, 2008, with a follow-up meeting to facilitate data transfer on September 30, 2008. A Preliminary Jurisdictional Determination from the Corps was received on February 27, 2009. A copy of the Corps letter is included in Appendix B.

In 2000, Caltrans, and STA initiated the NEPA-404 integration process to coordinate the review and approval of key EIS elements and how these elements address impacts to waters of the United States and associated sensitive species. Members of the NEPA-404 group for the Jepson Parkway Project include the above-listed agencies; the San Francisco Bay RWQCB; CDFG; Solano County; STA; and the Cities of Fairfield, Vacaville, and Suisun City. In 2001, the NEPA-404 group agreed on the project purpose and need, as well as the four build alternatives subject to environmental analysis in this EIS.

¹ Environmental Laboratory. 1987. U.S. Army Corps of Engineers wetlands delineation manual. (Technical Report Y-87-1.) U.S. Army Waterways Experience Station. Vicksburg, MS.

Caltrans and STA held an informational meeting with the NEPA-404 group in January 2008. On November 20, 2008, the NEPA-404 checkpoint 3 meeting was held to discuss the LEDPA and the rationale for choosing it. Letters from the signatories concurring on the LEDPA and the conceptual mitigation plan are included in Appendix B.

Seasonal Wetland

Seasonal wetlands, including vernal pools and swales, are present in the study area within annual grasslands and agricultural lands, including seasonal wetlands regulated by the Corps (jurisdictional) and those that are isolated from other waters of the United States (non-jurisdictional). Seasonal wetlands in the northern portion of the proposed Walters Road extension area are alkaline and support salt-tolerant wetland species, such as saltgrass, alkali heath, glasswort, and sand spurrey. Cattle grazing also occurs in this area. Westerly along Cement Hill Road in the vicinity of the proposed Walters Road extension, these wetlands provide low to moderate flood control. In the Walters Road extension and Air Base Parkway portions of the study area, seasonal wetlands support Contra Costa goldfields, a federally-listed endangered plant species. Seasonal wetlands in the study area also support a variety of invertebrates such as vernal pool fairy shrimp. Seasonal wetlands occurring south of Air Base Parkway, and east of existing Walters Road fall within Critical Habitat for vernal pool species.

Freshwater Marsh

Freshwater emergent marsh habitat occur within deep concave ditches along various roadways throughout the project area, along the shoreline of the McCoy Detention Basin, and along an intermittent drainage feature located between Cement Hill Road and the UPRR tracks. Dominant plant species in both seasonal and perennial freshwater marshes include cattail, bulrush, and Himalayan blackberry. These freshwater marshes are productive wildlife habitats and provide food, cover, and water for many species of amphibians, reptiles, birds, and mammals. They also provide water storage and filtration.

Seasonal Drainage

Seasonal drainages mapped in the study area consist of both natural and human-made features that either cross or run alongside roadways in the corridors. Natural seasonal drainages follow topographic contours, and may be tributary to larger perennial drainages, but typically only contain flowing water during, or for a short time after, precipitation events. Other seasonal drainages consist of roadside or agricultural ditches. Seasonal drainages in the study area are typically sparsely vegetated and therefore provide only low to moderate wildlife habitat value, although they serve moderate water storage and filtration functions.

The seasonal drainage (Strassberger Detention Pond) in the Walters Road extension area of Alternative B was constructed as a flood detention basin within McCoy Creek and has an outlet to the larger McCoy Creek detention basin to the south, which ultimately connects to Hill Slough and Suisun Bay.

The pond supports some willow and cottonwood trees and areas of freshwater marsh on its perimeter. The trees, freshwater marsh vegetation, and open water of the pond provide foraging and breeding habitat for wildlife similar to that described for drainages. They also provide for water storage/flood control and filtration.

Perennial Drainage

Drainages mapped in the study area are primarily unvegetated waterways in Old Alamo Creek, New Alamo Creek, Union Creek, a tributary to McCoy Creek detention basin, and Putah South Canal. Some of these features also support freshwater marsh, riparian, or seasonal wetland vegetation. Drainages in the study area provide low- to moderate-quality habitat for wildlife species, depending on the extent of vegetation, and low to moderate flood control. Other types of perennial drainages are present in the study area, including roadside and irrigation ditches, some of which are cement-lined. These are generally isolated and have low habitat value.

Perennial Pond

There are two perennial ponds associated with Green Tree Golf Course, on the west side of Leisure Town Road. These ponds receive runoff from golf course irrigation and consist primarily of open water, but support scattered cattail marsh vegetation. Figure 3.15-2 shows the location of the two perennial ponds.

3.15.2.3 Environmental Consequences (including Permanent, Temporary, Direct, Indirect, and Cumulative Impacts)

Methodology

Filling in wetlands and other waters of the United States, such as seasonal wetlands/vernal pools, seasonal and perennial drainages, freshwater marshes and ponds was considered to potentially lead to a localized decrease in those wetland habitat types. Fill of jurisdictional wetlands is prohibited without prior approval from the Corps, and fill in non-jurisdictional wetlands is prohibited without prior approval of the RWQCB, and (for streams and lakes) the CDFG. Additionally, seasonal wetlands south of Air Base Parkway, and east of the existing Walters Road fall into a Critical Habitat area for vernal pool species. Disturbance of these areas would be prohibited without consultation with the USFWS. Wetlands and other waters of the United States potentially affected by project alternatives are depicted on Figure 3.15-3.

Summary of Impacts to Wetlands and Other Waters of the United States

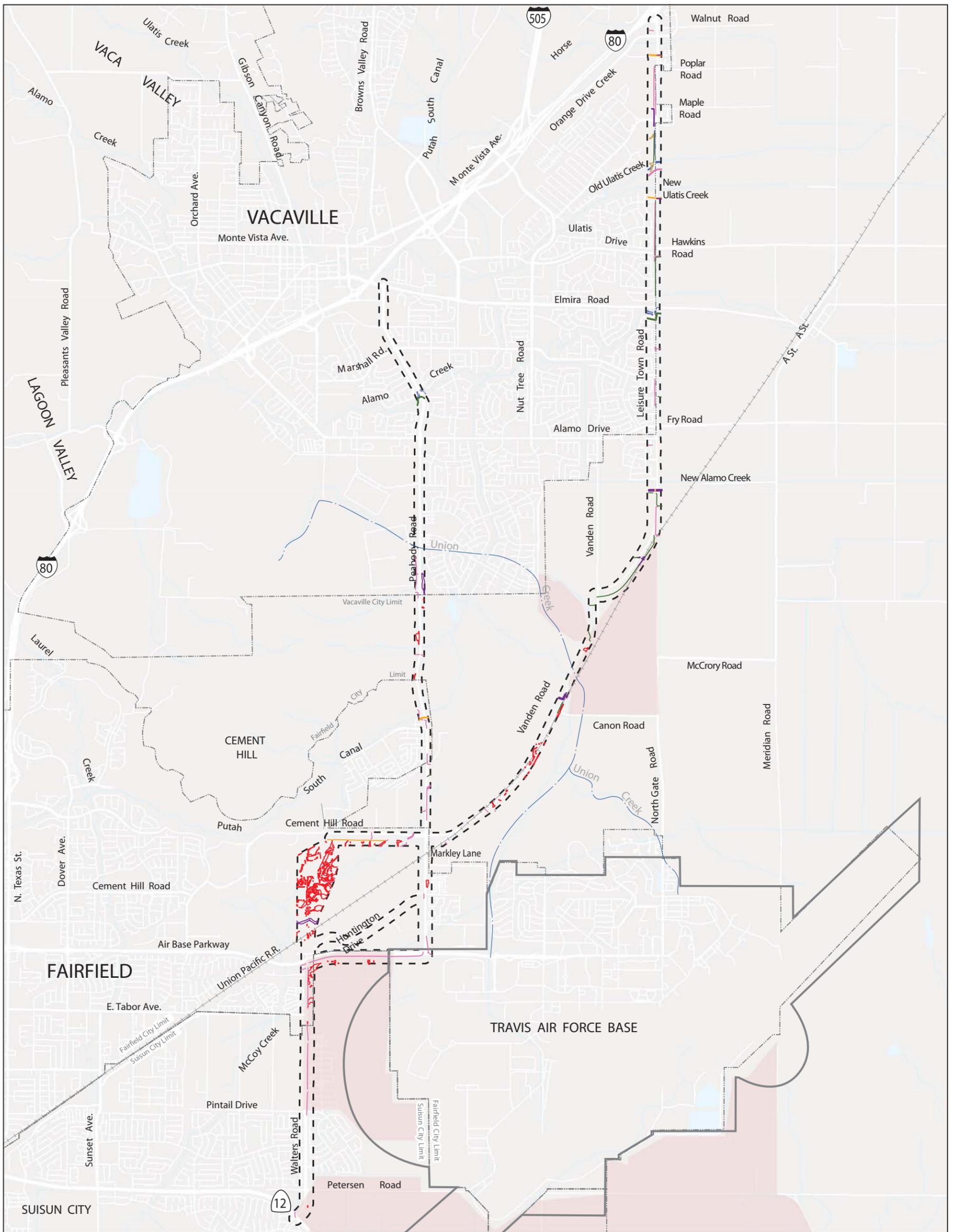
Table 3.15-3 summarizes impacts to wetlands and other waters of the United States for each alternative. As shown, among the build alternatives Alternative E has the lowest potential to impact wetlands and other waters of the United States. Impacts to wetlands and other waters of the United States are described below in detail for each alternative. Impact acreages are based on the 2004 NES and the 2007 revisions to the NES.

LEGEND

<p>EXISTING ROW</p> <p>PROPOSED ROW</p> <p>LIMIT OF WORK</p> <p>250' EXTENT FROM LIMIT OF WORK (BSA)</p> <p>FLOW LINES</p> <p>STORMWATER DRAIN PIPE/CULVERT/OUTLET</p> <p>EDGE OF PROPOSED PAVEMENT / SIDEWALK</p>	<p>UPLAND HABITAT TYPE</p> <p>AGRICULTURAL LAND</p> <p>RUDERAL</p> <p>RIPARIAN WOODLAND</p> <p>WETLANDS</p> <p>PERENNIAL FRESHWATER MARSH</p>
<p>WATERS OF THE US</p> <p>PERENNIAL DRAINAGE (P.D.)</p> <p>SEASONAL DRAINAGE</p>	<p>NON-JURISDICTIONAL OTHER WATERS</p> <p>POND (ARTIFICIAL)</p> <p>IRRIGATION</p>



Figure 3.15-2
Perennial Ponds near the Golf Course on Leisure Town Road



LEGEND

- Jurisdictional Perennial Drainage
- Jurisdictional Perennial Drainage with Riparian
- Jurisdictional Seasonal Drainage
- Perennial Freshwater Marsh
- Seasonal Freshwater Marsh
- Seasonal Wetland
- Pond



3.15-19

**Figure 3.15-3
Wetlands and Drainages**

Subsequent to the identification of Alternative B as the preferred alternative and the Least Environmentally Damaging Practicable Alternative (LEDPA), impact acreages for Alternative B were further refined in the 2009 NES Addendum #2 and the Biological Assessment (BA) completed for the project.

**Table 3.15-3
Summary of Direct Impacts to Wetlands and Other Waters of the United States (Acres)**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Jurisdictional Wetlands					
Seasonal wetlands	No Impact	2.70	0.91	0.91	0.30
Freshwater marsh	No Impact	0.24	0.26	0.26	0.10
<i>Subtotal Jurisdictional Wetlands</i>		<i>2.94</i>	<i>1.17</i>	<i>1.17</i>	<i>0.40</i>
Seasonal drainages	No Impact	0.91	0.53	0.14	0.54
Perennial drainages	No Impact	0.71	0.71	0.71	0.10
Perennial pond habitat	No Impact	0.28	0.28	0.28	No Impact
<i>Subtotal Jurisdictional Other Waters</i>		<i>1.90</i>	<i>1.52</i>	<i>1.13</i>	<i>0.64</i>
Total Jurisdictional Wetlands and Other Waters of the US	No Impact	4.84	2.69	2.30	1.04

For wetlands adjacent to the existing roadway and outside the direct impact area, impacts would be avoided by implementing avoidance and minimization measures such as restriction of construction to the dry season and placement of silt fences or other sedimentation prevention measures. If material is placed in a waterway, it would be done only with prior Corps approval, and would be done in a manner that would not hinder flows.

Alternatives Discussion/ Wetlands Only Practicable Alternative

The following analysis complies with Clean Water Act Section 404 (b)(1) Guidelines, which regulate discharges of dredged or fill materials into waters of the United States, including wetlands and special aquatic sites. The guidelines specifically require that no discharge of dredged or fill material shall be permitted if there is a practicable alternative that would have a less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. This analysis describes the impacts of the Jepson Parkway build alternatives in terms of adverse impacts on the aquatic ecosystem and other adverse environmental consequences, to identify whether a practicable alternative exists that avoids fill in wetlands and other special aquatic sites in the project vicinity.

The following discussion summarizes the potential adverse impacts of Alternatives A, B, C, D, and E on the aquatic ecosystem and other environmental resources and concerns in the project vicinity as discussed in various sections of this document with proposed minimization and compensation measures (these adverse effects are also summarized in Table 3.15-3a).

Alternative A. The no-build alternative is not practicable because it would not address the project purpose and need. Based on studies performed for this document, traffic congestion on the local roadway network and I-80 would worsen, greater numbers of local trips would need to be made on the Interstate and State highway network, safety conditions would be exacerbated, and multi-modal options would be lacking.

Alternatives B, C, D, and E. All proposed build alternatives would meet the basic project purpose and need of providing a safe, local north-south roadway alternative to using I-80 for local neighborhood, work, school and shopping trips. All would include multi-modal options, including a separated bicycle/pedestrian path to be constructed as part of the roadway improvements, and two new bus routes, one express and one local, to be implemented after completion of the parkway, the Fairfield multi-modal train station, and planned developments. Only Alternative B would require portions of the parkway to be constructed on undeveloped land; the other build alternatives could be provided by widening exclusively along existing roadways. Alternatives C, D, and E would require some six-lane widening, however, while Alternative B would require only four-lane widening.

Alternatives B, C, D, and E. All build alternatives would have impacts on the aquatic ecosystem, including seasonal wetlands, freshwater marshes, drainages, and riparian woodland. Alternative B would generally have greater acreage impacts on seasonal wetlands, freshwater marsh, and seasonal and perennial drainages (jurisdictional waters of the U.S.) than any of the other build alternatives. Alternative E would have fewer impacts on riparian woodland habitat, upland habitat for California tiger salamander and foraging habitat for Swainson's hawk than Alternatives B, C, and D. Alternative B would cross McCoy Creek and its watershed, which has been identified as a High Value Conservation Area in the Draft MSHCP. Alternative E would have roughly comparable direct and indirect impacts on habitat for Contra Costa goldfields, a federally listed endangered plant species, as Alternatives B and C, but would have lesser impacts on other biological resources and farmlands than the other build alternatives.

Alternative D. Alternative D has lesser impacts to wetlands, riparian woodland and habitat for Contra Costa goldfields than Alternative B, but it would displace 17 industrial and commercial structures in the Tolenas Industrial Park and result in the loss of approximately 224 local jobs. The severe economic hardship to these employees and the City of Fairfield is not acceptable to the local community. Thus, Alternative D is not practicable.

Alternative E. While Alternative E appears to be the LEDPA, it would result in permanent use of 1.7 acres of land from Al Patch Park and 1.2 acres of land containing outdoor athletic facilities at Will C. Wood High School, both properties protected by Section 4(f) of the Department of Transportation Act. Section 4(f) prohibits the Secretary of Transportation from approving a project that uses Section 4(f)-

protected property if there is a feasible and prudent alternative to that use. Under Section 4(f) regulations, Alternative E would not be practicable unless all of the other build alternatives can be shown not to be prudent and feasible. Alternative E also would take 26 single-family and 10 multi-family residential units. Finally, Alternative E, like Alternative C, raises an issue for homeland defense (See below).

Alternatives C and E. The “flyover” ramp proposed to be constructed at the intersection of Peabody Road and Air Base Parkway with either Alternative C or E would provide high-elevation visual access to Travis Air Base facilities, including the Aero Club landing strip and David Grant Hospital, which serves sensitive Defense Department missions and is designed to provide emergency functions. This visual access—particularly on a roadway that offers quick access and retreat—poses a concern for homeland defense. Travis Air Force Base officials raised this concern in their comments on the Draft EIS; see Volume II of this Final EIS, Letter 2. Alternative E is not practicable in light of the homeland defense and Section 4(f) impact issues.

Alternative C. Because it also would require the flyover ramp at Peabody Road and Air Base Parkway, Alternative C would have an impact on homeland defense. In addition, as described in the Travis Air Force Base letter referenced above, Alternative C has the potential to affect an area of high habitat value, consisting of a combination of natural and created vernal pools and seasonal wetlands with good populations of Contra Costa goldfields. This site includes mitigation area for vernal pools where efforts are currently underway to propagate and preserve goldfields and other listed and special status plant species, and a contiguous property that is being developed as a mitigation bank. Travis officials have agreed to maintain the portion on the Air Base for preservation of vernal pools, wetlands, and these plant species; using these lands for Alternative C would violate this agreement. In light of the homeland defense issue and these impacts to dedicated wetland and plant preservation areas, Alternative C is not practicable.

Alternative B. Alternative B is the remaining practicable alternative. It would affect seasonal wetlands, freshwater marsh, and seasonal and perennial drainages along the proposed Walters Road extension and Cement Hill Road. The area along the proposed Walters Road extension between the McCoy Flood Control channel and Cement Hill Road contains some of the highest quality seasonal wetlands and perennial drainages in the project corridor. These areas provide habitat for wetland vegetation and wildlife, and also provide for flood storage. Minimization measures have been incorporated into the project by narrowing the median and widening as much as possible to the west side along the developed portion of Walters Road between Tabor Avenue and Air Base Parkway, and by shifting the roadway alignment and providing bridges to maintain existing hydrological drainages and avoid wetland areas in the undeveloped portion. Bridge structures are proposed north of the proposed grade separation of the UPRR, to bridge the McCoy Flood Control Channel, preserve the hydrological connection between the large wetland areas south of the Strassberger Detention Pond, bridge the detention pond, and possibly bridge the complex of small wetlands north of the pond. Constructing these bridges would add approximately 670 feet of structure to the project.

**Table 3.15-3a
Summary of Impacts by Alternative**

Affected Resource	Alternative B	Alternative C	Alternative D	Alternative E
Section 4(f)				
Parks and Recreation	No Impact	No Impact	No Impact	4(f) Use
Meet Project Purpose and Need				
Safe north-south route for local trips without using I-80 (number of intersections below local LOS standards in 2015)	3	3	3	4
Use existing roadways to minimize impacts	Only Walters Road Extension	Yes	Yes	Yes
Enhance multi-modal options – transit/bikes/peds	Yes	Yes	Yes	Yes
Potential National Security Conflict from Proposed Flyover Ramp at Air Base Parkway and Peabody Road				
Visual access to base facilities	No	Yes	No	Yes
Interference with helicopter flight paths	No	Yes	No	Yes
Community Impacts				
Jobs Lost	58 jobs	40 jobs	224 jobs	80 jobs
Relocations				
Residential - Single Family/Multi family (units)	0	0	0	26/10
Non-residential (structures)	12	11	17	5
Biological Resources				
Loss of Contra Costa Goldfield habitat (acres) (1)				
Direct	0.40	0.24	0.27	0.24
Temporary (Direct)	0.17	0.22	0.15	0.22
Indirect	2.45	4.58	2.51	4.58
Total	3.02	5.04	2.93	5.04
Loss of vernal pool crustacean habitat (acres) (2)	4.69	1.45	1.45	0.96
Loss or degradation of suitable upland habitat for California Tiger Salamander (acres)	22.7	22.7	22.7	1.6
Loss of jurisdictional wetlands (acres)	2.94	1.17	1.17	0.40
Loss of Waters of the U.S. (acres)	1.90	1.52	1.13	0.64
Loss of Swainson’s Hawk nesting and foraging habitat (acres)	58.5	57.4	49.0	32.1
Loss of riparian woodland (acres)	2.1	2.1	2.1	0.4
Loss of Pappose spikeweed (acres)	1.0	0	0	0
Loss of Gairdner’s yampah (acres)	2.0	0	0	0
Loss of Saline Clover (acres)	1.0	0	0	0
Loss of elderberry shrubs that are habitat for Valley Elderberry Longhorn Beetle (shrubs)	4 shrubs, 16 stems	4 shrubs, 16 stems	4 shrubs, 16 stems	13 shrubs, 26 stems
Loss of Critical Habitat for Contra Costa Goldfields (acres)	2.70	2.70	2.70	0
Loss of Critical Habitat for vernal pool crustaceans (acres)	2.70	2.70	2.70	0
Farm/Agricultural Lands				
Conversion of Farmlands (acres)/ Williamson Act Contract (parcels)	75.4 acres/ 1 parcel	68.6 acres/ 2 parcels	64.5 acres/ 1 parcel	29.6 acres/ 6 parcels

Notes: Impact categories not shown on table do not help to discriminate among alternatives.

- 1) Includes some Vernal Pool habitat
- 2) Does not include any Goldfield habitat

Formal consultation with the USFWS was conducted to develop a minimization and compensation strategy that would achieve the appropriate balance of resource protection, project construction, and compensation costs. The USFWS's Biological Opinion identifies the required minimization and compensation measures pursuant to the federal Endangered Species Act (ESA), Clean Water Act (CWA), and FHWA policies on mitigating effects on natural lands (see Appendix J and mitigation measures BR-7, BR-8, and BR-9).

The foregoing analysis and proposed conceptual mitigation plan were presented to the NEPA-404 MOU signatory agencies on November 20, 2008 as a basis for identifying Alternative B as the LEDPA. The NEPA-404 MOU process requires these agencies to concur or agree in writing in the identification of the LEDPA and in the conceptual mitigation plan. The signatory agencies provided final concurrence regarding Alternative B as the LEDPA in letters of concurrence submitted to STA and Caltrans. Copies of these agencies' concurrence letters are provided in Appendix B. Concurrence in the LEDPA is a critical consideration in the identification of Alternative B as the Preferred Alternative for this project.

Impact BR-5: Would the Alternatives Result in Fill of or Disturbance to Seasonal Wetlands?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on seasonal wetlands would occur.

Alternative B. Under this alternative, direct impacts would result from placement of permanent fill in seasonal wetlands, some of which may be considered jurisdictional by the Corps. Additional seasonal wetlands would be indirectly affected by sedimentation and possibly by modification of hydrology. Removal or piping of the perennial drainage located on the south side of Cement Hill Road would indirectly affect the hydrology of seasonal wetlands located between this drainage and McCoy Creek. Some seasonal wetlands from east to west, south of Cement Hill Road, have a direct hydrologic connection to this drainage, and they would likely become substantially drier if the connection were removed. The drainage probably also provides water during floods to the other seasonal wetlands south of Cement Hill Road that do not have a direct hydrologic connection. As part of the project, the widening of Cement Hill Road would include construction of a new drainage south of the widened road to carry these flows, or the drainage may be placed in a pipe with outlet structures that would continue to provide flow to the wetlands south of the road. There would be an adverse effect. Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Alternatives C, D, and E. Implementation of these alternatives would result in similar direct effects on seasonal wetlands, though in a smaller area, as Alternative B (Table 3.15-3). Additional areas of seasonal wetlands would be indirectly affected by sedimentation and possibly by modification of hydrology (Table 3.15-3). Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Impact BR-6: Would the Alternatives Result in Fill of or Disturbance to Freshwater Marsh?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on freshwater marsh would occur.

Alternative B. Under this alternative, placement of fill would cause direct impacts on freshwater marsh, some of which may be considered jurisdictional by the Corps. Additional freshwater marsh areas would be indirectly affected by sedimentation and possibly by modification of hydrology, as discussed for seasonal wetlands. These communities have important habitat value for wildlife.

There would be an adverse effect. Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Alternatives C, D, and E. Implementation of these alternatives would result in similar direct effects on freshwater marsh, though in a slightly larger area for Alternative C and D, as Alternative B (Table 3.15-3). The direct impact on freshwater marsh under Alternative D would be slightly less than the impact from Alternative B. Additional areas of freshwater marsh would be indirectly affected by sedimentation and possibly by modification of hydrology. Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Impact BR-7: Would the Alternatives Result in Fill of or Disturbance to Seasonal Drainages?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on seasonal drainages would occur.

Alternative B. Under this alternative, placement of permanent fill would result in direct impacts on seasonal drainages, some of which may be considered jurisdictional by the Corps. Additional areas of seasonal drainages would be indirectly affected by sedimentation and possibly by modification of hydrology, as discussed above for seasonal wetlands. Roadside ditches that function as a storm drain system would be replaced with a new system, where necessary, to convey drainage along Leisure Town Road. There would be an adverse effect. Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Alternatives C, D, and E. Implementation of these alternatives would result in similar direct effects on seasonal drainages, though in a smaller area, as Alternative B (Table 3.15-3). Additional areas of seasonal drainages would be indirectly affected by sedimentation and possibly by modification of hydrology (Table 3.15-3). Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Impact BR-8: Would the Alternatives Result in Fill of or Disturbance to Perennial Drainages?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on perennial drainages would occur.

Alternative B. Under this alternative, placement of permanent fill would result in direct impacts on perennial drainages, some of which may be considered jurisdictional by the Corps. Additional areas of perennial drainages would be indirectly affected by sedimentation and possibly by modification of hydrology, as discussed for seasonal wetlands. Additionally, under this alternative, sections of Old Alamo Creek, Union Creek and its tributaries, tributaries to McCoy Creek, and other unnamed drainages would be placed within box culverts, or spanned where possible. The Old Alamo Creek culvert would be extended by approximately 350 feet. Piers or a box culvert would be placed within the floodplain of New Alamo Creek to widen the existing bridge. Irrigation ditches on Leisure Town Road would be maintained and extended or reconstructed as part of the proposed action. Roadside ditches that function as a storm drain system would be replaced with a new system, where necessary, to convey drainage along Leisure Town Road. There would be an adverse effect associated with these changes. Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Alternatives C, D, and E. Implementation of these alternatives would result in similar direct effects on perennial drainages, though in a smaller area, as Alternative B (Table 3.15-3). Additional areas of perennial drainages would be indirectly affected by sedimentation and possibly by modification of hydrology. Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Impact BR-9: Would the Alternatives Result in Fill of or Disturbance to Perennial Pond Habitat?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on perennial pond habitat would occur.

Alternatives B, C and D. Under these alternatives, permanent fill would be placed in perennial pond habitat (Table 3.15-3). Additional pond areas would be indirectly affected by sedimentation and possibly by modification of hydrology, as discussed for seasonal wetlands. Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Alternative E. No pond habitat is present along this alternative alignment. Therefore, no impacts to perennial pond habitat would occur.

Impact BR-10: Would the Alternatives Result in Cumulative Impacts to Wetlands and Other Waters of the United States?

Cumulative impacts on wetlands and other waters of the United States could result from construction of other general development projects in Solano County. Seasonal wetland impacts caused by projects initiated by the Solano County Water Agency will be mitigated and compensated for through the Draft MSHCP. Under the No Build Alternative, the project would not be constructed; therefore, Alternative A would not contribute to cumulative impacts. Construction of any of the build alternatives would add to the cumulative loss of wetlands and other waters of the United States. However, with implementation of the mitigation measures prescribed for minimizing impacts and compensating for remaining impacts, the proposed action is not likely to have a considerable cumulative effect. As part of compliance with the CWA Section 404 permit, STA or the appropriate local agency will be required to compensate for filling waters of the United States (direct impacts) to ensure no net loss of habitat functions and values, thereby avoiding cumulative effects to wetlands and other waters of the United States.

3.15.2.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BR-4: Obtain and Comply with Conditions of Clean Water Act Permits and Streambed Alteration Agreement. Before any construction activities are initiated, STA or the appropriate local agency will obtain and implement mitigation requirements of the following permits:

- CWA Section 404 permit from the Corps, and/or Report of Waste Discharge for Waters of the State.
- CWA Section 401 water quality certification from the RWQCB.
- CWA Section 402/National Pollution Discharge Elimination System permit from SWRCB [requiring preparation of a Stormwater Pollution Prevention Plan (SWPPP)].
- California Fish and Game Code (CFG) Section 1602 streambed alteration agreement from CDFG.

Copies of these permits will be provided to the contractor with the construction specifications. STA or the appropriate local agency will be responsible for ensuring compliance with the conditions set forth in these permits. STA or the appropriate local agency will also be responsible for the preparation and implementation of a Mitigation Monitoring Plan based on the permit requirements. The monitoring period shall not be less than five years. The target criteria for specified years of monitoring are as follows (though these may be subject to change pending consultation with the Corps during the permit process):

Year 1 50 percent combined area and basal cover (rhizomatous turf) of all vegetation in the preserve wetland; at least two hydrophytic plants co-dominant with whatever other vegetative cover exists.

- Year 3 60 percent combined area and basal cover (rhizomatous turf) of all vegetation in the preserve wetland; prevalence of hydrophytic species in terms of both cover and dominant species composition of the vegetation; native vascular species will comprise 50 percent of the vegetation in the preserve wetland.
- Year 5 70 percent combined area and basal cover (rhizomatous turf) of all vegetation in the preserve wetland. More than 50 percent dominance in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) species throughout the preserved wetland area; native vascular species will comprise 65 percent of the vegetation in the preserve wetlands

Once the necessary permits are obtained, STA or the appropriate lead agency shall implement Mitigation Measures BR-8 and BR-9.

Mitigation Measure BR-5: Implement Measures to Protect Water Quality. STA or the appropriate local agency will ensure that the contractor implements the general measures recommended in Section 3.10, Water Quality and Stormwater Runoff, to protect water quality and aquatic resources in Old Alamo Creek, Union Creek, McCoy Creek, tributary streams, and wetlands. Compliance with regulatory requirements described in Section 3.10, Water Quality and Stormwater Runoff, will concurrently satisfy water quality protection requirements under this section.

Mitigation Measure BR-6: Avoid and Minimize Disturbance of Waters of the United States and Non-jurisdictional Wetlands. STA or the appropriate local agency will ensure that the contractor will minimize indirect impacts on waters of the United States and non-jurisdictional wetlands throughout the study area by implementing the following measures:

- To maintain hydrologic connections, the project design will include culverts for all seasonal and perennial drainages that are waters of the United States, and/or waters of the State.
- Construction activities will be prohibited in saturated or ponded waters during the wet season (spring and winter) to the maximum extent possible. Where such activities are unavoidable, protective practices, such as using padding or vehicles with balloon tires, will be employed.
- Where determined necessary, geotextile cushions and other appropriate materials (e.g., timber pads, prefabricated equipment pads, geotextile fabric) will be used in saturated conditions to minimize damage to the substrate and vegetation.
- Exposed slopes and streambanks will be stabilized immediately following completion of construction activities. Other waters of the United States will be restored in a manner that encourages vegetation to reestablish to its pre-project condition and reduces the effects of erosion on the drainage system.
- In highly erodible stream systems, banks will be stabilized using a nonvegetative material that will bind the soil initially and break down within a few years. If STA or the appropriate local agency determines that more aggressive erosion control treatments are needed, the contractor will be directed to use geotextile mats, excelsior blankets, or other soil stabilization products.

- During construction, trees, shrubs, debris, or soils that are inadvertently deposited below the ordinary high-water mark (OHWM) of any streams will be removed in a manner that minimizes disturbance of the creek bed and bank.
- All activities will be completed promptly to minimize their duration and resultant impacts.
- Biological monitor or construction inspectors will routinely inspect protected areas to ensure that protective measures are in place and effective.
- All protective measures will remain in place until all construction activities near the resource have been completed and will be removed immediately following construction and reclamation activities.

Mitigation Measure BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss. To maintain as much of the natural hydrology within the Walters Road extension segment of the Alternative B alignment as possible, minimize placement of fill in waters of the United States and non-jurisdictional wetlands, and minimize impacts on Contra Costa goldfields, the roadway alignment has been modified by shifting the centerline, and/or widening primarily to one or the other side; narrowing inside shoulder widths; and using structure to span and avoid direct impacts to wetlands. An additional 670 feet of structure is proposed to be incorporated to reduce direct impacts to seasonal wetlands and Contra Costa goldfields in this area.

Mitigation Measure BR-8: Compensate for the Permanent and Temporary Filling of Seasonal Wetland, Freshwater Marsh, and Pond. As described in Table 3.15-3, all build alternatives will result in the fill of wetlands and other waters of the United States. As part of compliance with the CWA Section 404 permit, STA or the appropriate local agency will be required to compensate for filling waters of the United States (direct impacts) to ensure no net loss of habitat functions and values. Compensation will be provided pursuant to NEPA and FHWA policies on mitigating effects to natural lands. Waters of the United States in the study area include seasonal wetlands, freshwater marshes, and drainages. Fill of non-jurisdictional waters, including the pond habitat, protected under the Porter Cologne Water Quality Control Act is prohibited without the prior acquisition of the Waste Discharge Permit. STA or the appropriate local agency will also compensate for filling these non-jurisdictional waters.

Compensation for seasonal wetlands, freshwater marshes, and ponds will be provided at a minimum ratio of 1:1 (1 acre of mitigation for every 1 acre of waters of the United States filled) or 9:1 (9 acres of mitigation for every 1 acre of waters of the United States filled) in areas where Contra Costa goldfields are present (see Section 3.15.5, Threatened and Endangered Species). Compensation ratios for wetland habitats supporting other threatened or endangered species also are described in Section 3.15.5. Compensation may be achieved through a combination of mitigation credits, off-site preservation, and on-site restoration/creation. Compensation for the pond habitat will be out-of-kind and will consist of freshwater marsh habitat, which provides higher-value wildlife habitat than the pond that would be affected by the project. Final compensation ratios will be determined by State and federal agencies during consultation and permitting processes for the proposed action.

STA or the appropriate local agency will implement one or more of the following options to compensate for potential impacts associated with filling waters of the United States and non-jurisdictional wetlands:

- Mitigation bank credits will be purchased at a locally approved bank. One mitigation bank option is Wildlands North Suisun Mitigation Bank. This bank is currently available and provides vernal pool credits that can apply to seasonal wetland compensation. STA or the appropriate local agency will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The amount to be paid will be the fee that is in effect at the time the fee is paid.
- Funds equal to the amount needed to purchase mitigation bank credits will be contributed to the preservation of vernal pool complexes within the McCoy Creek watershed, a High Conservation Value Area identified in the Draft MSHCP. The Draft MSHCP directs that conservation lands will be held in fee ownership or as conservation easements, and will have resource management plans and funding sources for management in perpetuity. This area is also identified in the Draft MSHCP as one of five core Contra Costa goldfields populations, and is near a substantial goldfields population on public land at Travis Air Force Base. To implement this option, STA or the appropriate local agency will coordinate with appropriate individuals to determine whether there is a potential to purchase and preserve wetlands in the McCoy Creek watershed. This option will be coordinated with mitigation for Contra Costa goldfields and listed vernal pool crustaceans.
- A wetland restoration plan will be developed and implemented that involves creating or enhancing seasonal wetland and freshwater marsh either in the study area or in the project vicinity. Potential restoration sites will be evaluated by STA or the appropriate local agency to determine whether this is a feasible option. If STA or the appropriate local agency determines that on-site or off-site restoration is possible, a restoration plan will be developed that describes where and when restoration will occur and who will be responsible for developing, implementing, and monitoring the restoration plan. Potential mitigation sites in the vicinity of the Walters Road extension portion of the Alternative B alignment could be used to preserve and create or enhance seasonal wetland and freshwater marsh. Use of this option for seasonal wetland compensation will be coordinated with mitigation for Contra Costa goldfields and for listed vernal pool crustaceans.

Mitigation Measure BR-9: Compensate for the Permanent and Temporary Filling of Other Waters of the United States. STA or the appropriate local agency will compensate for filling other waters of the United States (a direct impact) in seasonal and perennial drainages. This compensation is being provided pursuant to NEPA and FHWA policies on mitigating effects to natural lands. Compensation for loss of other waters of the United States in Old Alamo Creek, which supports a riparian community, will be provided at a minimum ratio of 1:1 to comply with the Corps' no net loss policy (1 acre restored or created for every 1 acre permanently affected). Compensation will include restoration or enhancement of riparian and in-stream habitats on Old Alamo Creek or other streams in the study area. This mitigation measure will follow Corps and CDFG recommendations, Caltrans BMPs, and CDFG's riparian habitat restoration manual (CDFG, 2003, California Salmonid Stream Habitat Restoration Manual).

Most drainages in the study area, including Union Creek and its tributaries, McCoy Creek and its tributaries, and unnamed drainages, do not support riparian habitat. Compensation for loss of other waters of the United States in these drainages will include restoration or enhancement of stream channel habitat at a minimum ratio of 1:1 (1 acre restored or enhanced for every 1 acre permanently affected). Restoration or enhancement will be implemented in the affected drainages or will be focused in McCoy Creek in the study area. The restoration or enhancement will include bank stabilization improvements to decrease erosion and improve water quality. A plan will be developed to make the bank slopes less vertical and to plant an appropriate grass seed mix to control bank erosion.

STA or the appropriate local agency will retain a restoration ecologist to develop a mitigation plan that identifies erosion control, habitat replacement, and maintenance and enhancement of habitat as the primary mitigation goals. The habitat mitigation plan will include a list of native plant species, design specifications, an implementation plan, a maintenance program, and a monitoring program. STA or the appropriate local agency will implement the mitigation plan. At least five years of monitoring (more if required as a condition of permits) will be conducted by STA or the appropriate local agency to document whether success criteria are achieved (to be determined as part of the mitigation plan) and to identify remedial actions. Annual monitoring reports will be submitted to CDFG, the Corps, Caltrans, and other interested agencies. Each report will summarize data collected during the monitoring period, describe how the habitats are progressing in terms of the success criteria, and discuss any remedial actions performed. Additional reporting requirements imposed by permit conditions will be incorporated into the mitigation plan and implemented as appropriate.

Compensation for non-jurisdictional drainage impacts, which include irrigation and roadside ditches, will include maintenance or reconstruction of the irrigation drainages after road construction and replacement of the roadside drainages with a new system to convey stormwater.

3.15.2.5 Wetlands Only Practicable Finding

The preferred alternative for the Jepson Parkway project is Alternative B, which also has been identified as the LEDPA (see Section 3.15.2.3, Environmental Consequences [Including Permanent, Temporary, Direct, Indirect, and Cumulative Impacts]). Under the Preferred Alternative, the project would involve new fill amounting to 2.70 acres in seasonal wetlands and 0.24 acres in freshwater marsh (see Table 3.15-3). In accordance with Executive Order 11990, it has been determined that there is no practicable alternative to these wetlands impacts.

There would be no effect on wetlands or waters of the U.S. from the No Build Alternative, however, this alternative is not practicable because it would not meet the project purpose and need. Alternatives C and E are not practicable because they would enable high level visual access to Travis Air Force Base facilities, raising concerns for homeland defense. Alternative E also is not practicable because it would use property protected under Section 4(f) of the DOT Act. Alternative D is not practicable because it would cause severe economic impacts from the loss of 224 local jobs.

The STA and Caltrans reviewed various alignment options in an attempt to identify an alignment that would avoid wetlands in the Walters Road extension segment and other areas where wetlands are found. It is not possible to avoid these wetlands entirely because of their locations with respect to

existing roadways. Wetlands impacts have been minimized by modifying the roadway alignment, shifting the centerline and/or widening primarily to one or the other side; narrowing inside shoulder widths; and using bridge structures to span wetlands. An additional 670 feet of structure has been incorporated to reduce impacts to wetlands. These measures have helped to minimize wetlands impacts. Design plans incorporate measures to maintain hydrological connectivity and the flow of water onto the sites. Areas that can be avoided will be avoided by designating them as Environmentally Sensitive Area (ESA). All wetlands areas that are disturbed by construction will be fully restored following construction activities, in accordance with measures determined in consultation with the resource agencies.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Appendix I contains the Wetlands Only Practicable Alternative Finding, pursuant to Executive Order 11990.

3.15.3 Plant Species

3.15.3.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) is responsible for the protection of federally listed 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 species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA). Please see the Threatened and Endangered Species section in this document for detailed information regarding these species.

This section of the document discusses all federally protected special-status plant species, including USFWS candidate species.

The regulatory requirements for FESA can be found at United States Code 16 USC, Section 1531, et. seq. See also 50 CFR Part 402.

Solano County is preparing their Draft MSHCP that would provide protection to many of the plants discussed in this section.

3.15.3.2 Affected Environment

Botanists conducted special-status plant and floristic surveys of the study area on the following dates:

- May 7, 17, 18, and 20, 1999
- April 11, 12, 14, 19, and 28, 2000
- May 4 and 19, 2000
- June 20 and 21, 2000
- July 10, 2000
- August 29 and 30, 2000
- September 20, 2000
- May 8 and 9, 2002 (to revisit Contra Costa goldfields sites)
- August 21, 2002
- May 3 and 4, 2005 (for western half of Walters Road extension area)

- July 7 and 8, 2005 (for western half of Walters Road extension area)

- March 21, 27, and April 3, 2007
- July 8, 2008

Surveys were timed during the appropriate flowering periods for special-status plants with potential to occur in the study area. Vegetation communities and the locations of oak trees in the study area were also identified and mapped during the botanical and wetland field surveys.

Five special-status plant species have been observed in the study area:

- Brittlescale (*Atriplex depressa*), a California Native Plant Society (CNPS) List 1B species, occurs in alkaline annual grasslands in the Walters Road extension area.
- Pappose spikeweed (*Centromadia parryi* ssp. *parryi*), a CNPS List 1B species that is covered under the Draft MSHCP, occurs in annual grasslands and vernal pools in the Walters Road extension area.
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*), a CNPS List 4 species that is covered under the Draft MSHCP, occurs in annual grasslands and seasonal wetlands in the Walters Road extension area.
- Saline clover (*Trifolium depauperatum* var. *hydrophilum*), a CNPS List 1B species that is covered under the Draft MSHCP, occurs in vernal pools in the Walters Road extension area.
- In addition, during the earlier surveys, dwarf downingia (*Downingia pusilla*), a CNPS List 2 species and Draft MSHCP covered species, was observed in one seasonal wetland located east of Walters Road between East Tabor Avenue and Bella Vista Drive. These plants were subsequently removed and mitigated for as a result of a previous project conducted by the City of Suisun City (widening of Walters Road between East Tabor Avenue and Bella Vista Drive) and therefore are not addressed further in this EIS.

The acreages of impacts on special-status plant species habitat are shown in Table 3.15-4 for each alternative.

Methodology

Removing individuals or populations of special-status plants was considered to potentially lead to a localized, and potentially regional decrease in those in those species. Such removal is prohibited without prior approval from the CDFG.

3.15.3.3 Environmental Consequences (including Permanent, Temporary, Direct, Indirect, and Cumulative Impacts)

Summary of Impacts to Special-Status Plant Species

Table 3.15-4 summarizes impacts to special-status plant populations and habitat for each alternative. As shown, Alternatives A, C, D, and E are not expected to impact special-status plant populations and habitat. Alternative B would have the potential to result in a loss of special-status plants. Impacts to special-status plant individuals and populations are further described below for each alternative.

Table 3.15-4
Summary of Impacts to Plant Species (Acres)

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Loss of Brittlegrass	No Impact				
Loss of Pappose spikeweed	No Impact	1.0	No Impact	No Impact	No Impact
Loss of Gairdner's yampah	No Impact	2.0	No Impact	No Impact	No Impact
Loss of Saline Clover	No Impact	1.0	No Impact	No Impact	No Impact

Impact BR-11: Would the Alternatives Result in Loss of Brittlegrass?

Alternative A. Under this alternative, the project would not be constructed. Therefore, no project-related impacts on brittlegrass would occur.

Alternative B. Brittlegrass was identified in seasonal wetlands north of McCoy Creek in the Walters Road extension segment. Under this alternative, all of the brittlegrass plants in the study area would be avoided. Potential indirect impacts on the seasonal wetlands that support the brittlegrass would be avoided by including culverts in the road design to maintain existing hydrologic conditions. Mitigation has been identified for this impact (Mitigation Measures BR-10 through BR-13 and BR-15).

Alternatives C, D, and E. Brittlegrass and its suitable habitat do not occur in the study area for these alternatives. No direct or indirect impacts would occur.

Impact BR-12: Would the Alternatives Result in Loss of Pappose Spikeweed?

Alternative A. Under this alternative, the project would not be constructed. Therefore, no project-related impacts on pappose spikeweed would occur.

Alternative B. Pappose spikeweed was identified in seasonal wetlands north and south of McCoy Creek in the Walters Road extension segment. Because of the abundance of the species in this area, it is assumed to also occupy seasonal wetlands west of this area; under this alternative, pappose spikeweed plants would be directly affected (Table 3.15-4). Potential indirect impacts on other seasonal wetlands that support the pappose spikeweed would be avoided by including culverts in the road design to maintain existing hydrologic conditions. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-15).

Alternatives C, D, and E. Pappose spikeweed and its suitable habitat do not occur in the study area for these alternatives. No direct or indirect impacts would occur.

Impact BR-13: Would the Alternatives Result in Loss of Gairdner's Yampah?

Alternative A. Under this alternative, the project would not be constructed. Therefore, no project-related impacts on Gairdner's yampah would occur.

Alternative B. Gairdner's yampah was identified in the annual grassland/seasonal wetland mosaic along and north of McCoy Creek in the Walters Road extension segment. This species is restricted primarily to the grassland portion of the mosaic, particularly the mounds surrounded by seasonal wetlands north of McCoy Creek. Under this alternative, none of the Gairdner's yampah plants in the study area would be directly affected. However, construction of Alternative B could result in potential indirect impacts on seasonal wetland areas that support Gairdner's yampah along the Walters Road extension. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-13 and BR-15).

Alternatives C, D, and E. Gardiner's yampah and its suitable habitat do not occur in the study area for these alternatives. No direct or indirect impacts would occur.

Impact BR-14: Would the Alternatives Result in Loss of Saline Clover?

Alternative A. Under this alternative, the project would not be constructed. Therefore, no project-related impacts on saline clover would occur.

Alternative B. Specific locations of the saline clover variety of *T. depauperatum* were not mapped within the study area. However, the species was observed during surveys in the Walters Road extension area in parts of seasonal wetlands, co-occurring with Contra Costa goldfields. Under this alternative, avoidance of Contra Costa goldfields populations would concurrently avoid co-occurring saline clover populations. Potential indirect impacts on seasonal wetlands that support saline clover would be avoided by including culverts in the road design to maintain existing hydrologic conditions. Mitigation has been identified for impacts to this species (Mitigation Measures BR-10 to BR-13 and BR-15).

Alternatives C, D, and E. Saline clover and its suitable habitat do not occur in the study area for these alternatives. No direct or indirect impacts would occur.

Impact BR-15: Would the Alternatives Result in Cumulative Impacts to Plant Species?

Cumulative impacts on special-status plant species could result from construction of the other planned projects and general development projects in Solano County. Under the No-Action Alternative, the project would not be constructed; therefore, the project would not contribute to cumulative impacts. Similarly, suitable habitat for brittlescale, pappose spikeweed, Gairdner's yampah, and saline clover does not occur in the study area for Alternatives C, D, or E; therefore, these alternatives would not contribute to cumulative impacts. The mitigation measures included in this section would address the loss of special-status plants or their habitat from implementation of Alternative B by modifying the roadway to avoid special-status plant species, minimizing impacts, and compensating for the loss of pappose spikeweed. With these mitigation measures in place, no contribution to cumulative impacts would occur from implementation of Alternative B.

3.15.3.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BR-10: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions. STA or the appropriate local agency will ensure that the contractor will conduct worker environmental awareness training (WEAP) for construction crews before project implementation. The education program will include a brief overview of the special-status species that are known to or could potentially occur in the study area. The overview will cover the life history, habitat requirements, and legal status of each species and will include photographs of the species. The training will identify the portions of the study area in which these species may occur. The program shall also cover all mitigation measures, environmental permits and proposed project plans, such as the Stormwater Pollution Prevention Plan (SWPPP), best management practices (BMPs), erosion control and sediment plan, and any other required plans. Restrictions and guidelines that must be observed by construction personnel are listed below:

- Project-related vehicles will be driven at or below the posted speed limit on hard-surfaced roads and at or below 15 mph on unpaved roads in the study area.
- Off-road travel using project-related vehicles and construction equipment, and all ground disturbing activities will be restricted to the designated construction area.
- All food-related trash will be disposed of in closed containers and removed from the study area at least once per week during the construction period. Construction personnel will not feed or otherwise attract wildlife to the study area.

Any worker who encounters damaged vegetation or causes harm to a special-status plant or wildlife species will immediately report the incident to the biological monitor. The monitor will immediately notify STA or the appropriate local agency, which will provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and to the local CDFG warden or biologist within three working days. STA or the appropriate local agency will follow up with written notification to USFWS and CDFG within five working days.

The designated environmental inspector shall be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. WEAP training sessions shall be conducted as needed for new personnel brought onto the job during the construction period.

Mitigation Measure BR-11: Retain a Biologist to Monitor Construction Activities. STA or the appropriate local agency will retain a biological monitor to monitor all construction activities located within 250 feet of special-status plant and wildlife populations (including Contra Costa goldfields and vernal pool crustaceans, discussed under Section 3.15.5, Threatened and Endangered Species). The monitor will ensure compliance with all conservation measures and applicable resource agency permits and prevent any potential take of listed species, or impacts to sensitive habitat. More than one monitor may be required depending on the distance between construction activities and the proximity to wetland resources. The biological monitor will assist the construction crew as needed to comply with all project implementation restrictions and guidelines. Also, the biological monitor will be responsible for ensuring that the contractor maintains the staked and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources.

Mitigation Measure BR-12: Install Construction Barrier Fencing around the Construction Area.

STA or the appropriate local agency will ensure that the contractor installs orange construction barrier fencing to identify environmentally sensitive areas in the construction area, including Old Alamo Creek, Union Creek, McCoy Creek, unnamed drainages, wetlands, elderberry shrubs, special-status plant populations, oak trees, and any trees that support nests of special-status bird species. Before construction, a qualified biologist will identify sensitive biological habitat on site before the final design plans are prepared so that the areas to be fenced can be included in the plans. The contractor will work with the project engineer and a resource specialist to identify the locations for the barrier fencing and will place stakes around the sensitive resource sites (a minimum of one foot buffer) to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans. The fencing will be installed before construction activities are initiated and will be maintained throughout the construction period. The following paragraph will be included in the construction specifications:

The contractor's attention is directed to the areas designated as "environmentally sensitive areas." These areas are protected, and no entry by the contractor for any purpose will be allowed unless specifically authorized in writing. The contractor will take measures to ensure that contractor's forces do not enter or disturb these areas, including giving written notice to employees and subcontractors.

Temporary fences around the environmentally sensitive areas will be installed as one of the first orders of work. Temporary fences will be furnished, constructed, maintained, and removed as shown on the plans, as specified in the special provisions, and as directed by the project engineer. The fencing will be commercial-quality woven polypropylene, orange in color, and at least four feet high (Tensor Polygrid or equivalent). The fencing will be tightly strung on posts set at maximum intervals of 10 feet. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities have been completed.

Mitigation Measure BR-13: Minimize Potential Impacts on Special-Status Plant Species during Construction. STA or the appropriate local agency will ensure that the contractor will minimize potential construction-related impacts on special-status plant species by implementing the following measures to the extent possible:

- In areas that contain special-status plants, construction activities will be conducted during the period when special-status plants are not flowering or fruiting (i.e., generally between August and January).
- As described in the Draft MSHCP, the topsoil from the area within the study area that contains the potentially affected special-status plant populations will be excavated with the roots, rhizomes, and seed bank in place; depth of excavation will be determined after further research on the species and site conditions. This excavation will occur after the plants have flowered and set seed, generally in November/December, when the soils are elastic and easy to move. The excavation will be done by hand or with a truck-mounted tree spade. The equipment will be chosen depending on the depth and diameter of excavation required. The topsoil will be placed on a transplant site immediately after excavation. This activity will be conducted or monitored by a botanist to ensure that the appropriate amount of topsoil is removed and placed in the appropriate location. Special project

specifications will be developed for removing and relocating soils containing special-status plants. Because all identified special-status plants to be affected are wetland species, the transplant location will be located within the same wetland complex as the impact location.

Mitigation Measure BR-14: Compensate for Loss of Pappose Spikeweed. STA or the appropriate local agency will compensate for the permanent loss of occupied pappose spikeweed habitat. This compensation is being provided pursuant to NEPA and FHWA policies on mitigating effects to special status plant habitat. Compensation will include preservation at a ratio of 3:1 (3 acres preserved for each 1 acre of occupied habitat removed during construction). The area to be preserved will include either private property or City of Fairfield property located adjacent to the Walters Road extension area, which is part of the McCoy Creek watershed High Value Conservation area identified in Draft MSHCP.

Mitigation Measure BR-15: Implement Mitigation Measure BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss. Implementation of Mitigation Measure BR-7 requires modifications to roadway design that will reduce impacts on special status plants.

3.15.4 Animal Species

3.15.4.1 Regulatory Setting

Many federal laws regulate impacts on wildlife. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the federal Endangered Species Act. Species listed or proposed for listing are discussed in the Threatened or Endangered Species section below. All other federally protected special-status animal species are discussed here, including USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

Solano County Multispecies Habitat Conservation Plan (Version 2.2 Final Administrative Draft)

The Draft MSHCP will establish a framework for complying with State and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Plan Participants within Solano County over the next 50 years. These covered activities include:

- 1) Approximately 12,300 acres of planned urban development within the boundaries of Vacaville, Fairfield, Suisun City, Vallejo, Rio Vista and Dixon;
- 2) The operation and maintenance of the approximately 1,236 miles of flood control and irrigation channels, 321 miles of pipelines, and numerous pump stations, diversion dams, holding reservoirs, water tanks, and other associated facilities owned and operated by the Solano County Water Agency (SCWA), Solano Irrigation District (SID), Maine Prairie Water District (MPWD), Reclamation District 2068 (RD 2068), Dixon Resource Conservation District (RCD), and Dixon Regional Watershed Joint Powers Authority (JPA); and
- 3) Implementation of HCP conservation measures such as the establishment and management of reserves and preserves, habitat restoration and construction, scientific collection/ monitoring, relocation of covered species and associated activities on an estimated 25,000 to 30,000 acres of reserves, preserves, open space lands, and other cooperative habitat restoration sites.

Although the Draft MSHCP has not yet been adopted (at the time of Final EIS publication), STA or the appropriate local agencies have agreed, to the extent feasible, to mitigate for impacts on biological resources in such a way as to be consistent with the Draft MSHCP.

3.15.4.2 Affected Environment

The study area contains habitat for several federally-listed threatened or endangered wildlife species that are discussed under Section 3.15.5, Threatened and Endangered Species. The following special-status wildlife species are also known to occur or are highly likely to occur in the study area, based on surveys, the presence of suitable habitat, and information regarding distribution:

- Northwestern pond turtle (*Actinemys marmorata marmorata*), one of two subspecies of western pond turtle, is a State species of special concern, and is covered in the Draft MSHCP. Perennial aquatic habitat and adjacent uplands in the study area provide suitable habitat for western pond turtle. Several individuals were observed in 2007 in the McCoy Detention Basin adjacent to the proposed Walters Road extension. Several size classes were observed (i.e., juveniles through adults), which implies the site is breeding habitat. McCoy Detention Pond is adjacent and hydrologically connected to the perennial pond within the study area along the Walters Road extension. Although no northwestern pond turtles were observed in the pond, it does provide suitable habitat for this species, and based on the proximity the McCoy Detention Basin, it is likely that this species uses the pond and the adjacent uplands in the study area as well. Additional habitat for this species occurs along Old Alamo Creek, though no northwestern pond turtles have been observed there during surveys conducted for this project.
- Western burrowing owl (*Athene cunicularia hypugea*) is a State species of special concern, and is covered in the Draft MSHCP. It is also protected during its nesting season under the Migratory Bird Treaty Act (MBTA) and CFGC Section 3503.5. The MBTA and CFGC Section 3503.5 prohibit the “take” of migratory birds, nests, and young. Annual grassland in the study area provides suitable habitat for this species. A single individual was observed along Peabody Road

near its intersection with Air Base Parkway. Protocol-level surveys conducted in spring 2008 documented a nesting pair of burrowing owls near the intersection of Orange Drive and Leisure Town Road. Additional records for this species in the vicinity are contained in the CNDDDB.

- Swainson's hawk (*Buteo swainsoni*) is a State-listed threatened species protected under the MBTA and CFGC Section 3503.5, and covered in the Draft MSHCP. Large oak, cottonwood and eucalyptus trees in the study area provide suitable nesting habitat for Swainson's hawk, and annual grasslands and agricultural fields in the study area provide foraging habitat for this species. No Swainson's hawk nests were observed during surveys for this project, but at least nine nesting records for this species within one to three miles of the study area are contained in the CNDDDB.
- White-tailed kite (*Elanus leucurus*) is a fully protected species under CFGC Section 3511 and is covered in the Draft MSHCP. Riparian woodlands, grasslands, and agricultural fields in the study area provide suitable nesting and foraging habitat for white-tailed kite. Although none were observed during the surveys, white-tailed kites are relatively common in the vicinity of the study area.
- Northern harrier (*Circus cyaneus*) is a State species of special concern and is covered in the Draft MSHCP. Marshes, annual grasslands, and agricultural fields in the study area provide suitable nesting and foraging habitat for northern harrier. Although none were observed during the surveys, northern harrier are relatively common in the vicinity of the study area.
- Non-special-status migratory birds, including cliff swallows, barn swallows, and raptors such as Cooper's hawk, have the potential to nest in the study area. Although these birds are not considered special-status wildlife species, their occupied nests and eggs are protected under the MBTA and CFGC Sections 3503 and 3503.5.

Surveys of the study area were conducted on the following dates:

- Surveys for nesting raptors, nesting swallows and special-status bats were conducted May 27 to 28 and July 20, 1999.
- A survey for western snowy plover was conducted on October 19, 2001.
- Surveys for California tiger salamander and western spadefoot toad were conducted on June 2 to 4, 1999; March 20, 2000; and October 13, 2005.
- Habitat assessment for California red-legged frog was conducted on March 27 and April 3, 2007.
- Surveys for vernal pool crustaceans were conducted September 13, 2000, and from November 2000 through April 2001.
- A habitat assessment for vernal pool crustaceans was conducted on May 3, 2005, as well as in February and November 2005.
- Protocol shrimp surveys were conducted in portions of the study area in 2000.²

² Vollmar Consulting. 2000. Wetland delineation report and special status species survey report for the Strassberger Industrial Park, Cross Industrial Park, and McCoy Detention Basin properties, Fairfield, Solano County, California. Berkeley, CA. Prepared for the City of Fairfield Department of Planning and Development.

- Delta green ground beetle surveys were conducted in early 2000, and in the Walters Road extension area between January and May of 2006.
- Focused VELB surveys were conducted on October 9, 2001, October 13, 2005, and September 23, 2008.
- Fisheries surveys were conducted on July 9, 2002.
- Protocol burrowing owl surveys were conducted on April 30, May 5, May 6, and May 7, 2008.
- Habitat assessment for California red-legged frog following the August 2005 USFWS protocol for California Red-legged frog was conducted by PBS&J on March 27, and April 3, 2007.

3.15.4.3 Environmental Consequences (including Permanent, Temporary, Direct, Indirect, and Cumulative Impacts)

Methodology

Removing portions of uncommon and biologically unique habitats, such as seasonal wetlands/vernal pools and riparian woodlands, was considered to potentially lead to a localized decrease in those habitat types. However, removing portions of common and widespread habitat types, such as annual grassland, was not considered to lead to substantial local decreases in those habitat types. The loss or disturbance of common natural communities, such as non-native annual grassland, agricultural land, and ruderal areas, is not considered adverse from a botanical perspective because of the regional abundance of the communities.

Summary of Impacts to Animal Populations

Table 3.15-5 summarizes impacts on special-status animal populations and their habitat for each alternative. As shown, each of the build alternatives would have the potential to impact special-status animals and their habitat; however, Alternative E would have the lowest potential for impacts. Impacts to special-status animal populations and their habitat are described in detail below for each alternative.

**Table 3.15-5
Summary of Impacts to Special-Status Animal Populations (non-listed)**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Loss of habitat for Northwestern Pond Turtle	No Impact	Potential Impact	Unlikely to be affected	Unlikely to be affected	Unlikely to be affected
Disturbance to Burrowing Owl breeding or wintering burrow site	No Impact	Possible effect if present			
Loss of Swainson’s Hawk nesting and foraging habitat	No Impact	58.5 acres	57.4 acres	49 acres	32.1 acres
Degradation or disturbance to White-Tailed Kite nesting sites	No Impact	Possible effect on nesting birds if present			
Degradation or disturbance to Northern Harrier nesting sites	No Impact	Possible effect on nesting birds if present			
Disturbance to nesting sites of migratory birds, including raptors	No Impact	Possible effect on nesting birds if present			

Impact BR-16: Would the Alternatives Result in Loss of Habitat for Northwestern Pond Turtle?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on northwestern pond turtle would occur.

Alternative B. The CNDDDB (2008) lists several records for northwestern pond turtle within a 10-mile radius of the study area. Several adult and juvenile western pond turtles were observed in the McCoy Detention Basin during surveys conducted in March and April of 2007. The presence of a variety of size classes implies that the species is breeding at that location. The perennial pond occurring along the Walters Road extension of Alternative B provides suitable habitat for this species. Although none were observed in this pond, it is adjacent and connected to the McCoy Detention Basin and is likely used by this species. Grasslands surrounding these features provide suitable upland habitat for egg laying and hibernation. There is additional suitable aquatic habitat for northwestern pond turtles at the Old Alamo Creek crossing, but suitable upland habitat is limited because the area is developed and therefore this portion of the study area does not provide overwintering burrows or areas for egg deposit sites. Northwestern pond turtles occur in the study area based on the presence of suitable aquatic habitat. There would be an adverse effect. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-12 and BR-16).

Alternatives C, D, and E. Impacts of these alternatives would be less than identified for Alternative B, because no construction would occur along the proposed Walters Road extension alignment under Alternatives C, D, and E. Potential impacts could occur along Old Alamo Creek if the species is present there. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-12 and BR-16).

Impact BR-17: Would the Alternatives Disturb Burrowing Owl Breeding or Wintering Burrow Sites?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on burrowing owl would occur.

Alternatives B, C, and D. Nesting burrowing owls were observed along the Alternative B, C, and D alignments during surveys, near the intersection of Orange Drive and Leisure Town Road. CNDDDB records also indicate that owls could occur in the southern portion of the study area along all of the alternative alignments. Because burrowing owls have been documented in suitable habitat within the study area, there is potential for burrowing owls to occupy the study area before project construction begins. Construction could harm owls if a burrowing owl breeding or wintering burrow site is found within 250 feet of the study area. There would be an adverse effect. Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-17).

Alternative E. This impact is the same as identified for Alternatives B to D, except that a single burrowing owl was observed along the Alternative E alignment during field surveys. Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-17).

Impact BR-18: Would the Alternatives Result in Loss of Swainson's Hawk Nesting and Foraging Habitat?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on Swainson's hawk would occur.

Alternative B. No Swainson's hawk nests were observed in the study area during field surveys. According to the CNDDDB (2005), the Swainson's hawk nest closest to the study area was observed in 1990 at Cypress Tree Golf Course, near the intersection of Leisure Town Road and Vanden Road. Approximately five Swainson's hawk nest sites have been recorded in the last two years (CNDDDB 2008) between one and three miles from the study area. All of these nest sites are located east of the study area. Although no nests are known to occur in the study area, Swainson's hawks could establish a nest in or near the area during the construction year. Construction-related disturbances, including noise and other disturbances caused by construction activities and personnel, could result in the abandonment of Swainson's hawk nests, leading to the death of eggs or young. In addition, the proposed action also would result in the removal or disturbance of annual grasslands and agricultural lands (row crop and pasture land); which provide foraging habitat for Swainson's hawks (Table 3.15-5).

All annual grasslands and agricultural lands larger than two contiguous acres provide potential habitat. There would be an adverse effect. Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-18).

Alternative C. This impact would be similar to that identified for Alternative B, although slightly less foraging habitat would be removed (Table 3.15-5). Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-18).

Alternative D. This impact would be similar to that identified for Alternatives B and C, although less foraging habitat would be removed (Table 3.15-5). Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-18).

Alternative E. This impact would be similar to that identified for Alternatives B to D, although less foraging habitat would be removed (Table 3.15-5). Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-18).

Impact BR-19: Would the Alternatives Result in Degradation or Disturbance to White-Tailed Kite Nesting Sites?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on white-tailed kite would occur.

Alternatives B, C, D, and E. No white-tailed kites were observed in the study area during field survey. However, this species has been recorded nesting approximately 0.5 miles east of the study area (CNDDB 2008), and trees in the study area provide suitable nesting habitat for white-tailed kites. Based on the presence of suitable habitat, white-tailed kites could potentially nest in or adjacent to the study area. Construction of the build alternatives could degrade suitable nesting habitat for white-tailed kites. Noise associated with construction activities and vegetation removal could disturb nesting white-tailed kites if these activities occur during the breeding season (generally between March 1 and August 31) and if nests are present in or adjacent to the study area. This disturbance could cause nest abandonment and would be an adverse effect. Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-19).

Impact BR-20: Would the Alternatives Result in Degradation or Disturbance to Northern Harrier Nesting Sites?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on northern harrier would occur.

Alternatives B, C, D, and E. No northern harriers or large ground nests were observed in the study area during field surveys. However, because northern harriers are known to occur in the project vicinity, and suitable nesting and foraging habitat (annual grassland and emergent wetlands) is available in the study area, northern harriers could nest in the study area. Construction of the build alternatives could degrade suitable nesting habitat (annual grasslands and emergent marsh) for northern harriers. Noise associated with construction activities and vegetation removal could disturb nesting harriers if these activities occur during the breeding season (generally between March 1 and August 31) and if nests are present in or adjacent to the study area. This disturbance could cause nest abandonment. This would be an adverse effect. Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-19).

Impact BR-21: Would the Alternatives Result in Disturbance to Nesting Sites of Migratory Birds, including Raptors?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on nesting migratory birds would occur.

Alternatives B, C, D, and E. Non-special-status migratory birds, including cliff swallows, barn swallows, and raptors such as Cooper's hawk have the potential to nest in the study area. Although these birds are not considered special-status wildlife species, their occupied nests and eggs are protected under the MBTA and CFGC Sections 3503 and 3503.5. Mountain plovers, long-billed curlews, white-faced ibises, and several raptor species, including bald eagle, prairie falcon, ferruginous hawk, and short-eared owl, may be present infrequently in the study area during winter, but they do not nest there and would not be negatively affected by project activities. Implementation of the build alternatives could affect nesting migratory birds, including raptors, if construction activities remove or otherwise disturb occupied nests during the breeding season (generally between March 1 and August 31). Construction activities during the breeding season could result in death of young or loss of reproductive potential, resulting in large subsequent population declines affecting local population viability. This would be an adverse effect. Mitigation has been identified for this effect (Mitigation Measures BR-10 to BR-12 and BR-19).

Impact BR-22: Would the Alternatives Result in Cumulative Impacts to Animal Species?

Cumulative impacts on animal species could result from construction of other general development projects in Solano County. Under the No-Action Alternative, the project would not be constructed; therefore, the project would not contribute to cumulative impacts. Construction of the build alternatives would add to the cumulative loss of suitable habitat for northwestern pond turtle, burrowing owl, Swainson's hawk, white-tailed kite, northern harrier, and migratory bird species, including raptors. However, with implementation of the mitigation measures prescribed for minimizing and compensating for impacts, the proposed action would not be likely to have a cumulatively considerable contribution to effects on these species.

3.15.4.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BR-16: Conduct Preconstruction Surveys for Western Pond Turtle. STA or the appropriate local agency will ensure that a clearance survey for western pond turtles is conducted by a qualified biologist in all areas of aquatic habitat that cannot be avoided, within 24 hours prior to construction. If any western pond turtles are found, they should be moved, or encouraged to move to a safe location outside the construction zone.

Mitigation Measure BR-17: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the CDFG Guidelines for Burrowing Owl Mitigation, if Necessary. The Staff Report on Burrowing Owl Mitigation (CDFG 1995) recommends that preconstruction surveys be conducted to locate active burrowing owl burrows in the study area and in a 250-foot-wide buffer zone around the study area. STA or the appropriate local agency will retain a qualified biologist to conduct preconstruction surveys for active burrows according to CDFG guidelines. The surveys will include a nesting season survey and wintering season survey. If no burrowing owls are detected, no further mitigation will be required. If active burrowing owls are detected in the survey area, STA or the appropriate local agency will implement the following measures:

- Occupied burrows will not be disturbed during the nesting season (February 1 to August 31).
- When destruction of occupied burrows is unavoidable during the non-nesting season (September 1 to January 31), unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (installing artificial burrows) at a ratio of 2:1 on protected lands approved by CDFG. Newly created burrows will be installed following guidelines established by CDFG.
- If owls must be moved away from the study area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping. At least one week will be allowed to accomplish passive relocation and allow owls to acclimate to alternate burrows.

If active burrowing owl burrows are found and the owls must be relocated, STA or the appropriate local agency will offset the loss of foraging and burrow habitat in the study area by acquiring and permanently protecting a minimum of 6.5 acres of foraging habitat per occupied burrow identified in the study area. This compensation would be provided pursuant to NEPA and FHWA policies on mitigating effects on special status species. The protected lands should be located adjacent to the occupied burrowing owl habitat in the study area or at another occupied site near the study area. The location of the protected lands will be determined in coordination with CDFG. STA or the appropriate local agency will also prepare and implement a monitoring plan and provide long-term management and monitoring of the protected lands. The monitoring plan will specify success criteria, identify remedial measures, and require an annual report to be submitted CDFG.

- If avoidance is the preferred method of dealing with potential impacts, no disturbance should occur within 160 feet of occupied burrows during the nonbreeding season (September 1 to January 31) or within 250 feet during the breeding season. Avoidance also requires that at least 6.5 acres of foraging habitat (calculated based on an approximately 300-foot foraging radius around an occupied burrow) contiguous with occupied burrow sites be permanently preserved for each pair of breeding burrowing owls or single unpaired resident bird. The configuration of the protected site will be submitted to CDFG for approval.

Mitigation Measure BR-18: Implement the CDFG Guidelines for Swainson's Hawk Foraging Habitat Mitigation and Conduct Preconstruction Surveys for Nesting Swainson's Hawks. The Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (*Buteo swainsoni*) in the Central Valley of California (CDFG 1994) recommends mitigation of the removal of suitable Swainson's hawk foraging habitat at a ratio determined by the distance to the nearest active nest. Because the nearest known nest

is one mile from the study area, the recommended compensation ratio would be 1:1 (1 acre replaced for every 1 acre removed), which is also consistent with the Draft MSHCP. Total range of compensation would be from 32 acres for Alternative E to 58 acres for Alternative B. STA or the appropriate local agency will accomplish this mitigation either by developing and implementing a project-specific mitigation agreement that would be submitted to CDFG for approval or by purchasing Swainson's hawk mitigation credits at a CDFG/Draft MSHCP-approved mitigation bank. This compensation would be provided pursuant to NEPA and FHWA policies on mitigating effects on special status species. It may also be feasible to combine this mitigation requirement with wetland or vernal pool upland mitigation discussed for Wetlands or Threatened and Endangered Species because mitigation lands for vernal pools and seasonal wetland swales include grasslands that are also suitable Swainson's hawk foraging habitat.

If construction is scheduled to occur during the Swainson's hawk breeding season (generally March 1 through August 31), STA or the appropriate local agency will retain a qualified wildlife biologist to conduct preconstruction surveys for nesting Swainson's hawks in suitable habitat within a 0.25-mile radius of the construction site. If no Swainson's hawks are found nesting within the areas surveyed, then no further mitigation will be required. If Swainson's hawks are found nesting within a 0.25-mile radius of the construction site, CDFG will be consulted to determine whether a no-disturbance buffer would be required until after the young have fledged (as determined by a qualified wildlife biologist). Impact avoidance measures will be conducted pursuant to CDFG mitigation guidelines.

Mitigation Measure BR-19: Avoid Disturbance of Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors. To avoid impacts on potentially nesting Cooper's hawk, white-tailed kite, northern harrier, and non-special-status migratory birds and raptors, STA or the appropriate local agency will implement the following avoidance and minimization measures:

- To the extent possible, vegetation removal activities associated with the proposed action will be conducted outside the breeding season (generally between March 1 and August 31) for migratory birds and raptors.
- If vegetation removal activities are to take place during the breeding season for these species (generally between March 1 and August 31), a qualified wildlife biologist will be retained to conduct focused nesting surveys for Cooper's hawk, white-tailed kite, northern harrier, and non-special-status migratory birds and raptors.
- If active Cooper's hawk, white-tailed kite, northern harrier, or non-special-status migratory bird or raptor nests are found in the study area, and if construction activities must occur during the breeding season, STA or the appropriate local agency will consult CDFG to determine and implement appropriate "no-disturbance" buffers around the nest sites until the young have fledged (as determined by a qualified biologist).
- If other active non-special-status migratory bird nests are found in the study area, and if construction activities must occur during the breeding season, STA or the appropriate local agency will consult with CDFG and USFWS to develop and implement an MOU to promote the conservation of migratory bird populations.

- If surveys indicate that no special-status or non-special-status birds are nesting in or adjacent to the study area, no further mitigation will be required.

3.15.5 Threatened and Endangered Species

3.15.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Department, as assigned by FHWA, are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an Incidental Take statement. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

The Draft MSHCP establishes a framework for complying with State and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Plan Participants within Solano County over the next 50 years. Although not adopted at the time of this writing, the STA has agreed, to the extent feasible, to model mitigation measures for the Jepson Parkway Project such that they are consistent with the Draft MSHCP.

3.15.5.2 Affected Environment

A search of the CNDDDB (2008) was conducted to determine whether any special-status species were known to occur in the vicinity of the study area. The search encompassed a five-mile radius around the study area within the USGS 7.5-minute Allendale, Dozier, Denverton, Elmira, Fairfield South, and Fairfield North quadrangles. A target list of special-status species with potential to occur in the study area was compiled using the search results, the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001), and the listing of sensitive species provided by USFWS. Special-status species were included on the list if they were known to occur in the geographic region and if suitable habitat for the species was present in the study area. USFWS provided a list of species that are federally listed as threatened or endangered, or are proposed for such listing, that could occur in the project region. Table 3.15-6 lists all the species identified for the proposed project by USFWS. The list provided by USFWS is included in Appendix E. The USFWS issued a Biological Opinion (BO) for this project that details the project impacts and mitigation requirements that have been approved on May 27, 2010. This BO can be found in Appendix J.

Critical Habitat

A portion of the project area lies within critical habitat for vernal pool fairy shrimp (VPFS) (Critical Habitat Units 16 A, 16B, and 16C), vernal pool tadpole shrimp (VPTS) (Critical Habitat Units 11A, 11B, and 11C), and Contra Costa goldfields (CCGF) (Critical Habitat Units 4A, 4B, and 4C) (USFWS, 2002). The physical boundaries for Critical Habitat Units for Contra Costa goldfields, vernal pool fairy shrimp and vernal pool tadpole shrimp referenced above overlap identically, but are numbered differently for each species (e.g., VPFS unit 16A, VPTS unit 11A, and Contra Costa goldfields unit 4A all occupy the same physical area). The project area does not include critical habitat for Conservancy fairy shrimp, valley elderberry longhorn beetle (VELB), California tiger salamander (CTS), or California red-legged frog (CRLF). Critical habitat has not been designated for giant garter snake (GGS). The USFWS concurred that the proposed project is not likely to adversely affect giant garter snake in the Biological Opinion issued for this project (see Appendix J).

Special-status Species Surveys

Surveys for special-status wildlife species in the study area were conducted as described in the list below. Botanical surveys to identify threatened and endangered plant species were also conducted, as described in Section 3.15.3, Plant Species.

- Surveys for nesting raptors, nesting swallows and special-status bats were conducted May 27 to 28 and July 20, 1999.
- A survey for western snowy plover was conducted on October 19, 2001.
- Focused surveys for California tiger salamander and western spadefoot toad were conducted on June 2 to 4, 1999 (minnow traps and seining in McCoy Reservoir and nearby stock pond); March 20, 2000 (habitat assessment); and October 13, 2005 (habitat assessment on all alternatives).
- Habitat assessment for California red-legged frog was conducted on March 27 and April 3, 2007.
- Protocol-level dry-season (September 13, 2000) and wet-season (November 2000 through April 2001) surveys for vernal pool crustaceans were conducted in vernal pools along Air Base Parkway and adjacent to the proposed Walters Road extension.
- A habitat assessment for vernal pool crustaceans was conducted on May 3, 2005, as well as in February and November 2005.
- Protocol shrimp surveys were conducted in portions of the study area in 2000 (Vollmar Consulting 2000).
- Delta green ground beetle surveys were conducted in conjunction with the vernal pool crustacean habitat assessments in the Walters Road extension area in early 2000. Additional delta green ground beetle surveys were conducted in the Walters Road extension area that consisted of more than 20 visits between January and May of 2006.³

³ Personal communication, Richard Arnold, Entomological Consulting Services, Ltd. July 2, 2007

- Focused surveys for valley elderberry longhorn beetle (VELB) were conducted on October 9, 2001, October 13, 2005, and September 23, 2008.
- Fisheries surveys were conducted on July 9, 2002.

Based on the pre-field investigation and the field surveys, the following federally listed, proposed, and candidate species were determined to have potential to occur in the study area.

Contra Costa Goldfields

Contra Costa goldfields (*Lasthenia conjugens*) is federally listed as endangered (62 FR 33029). Contra Costa goldfields is included in the USFWS 2005 Recovery Plan for Vernal Pool Ecosystems of California and Oregon (Recovery Plan), and critical habitat has been designated for this species. Additionally, Contra Costa goldfields is a covered species under the Draft MSHCP. Contra Costa goldfields has no State listing status but is considered endangered in California and elsewhere (List 1B) by CNPS (2001).

In the study area, Contra Costa goldfields occurs in vernal pools/seasonal wetlands in the Walters Road extension area, east of existing Walters Road between Air Base Parkway and East Tabor Avenue, and south of Air Base Parkway. Substantial populations of native ground nesting bees, which are pollinators of the Contra Costa goldfields, were observed in the Walters Road extension area during surveys conducted between January and May of 2006.⁴ The number of Contra Costa goldfields observed each survey year varied greatly in some wetlands. Populations along Vanden Road, and along the Walters Road extension south of Cement Hill Road are considered Vernal Pool Core Species Recovery Areas in the MSHCP. Critical habitat for vernal pool species, including Contra Costa goldfields occurs along undeveloped portions of existing Walters Road, south of Air Base Parkway, west of Travis Air Force Base, and southwest of the base near the intersection of Walters Road and SR 12.

The project area crosses critical habitat for Contra Costa goldfields in three places, Critical Habitat Unit 4A near the intersection of Leisure Town Road and Vanden Road (Alternatives B, C, and D), Critical Habitat Unit 4B at the intersection of Walters Road and Air Base Parkway (Alternatives B, C, D, and E), and Critical Habitat unit 4C at the intersection of Walters Road and SR 12 (Alternatives B, C, D, and E) (Figure 31). No suitable habitat for this species exists where the project area crosses Critical Habitat (CH) Unit 4A, and no road construction will occur where the project area crosses CH Unit 4C. However, where the project area crosses CH Unit 4B, suitable habitat for this species is present.

⁴ Personal communication, Richard Arnold, Entomological Consulting Services, Ltd. July 2, 2007

**Table 3.15-6
Species in the Project Region that are Federally Listed Threatened or Endangered or Proposed for Listing**

Common Name	Scientific Name	Status ^a Federal/ State	General Habitat Description	Habitat Present/ Absent	Rationale	Federal Effect Finding
Invertebrates						
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E/-	Found in large, deep playa vernal pools in annual grasslands. Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, and Glenn Counties.	HA	No large, deep playa vernal pools present in the study area.	May affect, but is not likely to adversely affect
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T/-	Common in vernal pools; also occurs in sandstone rock outcrop pools; found in the Central Valley and central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.	P	Habitat present in the study area.	Likely to adversely affect
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E/-	Found in vernal pools and ephemeral stock ponds. Occurs from Shasta County south to Merced County.	P	Habitat present in the study area.	Likely to adversely affect
Delta green ground beetle	<i>Elaphrus viridus</i>	T/-	Found on sparsely vegetated edges of vernal lakes and pools. Occurs up to 250 feet from pools. Currently known only from Olcott Lake and other vernal pools in the Jepson Prairie Preserve, Solano County.	HA	Suitable habitat not present in the study area. No beetles located during focused surveys and species considered to be not present.	May affect, but is not likely to adversely affect
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T/-	Found in riparian and oak savanna habitats with elderberry shrubs. Elderberries are the host plant. Occurs in streamside habitats below 3,000 feet above mean sea level (asl) throughout the Central Valley	P	Focused surveys located elderberry shrubs along Old Alamo Creek at its crossings with Leisure Town Road, and Peabody Road.	Likely to adversely affect
Callippe silverspot	<i>Speyeria callippe callippe</i>	E/-	Found on open hillsides where wild pansy (<i>Viola pendunculata</i>) grows. Larvae feed on Johnny jump-up plants, whereas adults feed on native mints and non-native thistles. Occurs in the San Bruno Mountains, San Mateo County, and a single location in Alameda County.	HA	Study area is outside the known range for the species; no Johnny jump-up plants located in the area during floristic surveys.	No effect

**Table 3.15-6
Species in the Project Region that are Federally Listed Threatened or Endangered or Proposed for Listing**

Common Name	Scientific Name	Status ^a Federal/ State	General Habitat Description	Habitat Present/ Absent	Rationale	Federal Effect Finding
Fish						
Delta smelt	<i>Hypomesus transpacificus</i>	T/T	Found in estuary habitat where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (ppt). Occurs in the Delta and in Suisun Bay (Moyle 2002).	HA	No suitable habitat present in the study area.	No effect
Central Valley steelhead	<i>Oncorhynchus mykiss</i>	T/-	Found in well-oxygenated, cool, riverine habitat with water temperatures between 7.8 and 18°C (Moyle 2002). Habitat types are riffles, runs, and pools. Occurs in the Sacramento River and tributary Central Valley rivers.	P	No spawning or rearing habitat present in the study area; possible adult migration corridor during high flows.	May affect, but is not likely to adversely affect
Sacramento Winter-run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	E/E	Found in well-oxygenated, cool, riverine habitat with water temperatures between 8.0 and 12.5°C. Habitat types are riffles, runs, and pools. Occurs in the mainstem Sacramento River (Moyle 2002).	HA	Study area is outside known range for the species.	No effect
Central Valley spring-run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	T/T	Has the same general habitat requirements as winter-run Chinook salmon. Cold-water pools are needed for holding adults (Moyle 2002). Occurs in upper Sacramento River and Feather River.	HA	Study area is outside the known range for the species.	No effect
Central Valley fall/late fall–run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	C/-	Has the same general habitat requirements as winter and spring-run Chinook salmon. Occurs in the Sacramento River and tributary Central Valley rivers.	P	No spawning or rearing habitat present in the study area; possible adult migration corridor during high flows.	No effect
Green sturgeon	<i>Acipenser medirostris</i>	C/-	Spawns in well-oxygenated, cool, riverine habitat with water temperatures between 8.0 and 14°C. Occurs in the Sacramento, lower Feather, and Klamath Rivers (Moyle 2002).	HA	Project is outside the known range for the species.	No effect

**Table 3.15-6
Species in the Project Region that are Federally Listed Threatened or Endangered or Proposed for Listing**

Common Name	Scientific Name	Status ^a Federal/ State	General Habitat Description	Habitat Present/ Absent	Rationale	Federal Effect Finding
Amphibians						
California red-legged frog	<i>Rana aurora draytonii</i>	T/SSC	Found in permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods. Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehema County to Fresno County.	P	Poor quality habitat identified in drainages crossed by the study area or in ponds in the study area. However, no records for this species within 14 miles of the study area.	May affect, but is not likely to adversely affect
California tiger salamander	<i>Ambystoma californiense</i>	T/SSC	Found on valley floor grasslands or low foothills (below 1,500 feet asl) where lowland aquatic sites, like large vernal pools, playa pools, sag ponds, and stock ponds, are available for breeding. Upland habitat consists of small mammal burrows within approximately 1.24 miles of breeding habitat.	P	Upland habitat is present within 1.24 miles of CTS breeding site (CNDDDB 2008). No suitable breeding habitat in the study area.	Likely to adversely affect
Reptiles						
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	T/T	Found in valleys, foothills, and low mountains associated with northern coastal scrub or chaparral habitat. Requires rock outcrops for cover and foraging. Restricted to Alameda and Contra Costa Counties. Fragmented into five disjunct populations throughout its range.	HA	No suitable habitat present in the study area. Study area outside the known range of the species.	No effect
Giant garter snake	<i>Thamnophis couchi gigas</i>	T/T	Found in sloughs, canals, low-gradient streams, and freshwater marsh habitats where there is a prey base of small fish and amphibians. Also found in irrigation ditches and rice fields. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter. Occurs in the Central Valley from the vicinity of Burrell in Fresno County north to near Chico in Butte County. Believed to have been extirpated from areas south of Fresno.	HA	Study area is on the edge of the species' range. Disturbance (i.e., concrete-lined drainage crossings located in an urbanized setting) make habitat unsuitable in the study area.	May affect, but is not likely to adversely affect

**Table 3.15-6
Species in the Project Region that are Federally Listed Threatened or Endangered or Proposed for Listing**

Common Name	Scientific Name	Status ^a Federal/ State	General Habitat Description	Habitat Present/ Absent	Rationale	Federal Effect Finding
Birds						
California brown pelican (nesting colony)	<i>Pelecanus occidentalis californicus</i>	E/E	Native of estuarine, marine subtidal, and marine pelagic waters along the California coast. Breeds on Channel Islands: Anacapa, Santa Barbara, and Santa Cruz.	HA	No large bodies of water suitable for foraging or breeding present in the study area.	No effect
Western snowy plover (coastal populations)	<i>Charadrius alexandrinus nivosus</i>	T/SSC	Found on coastal beaches above the normal high-tide limit in flat, open areas with sandy or saline substrates. Vegetation and driftwood are usually sparse or absent. A population is defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to San Diego County.	HA	No suitable tidally influenced habitat present in the study area.	No effect
Bald eagle	<i>Haliaeetus leucocephalus</i>	T/E	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, stream, or the ocean. Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County.	HA	Foraging habitat present in the study area; however, no nesting habitat.	No effect
California clapper rail	<i>Rallus longirostris oboletus</i>	E/-	Restricted to salt marshes and tidal sloughs. Usually associated with heavy growth of pickleweed. Feeds on mollusks removed from the mud in sloughs.	HA	No suitable habitat present in the study area.	May affect, but is not likely to adversely affect
California least tern	<i>Sterna antillarum</i>	E/-	Nests on sandy, upper ocean beaches, and occasionally uses mudflats. Forages on adjacent surf line, estuaries, or over the open ocean.	HA	No suitable habitat present in the study area.	No effect
Western yellow billed cuckoo	<i>Oncorhynchus americanus occidentalis</i>	C/-	Found in wide, dense riparian forests with a thick understory of willows for nesting. Sites with a dominant cottonwood overstory are preferred for	HA	No suitable habitat present in the study area.	No effect

**Table 3.15-6
Species in the Project Region that are Federally Listed Threatened or Endangered or Proposed for Listing**

Common Name	Scientific Name	Status ^a Federal/ State	General Habitat Description	Habitat Present/ Absent	Rationale	Federal Effect Finding
			foraging. May avoid valley-oak riparian habitats where scrub jays are abundant.			
Mammals						
Salt marsh harvest mouse	<i>Reithrodontomys raviventris</i>	E/E, FP	Found in salt marshes with a dense plant cover of pickleweed and fat hen and located adjacent to an upland site. Occurs near San Francisco, San Pablo, and Suisun Bays and the Delta.	HA	No suitable habitat present in the study area.	May affect, but is not likely to adversely affect
Riparian (San Joaquin Valley) woodrat	<i>Neotoma fuscipes riparia</i>	E/SSC, FP	Found in riparian habitats with dense shrub cover, willow thickets, and an oak overstory. Historical distribution along the San Joaquin, Stanislaus, and Tuolumne Rivers, and in Caswell State Park in San Joaquin, Stanislaus, and Merced Counties. Presently limited to San Joaquin County at Caswell State Park; a possible second population occurs near Vernalis.	HA	Study area outside the known range of this species. No suitable habitat present in the study area.	No effect
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	E/E	Found in native valley riparian habitats with large clumps of dense shrubs, low-growing vines, and some tall shrubs and trees. Limited to San Joaquin County at Caswell State Park near the confluence of the Stanislaus and San Joaquin Rivers and to the Paradise Cut area on Union Pacific Railroad right-of-way.	HA	Study area outside the known range of this species. No suitable habitat present in the study area.	No effect
Plants						
Suisun thistle	<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	E/-	Found in salt marsh.	HA	No salt marsh habitat in the study area; not observed during floristic surveys of alkaline habitat in the study area.	May affect, but is not likely to adversely affect
Contra Costa goldfields	<i>Lasthenia conjugens</i>	E/-	Found in vernal pools.	P	Habitat and species present in the study area.	Likely to adversely affect

**Table 3.15-6
Species in the Project Region that are Federally Listed Threatened or Endangered or Proposed for Listing**

Common Name	Scientific Name	Status ^a Federal/ State	General Habitat Description	Habitat Present/ Absent	Rationale	Federal Effect Finding
Soft bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>mollis</i>	E/-	Found in salt marsh.	HA	No salt marsh habitat in the study area; not observed during floristic surveys of alkaline habitat in the study area.	May affect, but is not likely to adversely affect
Solano grass	<i>Tuctoria mucronata</i>	E/-	Found in deep vernal pools on Pescadero clay.	HA	No large, deep vernal pools on Pescadero soils present in the study area.	No effect
Colusa grass	<i>Neostapfia colusana</i>	T/-	Found in deep vernal pools on Pescadero clay.	HA	No large, deep vernal pools on Pescadero soils present in the study area.	No effect
Showy Indian clover	<i>Trifolium amoenum</i>	E/-	Found in low, rich fields and swales in annual grassland.	HA	Presumed extirpated from study area (CNDDB 2001); not observed during floristic surveys of suitable habitat in the study area.	No effect

Notes:

Present [P] means that general habitat for the species is present in the study area and the species itself may be present.

Habitat Absent [HA] means that specific habitat required for the species does not occur in the study area based on the prefield investigation and the field surveys.

Notes:

a. Status explanations:

Federal

- E = listed as endangered under the federal Endangered Species Act.
- T = listed as threatened under the federal Endangered Species Act.
- PT = proposed for federal listing as threatened under the federal Endangered Species Act.
- C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.
- = no status definition.

State

- E = listed as endangered under the California Endangered Species Act.
- R = listed as rare under the California Native Plant Protection Act and California Endangered Species Act.
- FP = fully protected under California Department of Fish and Game Code.
- SSC = species of special concern in California.
- = no status definition.

Vernal Pool Crustaceans

Vernal pool fairy shrimp (*Branchinecta lynchi*) is federally listed as threatened (59 FR 48136–48153). Vernal pool tadpole shrimp (*Lepidurus packardii*) is a species endemic to the Central Valley and federally listed as endangered (59 FR 48136–48153). Both species are covered under the Draft MSHCP. In the study area, these species are found in seasonal wetlands along the Walters Road extension between Cement Hill Road and Air Base Parkway, and along the east side of Walters Road south of Airbase Parkway. Suitable habitat was defined as isolated, seasonally ponded waters that provide an aquatic ecosystem for various durations from November through April.

The project area crosses critical habitat for these species in three places, Critical Habitat Unit VPFS 16C/VPTS 11B near the intersection of Leisure Town Road and Vanden Road (Alternatives B, C, and D), Critical Habitat Unit VPFS 16B/VPTS 11C at the intersection of Walters Road and Air Base Parkway (Alternatives B, C, D, and E), and Critical Habitat unit VPFS 16A/VPTS 11D at the intersection of Walters Road and SR-12 (Alternatives B, C, D, and E). No suitable habitat for this species exists where the project area crosses CH Unit 16C, and no road construction will occur where the project area crosses CH Unit 16A. However, where the project area crosses CH Unit 16B, suitable habitat for this species is present.

Delta Green Ground Beetle

Delta green ground beetle (*Elaphrus viridis*) is federally listed as threatened, and is covered under the Draft MSHCP. Critical habitat for this species was designated in Solano County on August 8, 1980 (45 FR 52807). This species occurs on sparsely vegetated edges of vernal lakes and pools on Pescadero Clay soils, and has been found up to 250 feet from pools. Delta green ground beetle is currently known only from Olcott Lake and other vernal pools in the Jepson Prairie Preserve and adjacent privately owned sites in Solano County, but the species is difficult to observe, and could occur over a wider area if suitable habitat is present. Although vernal pool grasslands occur along Leisure Town Road, Vanden Road, and Walters Road (including the Walters Road extension, and the undeveloped land south of Suisun City, north of SR 12), no delta green ground beetles were observed in the study area during extensive focused surveys conducted from January to May of 2006.⁵ Additionally, the soils in the study area are not the Pescadero Clay soils typically associated with the habitat for this species. No Critical habitat for this species is present in the project area.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is federally listed as threatened (45 FR 52803–52807), and is covered under the Draft MSHCP. Focused surveys for valley elderberry longhorn beetle (VELB) were conducted in the study area on October 9, 2001, October 13, 2005, and September 23, 2008. Suitable habitat (valley elderberry shrubs) was identified along Old Alamo Creek at its intersection with Leisure Town Road. Additional elderberry shrubs were observed along Old Alamo Creek at its intersection with Peabody Road. One shrub at Leisure Town Road showed evidence

⁵ Personal communication, Richard Arnold, Entomological Consulting Services, Ltd. July 2, 2007

of VELB use (exit holes). All of the shrubs are growing in the riparian zone of Old Alamo Creek. According to the CNDDDB (2008), the VELB population closest to these elderberry shrubs is approximately three miles to the west of the Walters Road extension portion of the project, in the foothills northwest of the City of Fairfield. No Critical habitat for this species is present in the project area.

California Red-legged Frog

The California red-legged frog (*Rana aurora draytonii*) is federally listed as threatened, and is covered under the Draft MSHCP. There is no proposed critical habitat in the study area. California red-legged frog occurs in slow moving streams with dense riparian or marsh vegetation, typically with undercut banks or other cover and shelter opportunities. Limiting factors for this species are presence of non-native fish and bullfrogs that either prey upon, or compete with this species.

A habitat assessment for California red-legged frog was conducted in the study area in March and April of 2007. Although a number of aquatic habitats that could theoretically support this species were observed, the presence of bullfrogs and/or non-native predatory fish makes these habitats less suitable for this species. A review of CNDDDB records, and discussions with local amphibian expert Mark Jennings of Rana Resources in Davis, California,⁶ revealed that the nearest record for this species is approximately 14 miles to the west. According to the Draft MSHCP, occurrence of California red-legged frog in the County is limited to the Jameson Canyon-Lower Napa River Core Recovery Area. Additionally, the study area is not included in any of the California red-legged frog conservation areas. Based on the abundance of exotic predators, and the lack of any records for the species in the vicinity, California red-legged frog is unlikely to occur in or adjacent to the study area. No Critical habitat for this species is present in the project area. The USFWS concurred that the proposed project is not likely to adversely affect California red-legged frog in the Biological Opinion issued for this project (see Appendix J).

California Tiger Salamander

The central California distinct population segment of the California tiger salamander is federally listed as threatened (69 FR 47217 and 47248), and is covered under the Draft MSHCP. There is no proposed critical habitat within the study area boundaries (69 FR 48570 and 48649). California tiger salamander is a lowland species restricted to grasslands and low foothill regions where its breeding habitat (long-lasting rain pools and stock ponds) occurs. It requires dry-season refuge sites in uplands in the vicinity of breeding sites. Adults may migrate up to 1.24 miles from upland sites to a breeding pond.

In the project region, two known breeding sites and several suitable aquatic habitat sites are located within 1.24 miles of the project site. One known breeding site occurs on the Noonan property south of the project site, along Vanden Road. The other site occurs along the east side of the North Bay Regional Water Treatment Plant off of Peabody Road, north of the project site. There is one additional

⁶ Personal communication, Mark Jennings, Rana Resources, April 2, 2007.

pool located east of the North Bay Regional Water Treatment Plant, north of Vanden Road, but is located on private property and could not be surveyed. Most of the seasonal wetlands in the study area do not hold water long enough (at least three months) to support successful breeding. The perennial water bodies such as McCoy Creek detention basin and nearby stock ponds support fish and birds that are highly efficient predators of salamander eggs and larvae, and therefore are not suitable for California tiger salamander. Although no salamanders were observed during any of the surveys, suitable terrestrial habitat is located along Vanden Road, and suitable aquatic habitat and terrestrial habitat are located along the Alternative E alignment. Focused surveys following current USFWS protocol would be required to determine current presence or absence here or in other potentially suitable areas. No Critical habitat for this species is present in the project area.

Summary of Consultation to Date

- In September, 2000, Caltrans, STA, and the NEPA-404 signatories began the NEPA-404 MOU integration process. The group considered and screened a range of alternatives to achieve the project purpose and need while avoiding or minimizing environmental impacts. Six of 11 alternatives considered were recommended for detailed analysis in the EIR/EIS.
- In 2001 the NEPA-404 Checkpoint 2 meeting was held and Caltrans, USFWS, USEPA, NOAA/NMFS, and Corps subsequently concurred in the project purpose and need and narrowed the previous list of six alternatives to the four build alternatives plus the no-build that were evaluated in the Draft EIR/EIS.
- A meeting was held on October 10, 2007, with staff preparing the Draft EIS/EIR and Michelle Tovar at the Sacramento Office of the USFWS for a preliminary review of existing project data based on previous studies described in Section 2.4, and to discuss additional data needs required to submit a complete BA.
- A NEPA-404 informational meeting was held on January 10, 2008, with representatives from STA, Caltrans Environmental Oversight, Corps, CDFG, NOAA/NMFS, and USEPA. The purpose of the meeting was to update the agencies on project events since the previous NEPA-404 meeting and to identify any concerns they had.
- A meeting was held on June 5, 2008, with Michelle Tovar of USFWS at the Sacramento Office of PBS&J to discuss the approach to impacts analysis and mitigation strategies for the project.
- A meeting was held on September 26, 2008, with Michelle Tovar at the Sacramento Office of PBS&J to present current mapping, impact estimates, to further discuss mitigation strategies, and to identify any additional USFWS comments or concerns.
- On November 10, 2008, an informal meeting was held with Michelle Tovar of the USFWS to review mapping, impact estimates, and mitigation approaches that would be presented at the NEPA-404 Checkpoint 3 meeting.
- The NEPA-404 Checkpoint 3 meeting was held on November 20, 2008, with representatives from STA, Caltrans Environmental, Corps, California Department of Fish and Game (CDFG), USFWS, NOAA/NMFS, and USEPA. The purpose of the meeting was to discuss the least environmentally damaging, practicable alternative (LEDPA) and the rationale for choosing it.

- On September 29, 2010, an informal discussion was held with Melissa Escaron of the CDFG to discuss the procedure for obtaining an Incidental Take permit for take of California tiger salamander upland habitat. She stated that CDFG is moving away from consistency determinations and requiring incidental take permits due to efficiency issues with the consistency determination process. Further progress on obtaining this permit will follow approval of the Final EIS.

3.15.5.3 Environmental Consequences (including Permanent, Temporary, Direct, Indirect, and Cumulative Impacts)

Methodology

A direct impact was identified for vernal pool crustaceans when the pool was either entirely inside the project footprint or was both inside and outside the project footprint but within 250 feet of the right-of-way. An indirect impact was identified for vernal pool crustaceans when the entire pool was outside the project footprint but within 250 feet of the right-of-way, except on the bridged section of the proposed Walters Road extension where additional structure has been incorporated to avoid seasonal wetland impacts and the USFWS has agreed to a 150-foot area of indirect effect. Direct impacts on California tiger salamander upland habitat were assessed within 1.24 miles of aquatic habitat. Direct impacts on VELB were considered if the shrubs occurred within 100 feet of proposed disturbance.

Summary of Impacts to Threatened and Endangered Species

Table 3.15-7 summarizes impacts to threatened and endangered species populations and their habitat (and Critical Habitat) for each alternative. As shown, each of the build alternatives would have the potential to impact threatened and endangered species populations and their habitat; however, Alternative E would have the lowest potential for impacts. Impacts to threatened and endangered species populations and their habitat are described below for each alternative.

Impact BR-23: Would the Alternatives Result in Loss or Degradation of Contra Costa Goldfields Populations?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on Contra Costa goldfields would occur.

Alternative B. Under this alternative, placement of permanent fill related to the Walters Road extension, and subsequent shading of this area by the bridge, as well as the widening of existing Walters Road, would cause indirect impacts on seasonal wetlands occupied by Contra Costa goldfields (Table 3.15-7). Additional seasonal wetland areas supporting Contra Costa goldfields would be indirectly affected by sedimentation and possibly by modification of hydrology (duration of inundation) in the vicinity of the Walters Road extension. This alternative would also encroach on designated Critical Habitat for Contra Costa goldfields near the intersection of Leisure Town Road and Vanden Road, and at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-12, BR-20 and BR-21).

Alternative C. Implementation of this alternative would result in direct impacts on Contra Costa goldfields (Table 3.15-7). Two seasonal wetlands east of existing Walters Road support Contra Costa goldfields critical habitat and portions of these wetlands would be directly affected by construction. Occupied habitat in the nearby wetlands and in the remaining portion of the directly affected wetlands could be indirectly affected by sedimentation and possibly by modification of hydrology. This alternative would also encroach on designated Critical Habitat for Contra Costa goldfields near the intersection of Leisure Town Road and Vanden Road, and at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-12, BR-20 and BR-21).

**Table 3.15-7
Summary of Impacts to Threatened and Endangered Species (plants and wildlife)**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Loss or degradation of Contra Costa Goldfields populations (acres)	No Impact				
Direct		0.57	0.37	0.37	0.37
Indirect		2.45	2.91	1.19	2.91
Total		3.02	3.28	1.56	3.28
		(mitigation ratio 9:1* preservation and 3:1 creation for direct impacts; mitigation ratio 9:1 preservation for indirect impacts)			
Loss of Critical Habitat for Contra Costa Goldfields (acres)	No Impact	2.70	2.70	2.70	1.50
Loss of vernal pool crustacean habitat (acres)	No Impact				
Direct		0.97	1.30	1.26	1.17
Indirect		3.72	0.38	0.00	0.38
Total		4.69	1.68	1.26	1.55
		(mitigation ratio 4:1 preservation; 2:1 creation for direct impacts; mitigation ratio 4:1 preservation for indirect impacts)			
Loss of Critical Habitat for vernal pool crustaceans (acres)	No Impact	2.70	2.70	2.70	1.50
Loss or degradation of suitable habitat for Delta Green Ground Beetle	No Impact	No Impact	No Impact	No Impact	No Impact
Loss of elderberry shrubs within 100 feet of ground disturbance that are potential habitat for valley elderberry longhorn beetle	No Impact	4 shrubs; 16 stems greater than 1 inch in diameter at ground level	4 shrubs; 16 stems greater than 1 inch in diameter at ground level	4 shrubs; 16 stems greater than 1 inch in diameter at ground level	13 shrubs; 26 stems greater than 1 inch in diameter at ground level
Loss or degradation of suitable habitat for California tiger salamander (acres)					
Upland Habitat	No Impact	22.7	22.7	22.7	1.6
Aquatic Habitat	No Impact	No Impact	No Impact	No Impact	0.1

Notes:

* - All areas containing Contra Costa Goldfields are to be mitigated at a minimum level of 9:1 preservation and 3:1 creation for direct impacts; and 9:1 preservation for indirect impacts pursuant to USFWS direction (Solano Multi-Species Habitat Conservation Plan/Natural Community Conservation Plan, pg. 5.23; Personal communication, Michelle Tovar, USFWS meeting dated October 4, 2007.)

Alternative D. Implementation of this alternative would result in direct impacts on Contra Costa goldfields (Table 3.15-7). Several seasonal wetlands east of existing Walters Road support Contra Costa goldfields critical habitat and portions of these wetlands would be directly affected by construction. Occupied habitat in several other nearby wetlands and in the remaining portion of the directly affected wetlands could be indirectly affected by sedimentation and possibly by modification of hydrology. This alternative would also encroach on designated Critical Habitat for Contra Costa goldfields near the intersection of Leisure Town Road and Vanden Road, and at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-12, BR-20 and BR-21).

Alternative E. Implementation of this alternative would result in direct impacts on Contra Costa goldfields (Table 3.15-7). Several seasonal wetlands east of existing Walters Road support Contra Costa goldfields critical habitat and portions of these wetlands would be directly affected by construction. Occupied habitat in the nearby wetlands and in the remaining portion of the directly affected wetlands could be indirectly affected by sedimentation and possibly by modification of hydrology. This alternative would also encroach on designated Critical Habitat for Contra Costa goldfields at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-12, BR-20 and BR-21).

Impact BR-24: Would the Alternatives Result in Loss of Vernal Pool Crustaceans?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on vernal pool crustaceans would occur.

Alternative B. This alternative could adversely affect wetlands identified as suitable vernal pool crustacean habitat located adjacent to Leisure Town Road and Vanden Road, between Cement Hill Road and Air Base Parkway, and along the east side of Walters Road (Table 3.15-7). This alternative would also encroach on designated Critical Habitat for vernal pool crustaceans (VPTS and VPFS) near the intersection of Leisure Town Road and Vanden Road, and at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-22 and BR-23).

Alternative C. This alternative could adversely affect wetlands identified as suitable vernal pool crustacean habitat located adjacent to Leisure Town Road and Vanden Road, south of Air Base Parkway, and along the east side of existing Walters Road (Table 3.15-7). This alternative would also encroach on designated Critical Habitat for vernal pool crustaceans (VPTS and VPFS) near the intersection of Leisure Town Road and Vanden Road, and at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-22 and BR-23).

Alternative D. This alternative could adversely affect wetlands identified as suitable vernal pool crustacean habitat located adjacent to Leisure Town Road and Vanden Road and along the east side of existing Walters Road (Table 3.15-7). This alternative would also encroach on designated Critical

Habitat for vernal pool crustaceans (VPTS and VPFS) near the intersection of Leisure Town Road and Vanden Road, and at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-22 and BR-23).

Alternative E. This alternative could adversely affect wetlands identified as vernal pool crustacean habitat located along both sides of Peabody Road, south of Air Base Parkway, and along the east side of existing Walters Road (Table 3.15-7). This alternative would also encroach on designated Critical Habitat for vernal pool crustaceans (VPTS and VPFS) at the intersection of Walters Road and Air Base Parkway. Mitigation has been identified for this impact (Mitigation Measures BR-22 and BR-23).

Impact BR-25: Would the Alternatives Result in Loss of Delta Green Ground Beetle?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on Delta green ground beetle would occur.

Alternatives B, C, D, and E. Delta green ground beetle, or suitable habitat for this species is not known to occur along any of the proposed alignments, based on extensive, focused surveys. Therefore, no project-related impacts on Delta green ground beetle would occur (Table 3.15-7). The USFWS concurred that the proposed project is not likely to adversely affect Delta green ground beetle in the Biological Opinion issued for this project (see Appendix J).

Impact BR-26: Would the Alternatives Result in Loss of Elderberry Shrubs That Are Habitat for Valley Elderberry Longhorn Beetle?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on VELB would occur.

Alternatives B, C, and D. Surveys conducted on September 23, 2008 detected seven elderberry shrubs within 100 feet of the project area for these alternatives; all of which occur along Alamo Creek adjacent to its crossing under Leisure Town Road, just south of Elmira Road. Two shrubs occur on the east side of Leisure Town Road, four shrubs occur on the west side, and one cluster of stems that are less than one inch in diameter also occurs on the west side. A single potential VELB exit hole was observed on one of the shrubs on the west side of Leisure Town Road. Based on current project designs for Alternatives B, C, and D, it is expected that four of these shrubs will be lost, or otherwise impacted during the construction of road/bridge improvements proposed for these areas. Mitigation has been identified for this impact (Mitigation Measures BR-24 and BR-25).

Alternative E. Under this alternative, 13 elderberry shrubs along Old Alamo Creek (at Peabody Road) may be adversely affected by construction activities (Table 3.15-7). All 13 shrubs would be directly affected. Mitigation has been identified for this impact (Mitigation Measures BR-24 and BR-25).

Impact BR-27: Would the Alternatives Result in Loss or Degradation of Suitable Habitat for California Tiger Salamander?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on California tiger salamander would occur.

Alternatives B, C, and D. Under these alternatives, terrestrial habitat for California tiger salamander along Vanden Road may be adversely affected by construction activities (Table 3.15-7). No aquatic habitat would be affected. Mitigation has been identified for this impact (Mitigation Measures BR-26 and BR-27).

Alternative E. Under this alternative, aquatic habitat and terrestrial habitat for California tiger salamander could be adversely affected by construction activities (Table 3.15-7). Soil erosion that could be caused by construction activities, as well as changes in the hydrology around suitable habitat, could degrade aquatic habitat. Mitigation has been identified for this impact (Mitigation Measures BR-26 and BR-27).

Impact BR-28: Would the Alternatives Result in Cumulative Impacts to Threatened and Endangered Species?

Cumulative impacts on threatened and endangered species could result from construction of other development projects in Solano County. The Draft MSHCP addresses projects to be implemented by SCWA; impacts of these projects on the species discussed in this section would be mitigated through the Draft MSHCP. Under the No Build Alternative, the project would not be constructed; therefore, the project would not contribute to cumulative impacts. Construction of the build alternatives would add to the cumulative loss of suitable habitat for vernal pool crustaceans, VELB, California tiger salamander, and Contra Costa goldfields. However, with implementation of the mitigation measures prescribed for minimizing impacts and compensating for remaining impacts, the proposed action would not be likely to have a cumulatively considerable contribution to effects on these species.

3.15.5.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BR-20: Implement Mitigation Measure BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss. Implementation of Mitigation Measure BR-7 requires modifications to roadway design that will avoid and reduce impacts on threatened and endangered plant and wildlife species.

Mitigation Measure BR-21: Compensate for the Permanent Loss of Contra Costa Goldfields. Concurrently with implementation of Mitigation Measure BR-4, STA or the appropriate local agency will develop and implement a plan to compensate for the permanent loss of Contra Costa goldfields. The Contra Costa goldfields compensation plan will include mitigation for impacts on seasonal wetlands because the species is associated with seasonal wetlands. This compensation for permanent or temporary loss of Contra Costa goldfields in the study area, which is being provided pursuant to consultation with USFWS and consistent with NEPA and FHWA policies on mitigating effects to threatened or endangered species, will consist of the following:

- a. As recommended in the Draft MSHCP, occupied Contra Costa goldfields habitat will be preserved in perpetuity at a combined total of 30.6 acres (prior to the groundbreaking of each construction phase STA will purchase 9.54 acres of Goldfield preservation). A total of 30.6 acres of the Contra Costa goldfields habitat will be protected (1.98 acres of habitat created and 28.62 acres will be preserved).⁷

Compensation for areas of Contra Costa goldfields indirectly affected in the study area will consist of the following:

- b. Occupied Contra Costa goldfields habitat will be preserved in perpetuity at a combined total of 30.6 acres (1.98 acres of habitat created and 28.62 acres will be preserved).

Compensation requirements and the methods for restoration will be consistent with the USFWS Biological Opinion for the project, a copy of which is included in this document in Appendix J (see mitigation measures BR-7, BR-8, and BR-9). Mitigation for impacts on critical habitat for Contra Costa goldfields will occur in conjunction with mitigation for occupied Contra Costa goldfields habitat, and will occur at the same ratio.

Mitigation Measure BR-22: Minimize Potential Impacts on Listed Vernal Pool Crustaceans and Contra Costa Goldfields.

- a. Salvage of seeds, or topsoil with seeds for use in suitable enhanced, restored, and/or created Contra Costa goldfields pools will be in accordance with the Biological Opinion requirement.
- b. Construction will occur in the dry season (when pools are dry), unless otherwise authorized by the Service.
- c. In areas where complete avoidance, buffer areas, or equally effective protective measures to reduce the effects of surface disturbance and compaction are not feasible, the following measures shall be implemented:
 - i. Prior to allowing any vehicles or heavy equipment into Walters Road extension Area, STA or their agent shall install wooden mats in all areas where vehicles will encroach upon vernal pool crustacean and/or Contra Costa goldfields habitat. The wooden mats will help distribute the weight of vehicles and equipment and will prevent substantial disturbance of soil in these areas.
 - ii. Wooden mats shall only remain in the habitat areas as long as necessary for the construction work in the area. As soon as the work is completed, all fabric, wooden mats and any other construction related materials shall be removed from the site.
- d. Mowing for fire hazards and other maintenance activities shall be limited to those detailed in the 404 permit.
- e. Discharge of water and/or dust control shall only occur in accordance with the Regional Water Quality Control Board permits.

⁷ Mitigation lands are those areas that occur within the boundaries of an established mitigation site or bank. Non-mitigation lands are all areas outside the boundaries of an established mitigation site or bank.

- f. Implement Mitigation Measure BR-10: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions.
- g. Implement Mitigation Measure BR-11: Retain a Biologist to Monitor Construction Activities.
- h. Implement Mitigation Measure BR-12: Install Construction Barrier Fencing around the Construction Area.

Mitigation Measure BR-23: Compensate for Permanent Losses of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat. To compensate for impacts on habitat for federally listed vernal pool fairy shrimp and vernal pool tadpole shrimp, STA or the appropriate local agency will preserve and create additional habitat for these species determined in consultation with the USFWS and is described in their Biological Opinion for the project, a copy of which is included in this document in Appendix J. This compensation, which is being provided pursuant to NEPA and FHWA policies on mitigating effects to threatened or endangered species, will be achieved using the following:

- a. In areas considered to be occupied Contra Costa goldfields habitat, compensation for loss of vernal pool crustacean habitat will be accomplished concurrently with compensation for Contra Costa goldfields. (i.e., affected seasonal wetlands, including vernal pools, occupied by both Contra Costa goldfields and vernal pool crustaceans are mitigated the same as those occupied only by Contra Costa goldfields, which exceeds the ratio for vernal pool crustaceans).
- b. Suitable vernal pool crustacean habitat not occupied by Contra Costa goldfields will be preserved at a 4:1 ratio (4 acres preserved for every 1 acre of habitat directly or indirectly affected) for non-mitigation lands, and at a 8:1 ratio (8 acres preserved for every 1 acre of habitat directly or indirectly affected) for mitigation lands. Preservation lands will be established at a USFWS-approved conservation area, or preservation credits will be purchased from a USFWS-approved mitigation bank.
- c. Suitable vernal pool crustacean habitat not occupied by Contra Costa goldfields will be created at a 2:1 ratio (2 acres created for every 1 acre of habitat directly affected) for non mitigation lands, and at a 4:1 ratio (4 acres preserved for every 1 acre of habitat directly affected) for mitigation lands. Vernal pools will be created at a USFWS-approved conservation area, or creation credits will be purchased from a USFWS-approved mitigation bank.

Compensation requirements and the methods for restoration will be consistent with the USFWS Biological Opinion for the project, a copy of which is included in this document in Appendix J (see mitigation measures BR-7, BR-8, and BR-9). Mitigation for impacts on critical habitat for Contra Costa goldfields will occur in conjunction with mitigation for occupied Contra Costa goldfields habitat, and will occur at the same ratio.

Mitigation Measure BR-24: Minimize Impacts on Valley Elderberry Longhorn Beetle. Impacts on suitable elderberry shrubs shall be avoided during all phases of the proposed project where feasible. Complete avoidance is accomplished through establishment and maintenance of a minimum buffer zone of 100 feet from the drip lines of any suitable elderberry shrub. Firebreaks shall not be allowed within these buffer zones, and any areas temporarily disturbed within this buffer zone during construction shall be restored immediately following construction.

For those shrubs that will not be directly removed by the project, any ground disturbing activities within 100 feet of elderberry plants with stems measuring 1.0 inch or greater in diameter at ground level shall conform to the following avoidance measures:

- a. STA shall provide a minimum setback of at least 20 feet from the drip line of each suitable elderberry shrub. The setbacks shall be fenced and flagged to prevent equipment and materials encroachment into the setback zone. Fire fuel breaks (disked land) may not be included within the 20 foot setback.
- b. Signs will be erected every five feet along the edge of the setback zone with the following information, "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." These signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction (USFWS 1999).
- c. Construction contractors shall be instructed about the status of the beetle, the need to protect its elderberry host plant, the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements.
- d. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.
- e. Mowing of grasses/ground cover shall occur only from July through April to reduce fire hazard. No mowing shall occur within 50 feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., avoid stripping away bark through careless use of mowing/trimming equipment).
- f. Trimming of elderberry stems less than one inch in diameter may occur between September 1 and March 14. The recommended period for trimming is between November through the first two weeks in February when the plants are dormant and after they have lost their leaves.

Mitigation Measure BR-25: Compensate for Impacts on Valley Elderberry Longhorn Beetle. To compensate for impacts on habitat for valley elderberry longhorn beetle, STA or the appropriate local agency will preserve and create additional habitat for these species using acreages approved by USFWS. This compensation, which is being provided pursuant to NEPA and FHWA policies on mitigating effects to threatened or endangered species, will be achieved by purchasing credits at USFWS-approved mitigation banks. Final compensation requirements have been determined in coordination with the resource agencies (see mitigation measures BR-7, BR-8, BR-9) and in compliance with the USFWS Biological Opinion for the project, a copy of which is included in this document in Appendix J.

- All elderberry shrubs with one or more stems measuring one inch or more in diameter that will be directly affected by construction activities will be transplanted to a conservation area in accordance with USFWS's Conservation Guidelines for Valley Elderberry Longhorn Beetle.⁸
- Each elderberry stem measuring one inch or more in diameter at ground level that is within 100 feet of construction activities will be replaced in a conservation area with elderberry seedlings or cuttings at a ratio between 1:1 and 8:1. The ratio used for each affected plant will depend on the diameter of the stem at ground level, whether the shrub is located in riparian habitat, and whether the shrub has evidence of exit holes.
- A mix of native tree and plant species representative of those associated with the elderberry shrubs in the study area will be planted in the conservation area. The trees and plants will be planted at ratios of 1:1 (the ratio represents native trees and plants to each elderberry seedling or cutting) for replacement of elderberry shrubs without exit holes. A mixture of native grasses and forbs also will be planted in the conservation area.
- Each transplanted elderberry shrub will have at least 1,800 square feet of area. As many as five additional elderberry seedling or cuttings and up to five associated native plants may also be planted in the 1,800 square feet.
- Maintenance, remedial measures, and reporting will be conducted, following the requirements of the USFWS guidelines (1999).

Mitigation Measure BR-26: Minimize Potential Impacts on California Tiger Salamanders. Consistent with the Draft MSHCP STA or the appropriate local agency will ensure that the contractor will minimize potential impacts on California tiger salamanders and their aquatic and terrestrial habitats during construction by implementing the following measures, consistent with the requirements of the USFWS Biological Opinion and CDFG Incidental Take Permit:

- a. To minimize disturbance of breeding and dispersing California tiger salamanders, all construction activity within California tiger salamander upland habitat (defined as all habitat within 1.24 miles of aquatic habitat) will be conducted during the dry season between June 1 and October 15 or before the onset of the rainy season, whichever occurs first. If construction activities are necessary in California tiger salamander upland habitat between October 16 and April 30, STA or the appropriate local agency will contact the USFWS Sacramento Field Office and CDFG Yountville Office for approval to extend the work period.
- b. To minimize disturbance and mortality of adult and juvenile California tiger salamanders in aquatic habitat and underground burrows, STA or the appropriate local agency will minimize the extent of ground-disturbing activities within these habitats (grasslands within 1.24 miles of aquatic habitat) by requiring the contractor to limit the work area to the minimum necessary for construction. In addition, STA or the appropriate local agency will ensure that the contractor will install temporary exclusion fence between the construction work area and potential aquatic habitat for all construction within grasslands that occur within 1.24 miles of aquatic habitat.

⁸ U.S. Fish and Wildlife Service. 1999. Conservation guidelines for the valley elderberry longhorn beetle. July 9. Sacramento, CA.

- c. Consistent with Mitigation Measure BR-11, STA or the appropriate local agency will ensure that a qualified wildlife biologist monitors all construction activities within California tiger salamander upland habitat. This will ensure no take of individual California tiger salamander occurs during road widening and improvements along Vanden and Leisure Town Road. If a California tiger salamander is found, then the monitor shall immediately stop construction and contact USFWS and CDFG for advice.

Mitigation Measure BR-27: Compensate for Removal and Disturbance of California Tiger Salamander Habitat. STA or the appropriate local agency will compensate for the removal or disturbance of potential upland habitat suitable aquatic habitat for California tiger salamanders, consistent with the requirements of the USFWS Biological Opinion (see Appendix J and mitigation measures BR-7, BR-8, and BR-9) and CDFG Incidental Take Permit. This compensation, which is being provided pursuant to NEPA and FHWA policies on mitigating effects on threatened or endangered species, will be achieved as follows: STA or the appropriate local agency will preserve 68.1 acres of additional upland habitat within a USFWS- and CDFG-approved conservation area. STA or the appropriate local agency will coordinate or consult with USFWS and CDFG to determine the appropriate compensation ratio and location of the conservation area. This may be accomplished by purchasing credits at a USFWS- and CDFG-approved mitigation bank.

3.15.6 Invasive Species

3.15.6.1 Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 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.” Federal Highway Administration 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.

3.15.6.2 Affected Environment

Botanists conducted special-status plant and floristic surveys of the study area on the following dates:

- May 7, 17, 18, and 20, 1999
- April 12, 14, and 19, 2000
- May 4, 2000
- June 20 and 21, 2000
- August 29 and 30, 2000
- September 20, 2000
- May 8 and 9, 2002

- August 21, 2002
- May 3 and 4, 2005 (for western half of Walters Road extension area)
- July 7 and 8, 2005 (for western half of Walters Road extension area)
- March 21, 27, and April 3, 2007
- July 8, 2008

Surveys were timed during the appropriate flowering periods for special-status plants with potential to occur in the study area. Additional botanical surveys of the study area vicinity west of the Alternative B alignment were previously conducted on April 11 and 28, May 19, and July 10, 2000 (Vollmar Consulting, 2000). Vegetation communities and the locations of oak trees in the study area were also identified and mapped during the botanical and wetland field surveys.

Table 3.15-8 identifies the invasive species from the California Department of Food and Agriculture (CDFA) and California Invasive Plant Council (Cal-IPC) lists for the study area. The infestation of the study area by potential invasive species is limited. Except for infestation of giant reed in the riparian woodland west of Peabody Road at Old Alamo Creek, infestations occur primarily on isolated patches of ruderal vegetation on undeveloped lots, at the perimeter of agricultural fields, on the edges of roadways, or scattered in the annual grassland.

**Table 3.15-8
Invasive Plant Species Located in Study Area**

Invasive Plant Species	CDFR Rating	Cal-IPC Rating
Giant reed (<i>Arundo donax</i>)	-	A-1
Bellardia (<i>Bellardia trixago</i>)	-	B
Black mustard (<i>Brassica nigra</i>)	-	B
Italian thistle (<i>Carduus pycnocephalus</i>)	C	B
Yellow star-thistle (<i>Centaurea solstitialis</i>)	C	A-1
Bull thistle (<i>Cirsium vulgare</i>)	-	B
Field bindweed (<i>Convolvulus arvensis</i>)	C	-
Bermuda grass (<i>Cynodon dactylon</i>)	C	-
Blue gum (<i>Eucalyptus globulus</i>)	-	A-1
Fig (<i>Ficus carica</i>)	-	A-2
Sweet fennel (<i>Foeniculum vulgare</i>)	-	A-1
Perennial peppergrass (<i>Lepidium latifolium</i>)	B	A-1
Poverty weed (<i>Iva axillaris</i>)	C	A-1
Hyssop loosestrife (<i>Lythrum hyssopifolium</i>)	-	-
Harding grass (<i>Phalaris aquatica</i>)	-	B
Himalayan blackberry (<i>Rubus discolor</i>)	-	A-1
Medusa-head (<i>Taeniantherum caput-medusae</i>)	C	A-1

Notes:

The CDFR and Cal-IPC lists assign ratings to each of the species on the lists. These ratings reflect CDFR and Cal-IPC views of the Statewide importance of the pest, likelihood that eradication or control efforts would be successful, and present distribution of the pest in the State. These ratings are guidelines that indicate the most appropriate action to take against a pest under general circumstances. The Solano County Agricultural Commissioner does not currently have a list of invasive species on which action would be taken (Singh 2004).

The CDFR categories indicated above are defined as follows:

- B = eradication, containment, control, or other holding action at the discretion of the commissioner.
- C = State-endorsed holding action and eradication only when found in a nursery; action to retard spread outside of nurseries at the discretion of the commissioner; reject only when found in a cropseed for planting or at the discretion of the commissioner.

The Cal-IPC categories indicated above are defined as follows:

- A-1 = widespread pest plants that are aggressive and displace native plants and natural habitats.
- A-2 = regional pest plants that are aggressive and displace native plants and natural habitats.
- B = invasive pest plants that spread less rapidly and cause a lesser degree of habitat disruption; may be widespread or regional.
- = nonrated.

3.15.6.3 Environmental Consequences (including Permanent, Temporary, Direct, Indirect, and Cumulative Impacts)

Summary of Impacts to Invasive Species

The analysis below describes the impacts related to the spread of invasive species for each alternative. Of the build alternatives, Alternatives C, D, and E have the lowest potential to promote the additional spread of invasive species.

Impact BR-29: Would the Alternatives Result in the Spread of Invasive Weed Species?

Alternative A. Under Alternative A, no construction activities would occur. Therefore, no related impacts concerning the spread of invasive species would occur.

Alternative B. Invasive weed species in the study area are present along roadsides, which are routinely disturbed by shoulder maintenance and vegetation management activities. Alternative B would create additional disturbed area for a temporary period, but it would not substantially increase the area along existing roads subject to repeated disturbance because the new road shoulders would replace existing road shoulders. However, the Walters Road extension between Cement Hill Road and Huntington Drive will pass through currently undeveloped grassland/pasture. Therefore, Alternative B is anticipated to change the area currently occupied by invasive weeds and the potential for spreading invasive weed species. Mitigation Measures BR-28 and BR-29 have been identified to reduce this impact.

Alternatives C and D. As described for Alternative B, invasive weed species in the study area are present along roadsides, which are routinely disturbed by shoulder maintenance and vegetation management activities. Alternatives C and D would create additional disturbed area for a temporary period, but they would not substantially increase the area subject to repeated disturbance because the new road shoulders would replace existing road shoulders. Therefore, Alternatives C and D are not anticipated to increase or decrease the area currently occupied by invasive weeds or the potential for spreading invasive weed species. Mitigation Measures BR-28 and BR-29 have been identified to further reduce this impact.

Alternative E. This alternative has the potential to spread giant reed, an invasive weed that occurs along Old Alamo Creek at Peabody Road. Construction activities could break off plant fragments and transport seeds, allowing the plant to spread to currently uninfested riparian areas. This would be an adverse effect. Mitigation Measures BR-28 and BR-29 have been identified for this impact.

Impact BR-30: Would the Alternatives Result in the Cumulative Spread of Invasive Species?

Cumulative impacts related to the potential spread of invasive weed species could result from construction of other general development projects in Solano County. Under the No Build Alternative, the project would not be constructed; therefore, the project would not contribute to cumulative impacts. Construction of Alternative B would cause disturbance in a currently undeveloped area and thus encourage invasive weed species along the Walters Road extension area. Construction of the remaining build alternatives would not add to the cumulative spread of invasive species as construction will only occur along currently disturbed areas. However, with implementation of the mitigation measures prescribed for minimizing impacts and compensating for remaining impacts, the proposed action would not have a considerable cumulative effect on the spread of invasive weed species.

3.15.6.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BR-28: Educate Construction Crews on Invasive Species Control and Prevention, and Monitor Compliance. Consistent with the Draft MSHCP, the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, STA or the appropriate local agency will avoid introducing or spreading invasive weeds into previously uninfested areas by ensuring that the biological resources education program for construction crews includes education on weed identification and the importance of controlling and preventing the spread of invasive weeds. Small, isolated infestations will be treated with CDFG-approved eradication methods at an appropriate time to prevent or destroy viable plant parts or seeds. All equipment will be washed before entering the study area. Equipment will be washed off site at a paved facility, located away from environmentally sensitive areas. The resource monitors will routinely inspect construction activities to verify that construction equipment is being washed.

Mitigation Measure BR-29: Implement Revegetation and Restoration Measures Required in the Storm Water Pollution Prevention Plan. Once construction is complete, STA or the appropriate local agency will require the contractor to implement the measure set forth in the SWPPP to revegetate and restore disturbed areas immediately after construction. The revegetation portion of the SWPPP will require the use of certified weed-free native and non-native mixes. The SWPPP will also specify that all disturbed areas will be weeded and reseeded in subsequent years if determined necessary.

3.16 Energy

This section presents a qualitative analysis of the direct energy effects associated with the ongoing Jepson Parkway Project operations under all five alternative scenarios. When analyzing a transportation system's use of energy, direct energy use refers to the energy consumed in the actual propulsion of a vehicle using the facility and can be measured by the thermal value of fuel, the cost of fuel or the quantity used in the engine or motor. Direct energy required for ongoing operations in the case of Jepson Parkway include the use of petroleum-based fuels and alternative fuels for motor vehicle travel within the project area. Indirect energy use is defined as all the remaining energy consumed to run a transportation system, including construction energy, maintenance energy, and any substantial impacts to energy consumption related to project induced land use changes and mode shifts, and any substantial changes in energy associated with vehicle operation, manufacturing or maintenance due to increased automobile use.

According to Caltrans, energy requirements associated with operation (direct) of the project are usually greater and of more importance than the indirect energy used. As a result, a separate energy study was not prepared, as the construction of Jepson Parkway Project is not anticipated to have substantial indirect impacts on energy consumption (FHWA Technical Advisory 6640.8A). When balancing energy used during construction and operation against energy saved by relieving congestion and other transportation efficiencies, the project would not have substantial energy impacts.

3.16.1 Regulatory Setting

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

3.16.2 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

Summary of Energy Impacts

This section provides a summary and comparison of energy impacts resulting from the alternatives. As described in detail below, each of the build alternatives would be considered to have beneficial impacts related to more efficient use of energy. Alternative A, however, would continue the current inefficient use of energy related to traffic congestion.

Impact EN-1: Would the Alternatives Affect Energy Use?

Alternative A. Under Alternative A, no roadway or intersection improvements would be performed. The majority of the study intersections in the corridor (13 of 24)¹ would operate at below LOS standards in 2030 in the AM peak hour, the PM peak hour, or both peak hours. This represents an increase in intersections operating below local LOS from the 2010 projections. Without capacity improvements to the roadways, congested traffic conditions would prevail in the traffic study area, and

¹ The Walters Road/Cement Hill intersection would not be built under Alternative A.

would contribute to inefficient energy consumption as vehicles use extra fuel while idling in stop-and-go traffic or moving at slow speeds on a congested roadway.

Alternatives B, C, D, and E. All of the build alternatives would increase capacity and improve roadway operations. Average travel time, vehicle delay, and duration of congestion along arterial roads would decrease considerably with all build alternatives. Most intersections currently operating below local level of service standards would be improved and would operate at or above local level of service standards. Peak hour delays would be greatly reduced as a result of the build alternatives and the implementation of Mitigation Measure TRA-1. Additionally, all build alternatives include the operation of two new bus routes to provide future transit service along the corridor, encouraging the use of transit. Build alternatives would eliminate all intersections operating below local level of service standards by 2030 by allowing Jepson Parkway to carry more of the total peak-hour travel demand when compared to the no build alternative. Implementation of any of the build alternatives would also result in improved bicycle and pedestrian circulation in the corridor resulting in a decrease in direct energy consumed. Due to all the above-mentioned advantages, the long-term impacts of each of the build alternatives on transportation and vehicular traffic energy use would generally be beneficial.

3.16.3 Avoidance, Minimization, and/or Mitigation Measures

Since the build alternatives would have generally beneficial energy effects, avoidance, minimization and mitigation measures would be unnecessary.

3.17 The Relationship Between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

Implementation of any of the build alternatives would result in attainment of short-term and long-term transportation and economic objectives (gains) at the expense of some long-term social, biological, farmland, and parkland impacts (losses), depending on the alternative selected.

3.17.1 Alternative A

The no build alternative would not provide any of the gains or result in the losses listed above. It would, however, not resolve worsening congestion in the project vicinity and region.

3.17.2 Alternatives B, C, D, and E

The four build alternatives would generally have similar benefits and losses. Short-term economic losses would result primarily from economic losses experienced by businesses affected by relocation. These businesses may experience temporary closures while they relocate to new facilities. Additional short-term construction impacts would result, such as noise, air quality, and traffic delays or detours. The build alternatives would result in short-term benefits associated with increased jobs and revenue generated during construction of the project.

Each of the build alternatives would result in long-term losses associated with the permanent loss of plant and wildlife resources, farmlands, residential units and commercial/industrial structures, and construction materials and energy. In addition, Alternative E would result in the long-term loss of local parkland.

Long-term gains resulting from the build alternatives would include the improvement of the transportation network of the region and the project vicinity; reduction of congestion on local streets and highways; and enhanced multimodal transportation options. The project would provide an integrated and continuous route for local north-south trips between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County as an alternative to using I-80. In addition, the project would provide local traffic a safe, convenient route between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County. Multimodal transportation options would increase, including the provision of a safe, convenient bicycle and pedestrian path and options for transit use in the area.

The project is based on local and regional comprehensive planning that considers the need for present and future traffic requirements within the context of present and future land use development. The project is proposed at this time because of the extensive social costs attributable to existing and expected future congestion. Thus, the short-term and long-term losses of the build alternatives are consistent with the maintenance and enhancement of long-term productivity for the region.

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3.18 Irreversible and Irretrievable Commitments of Resources

Implementation of any of the four build alternatives would involve the commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the proposed roadway widenings and extension is considered an irreversible commitment during the time period that the land is used for a roadway facility. However, if a greater need arises for use of the land or if the roadway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable. Impacts to habitat and farmlands would also be irreversible and irretrievable. Replacement of these resources is provided as mitigation.

Considerable amounts of fossil fuels, labor, and roadway construction materials such as cement, aggregate, and bituminous material would be expended to construct the roadway improvements. Additionally, large amounts of labor and natural resources are used in the making of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources.

Any construction of roadway improvements would also require a substantial one-time expenditure of both State and federal funds, which are not retrievable. However, savings in energy and time associated with reduced congestion and a reduction in accidents would offset this expenditure. In addition to construction and right-of-way costs, the widened roadway would increase costs for roadway maintenance, including pavement, roadside, litter/sweeping, signs and markers, electrical, and storm maintenance.

The commitment of these resources is based on the concept that residents in the immediate area, region, and State would benefit from the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, which are expected to outweigh the commitment of these resources.

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Chapter 4 Summary of Public/Agency Involvement Process/Tribal Coordination

4.1 Public/Agency Involvement Process

Coordination and consultation with various federal, State, and local agencies; elected officials; community organizations; Native American tribes; and other individuals from the neighborhoods and communities within the corridor were conducted through a variety of means, including public agency coordination, consultation, a public scoping process, newsletters, public circulation and review of the Draft Environmental Impact Statement (EIS), and a public hearing.

4.1.1 Scoping Process

4.1.1.1 Notice of Intent

The National Environmental Policy Act (NEPA) specifically requires the federal lead agency to consult with federal agencies that have jurisdiction over the proposed action by law or special expertise. The lead agency must also solicit appropriate information from the public during EIS preparation. Scoping is the process by which the lead agency conducts these activities. This process helps determine the scope of the EIS, including the extent of the action, the range of the alternatives, and the types of adverse effects to be evaluated. The lead agency's scoping process may include early scoping meetings that can be incorporated with other aspects of the federal agency planning process. As part of the scoping process, NEPA requires that a Notice of Intent (NOI) to prepare an EIS be filed with the U.S. Environmental Protection Agency (EPA) and appear in the Federal Register. The NOI for the project was published in the Federal Register on August 4, 2000.

Public agencies formally or informally contacted and consulted during the preparation of this environmental document are listed below. These agencies received notification of the proposed EIS and the public scoping meeting.

- Office of State Senator Maurice Johannessen
- Office of Assembly Member Helen Thomson
- California Department of Transportation
- California State Highway Patrol
- Metropolitan Transportation Commission
- County of Solano
- Solano County Board of Supervisors
- City of Fairfield
- City of Rio Vista

- City of Suisun City
- City of Vacaville
- Solano Bicycle Advisory Committee
- Highway 12 Association

4.1.1.2 Public Scoping Meeting

A public scoping meeting for the project was held on August 9, 2000, at the Suisun City Hall, at 701 Civic Center Boulevard in Suisun City. Maps and graphics were available for viewing and there was a formal presentation of the project.

4.1.1.3 Summary of Major Concerns at Scoping

The major concerns expressed by the public at the Scoping meeting were:

- Potential traffic impacts on Cordelia Road, Pennsylvania Avenue, and Lopes Road leading to I-680;
- Comments focusing on potential erosion and stormwater pollution;
- Concerns regarding how SR 12 will carry extra volume of traffic;
- Concern that the project may affect drinking water in Putah Creek;
- Suggestions to limit truck access and extend truck limitations from Leisure Town Road to Vanden Road and Walters Road;
- Suggestion to build a sound wall on Walters Road designed so sound waves are redirected to Jepson Parkway instead of surrounding homes (angle upper quarter of road toward the roadway) to prevent sound from rolling over the wall;
- Suggestion to design project to avoid and minimize impacts on Contra Costa goldfields, vernal pool fairy shrimp, and vernal pool tadpole shrimp and vernal pool, wetland, and riparian habitats and their associated wildlife species;
- Concern that use of Air Base Parkway would create a dangerous lane-changing problem;
- Suggestions for the Parkway to be placed parallel to Air Base Parkway with the use of the Peabody signal to cross it;
- Suggestions that houses that create a “kink” in the County portion of the Parkway should be removed so the Parkway can continue unimpeded along the railroad tracks;
- Suggestion to prevent residential growth east of the Parkway in the County section; and
- Concerns over impacts on historic old town Cordelia from future traffic worsening traffic conditions on Cordelia Road.

4.1.2 Circulation and Review of the Draft EIS

Availability of the Draft EIS was published in the Federal Register on June 6, 2008 and the Draft EIS/EIR was circulated for public review and comment; a 60-day public review period was provided until August 6, 2008. The Draft EIS/EIR was made available for review online at www.solanolinks.com and print copies of the environmental document and supporting technical reports were provided for review at the Solano Transportation Authority (STA) offices at One Harbor Center, Suite 130 in Suisun City; the City of Fairfield Civic Center Library at 1150 Kentucky Street in Fairfield; the Suisun City Public Library at 333 Sunset Avenue, Suite 280 in Suisun City; and the City of Vacaville Public Library/Cultural Center at 102 Ulatis Drive in Vacaville.

A double-sided, self-mailing one-page newsletter announcing release of the Draft EIS/EIR was circulated on May 28, 2008. This newsletter was directly mailed to approximately 7,000 people, including all those who resided within 200 feet of any of the project alternatives as well as to other interested parties including any groups or individuals who had requested to be notified of the availability of the environmental document. The newsletter provided project information including project sponsors, project goals, an overview of project alternatives, and the date, time, and location of the public hearing as well as contact information for submitting comments. In addition, display advertisements announcing the availability of the Draft EIS/EIR and the public hearing were published in the Vallejo Times-Herald and the Fairfield-Suisun Daily Republic on June 8 and June 22, 2008, and in the Vacaville Reporter on June 10, June 21, and June 22.

Thirty-seven comment letters, including a petition with 67 signatories, and 15 comments recorded at the public hearing were received. Copies of these comment letters, the petition and the court reporter's transcript are provided with responses to each comment in Volume II of this Final EIS.

4.1.3 Public Hearing

A public hearing on the project was held on Tuesday, June 24th from 6:00 p.m. to 9:00 p.m. at the Callison Elementary School, 6261 Vanden Road in Vacaville. The public hearing was an open house format meeting featuring a looping video presentation and display boards containing project information, during which attendees could circulate freely and ask questions or give comments directly to members of the project team. A court reporter also was on hand to record comments; a copy of the transcript of these comments is provided in Volume II of this Final EIS. Approximately 30 people signed in their attendance at this meeting, and there were a few additional attendees who did not sign in. Fifteen people provided comments through the court reporter.

4.1.4 Final EIR Process

The STA Board certified the Final EIR, adopting the project with Findings of Fact and a Statement of Overriding Considerations on March 18, 2009. Per State requirements, the Final EIR included a discussion of Climate Change. The Final EIR is incorporated by reference and is available for public review. On March 19, 2009, STA filed a Notice of Determination with the State Clearinghouse (Office of Planning and Research) for completion of the California Environmental Quality Act (CEQA)

process. The CEQA 30-day statute of limitations on challenges to the Final EIR ended on April 19, 2009.

4.2 Agency Consultations

4.2.1 NEPA-404 MOU Integration

Alternatives screening for the project was conducted pursuant to the Memorandum of Understanding – National Environmental Policy Act and Clean Water Act Section 404 Integration Process for Surface Transportation Projects in Arizona, California, and Nevada (NEPA-404 Integration MOU) established in 1993. This MOU established a process for early coordination among departments of transportation and federal resource agencies in defining the purpose and need, establishing the criteria for evaluating and identifying alternatives, and setting the range of alternatives to be studied for surface transportation projects. The Jepson Parkway Project NEPA-404 MOU process was initiated in September 2000. Participants in the process are listed in Table 4-1.

**Table 4-1
NEPA-404 MOU Participants**

Agency	Role
Federal Highway Administration (FHWA)	MOU signatory and National Environmental Policy Act (NEPA) Lead Agency
US Fish and Wildlife Service (USFWS)	MOU signatory
National Marine Fisheries Service (NMFS)	MOU signatory
US Army Corps of Engineers (USACE)	MOU signatory
US Environmental Protection Agency (EPA)	MOU signatory
California Department of Transportation (Caltrans)	Local Programs Administrator for FHWA
California Department of Fish and Game (CDFG)	Permitting agency
San Francisco Bay Regional Water Quality Control Board (RWQCB)	Permitting agency
Solano County	California Environmental Quality Act (CEQA) Responsible Agency
Solano Transportation Authority (STA)	CEQA Lead Agency and project sponsor
City of Fairfield	CEQA Responsible Agency
City of Suisun City	CEQA Responsible Agency
City of Vacaville	CEQA Responsible Agency

Note that several of the participants were not NEPA-404 MOU signatories. STA, Caltrans, and FHWA agreed that early involvement of all interested federal and State agencies would provide an important preview for non-signatory agencies that may be participating in the EIS process. The NEPA-404 participants conducted a series of meetings at which a project purpose and need statement was drafted and adopted, criteria for screening alternatives and for identifying the preferred alternative were

established, a set of preliminary alternatives to be considered was defined, and an alternatives screening process was established. NEPA-404 signatories provided written concurrence on the project purpose and need, criteria for alternative identification, range of alternatives to be included in the screening process, and alternatives to be studied in the EIS. This coordination among the signatory agencies meets the integration requirements for Draft EIS circulation under the NEPA-404 MOU.

A Wetland Delineation Report was prepared and transmitted to the Corps on October 19, 2007 to request its confirmation of jurisdictional wetlands and other waters of the U.S. within the project vicinity. Corps staffed reviewed the delineation in the field and returned comments on October 2, 2008. Minor modifications were made to the delineation in accordance with the comments and the mapping returned to the Corps on September 30, 2008. A Preliminary Jurisdictional Determination was granted by the Corps on February 27, 2009. The project will require an individual wetlands permit under Section 404 of the Clean Water Act. The permit application will be submitted to the Corps during the final design phase of the project.

Following circulation of the Draft EIS Caltrans considered the impacts and benefits of the alternatives and all of the comments received to identify a preferred alternative that would meet project goals while achieving the appropriate balancing of project construction, resource protection and minimization and mitigation costs. This alternative is designated as the least environmentally damaging practicable alternative (LEDPA) in NEPA-404 terms. The NEPA-404 MOU signatory agencies must respond to the identification of the LEDPA and the conceptual mitigation plan (CMP) prior to distribution of the Final EIS and before the Record of Decision may be signed. Packets were distributed in October, 2008 and a final NEPA-404 meeting was held November 20, 2008 to present and discuss the LEDPA determination and CMP with the signatory agencies.

All build alternatives would have impacts on the aquatic ecosystem, including seasonal wetlands, freshwater marshes, drainages, and riparian woodland. Alternative B would generally have greater acreage impacts on seasonal wetlands, freshwater marsh, and seasonal and perennial drainages (jurisdictional waters of the U.S.) than any of the other build alternatives. Alternative E would have fewer impacts on riparian woodland habitat, upland habitat for California tiger salamander and foraging habitat for Swainson's hawk than Alternatives B, C, or D. Alternative B would cross McCoy Creek and its watershed, which has been identified as a High Value Conservation Area in the Draft MSHCP. Alternative E would have roughly comparable direct and indirect impacts on habitat for Contra Costa goldfields, a federally-listed endangered plant species, as Alternatives B and C, but would have lesser impacts on other biological resources and farmlands than the other build alternatives. Therefore, the rationale for identifying the LEDPA considers each type of impact and follows a process of elimination based on each of the related environmental regulations. The following is a summary of that reasoning:

Alternative D would result in severe economic impacts. Alternative D would displace industrial and commercial properties and result in the loss of some 224 local jobs. The severe economic hardship to these employees and the City of Fairfield is not acceptable to the local community; thus Alternative D would not be practicable. Alignment variations were considered to avoid the industrial installations along Huntington Drive, either by realigning the alternative

to go across the Union Pacific Railroad tracks and paralleling the railroad up to Peabody Road or by using Air Base Parkway for a short distance before turning north towards Huntington Drive. Both of these variations have feasibility issues. The realignment behind the railroad tracks would not work at the tie-in with Peabody Road because of the large PG&E electrical substation and the close proximity to the Cement Hill Road/Vanden Road/Peabody Road intersection. The variation that included a short distance of Air Base Parkway is not feasible because a new interchange on Air Base Parkway would be required due to the close proximity to the railroad spur line on Huntington Drive that has to be spanned by any Jepson Parkway alternative. This interchange would conflict with the existing Walters Road/Air Base Parkway intersection. There are no other practicable alignment variations to construct Alternative D to avoid these impacts; avoidance of this economic impact could be achieved by either Alternative C or Alternative E.

- **Alternative E would result in the use of Section 4(f) lands.** While Alternative E would avoid the job losses of Alternative D and appears to have the least overall impacts to natural resources, it would result in permanent use of 1.7 acres of land from Al Patch Park and 1.2 acres of Will C. Wood High School. Both properties are protected by Section 4(f) of the Department of Transportation Act, which prohibits the Secretary of Transportation from approving a project that uses Section 4(f)-protected property if there is a feasible and prudent alternative to that use. Alternatives B, C, and D would avoid these Section 4(f) impacts, but the economic impacts of Alternative D render it not prudent or practicable. Under Section 4(f) regulations, Alternative E cannot be identified as the preferred alternative unless both of the other remaining build alternatives can be shown not to be prudent and feasible. Alternative E also would require the full acquisition of 26 single-family and 10 multi-family residential units and have impacts as discussed in the next two bulleted paragraphs.
- **Both Alternatives C and E would result in homeland defense impacts.** The aerial ramp (“flyover” ramp) required to be constructed at the intersection of Peabody Road and Air Base Parkway with either Alternative C or Alternative E would allow high-elevation visual and physical access to Travis Air Base facilities, including the Aero Club landing strip and David Grant Hospital. David Grant Hospital serves sensitive Defense Department missions and is designed to provide emergency functions. This access—particularly from a roadway that offers quick access and retreat—poses a concern for homeland defense. Travis Air Force Base officials raised this concern in their comments on the Draft EIS; their letter is included in Volume II of this Final EIS. In light of potential homeland defense impacts, both Alternative C and Alternative E appear to be impracticable.

Alignment variations that would move the flyover ramp to the opposite quadrant of the interchange or move the intersection itself were considered. The first would still require an aerial structure with visual access to the Air Force Base. Also, it would have residential property impacts at the tie-in along Peabody Road. The second would create a curvilinear alignment along Air Base Parkway that would still require an aerial structure with visual access to the Air Force Base. Tunneling was also considered. This would involve prohibitive costs

and would not avoid the homeland defense issue, as subterranean access would present its own defense risks. Therefore, Alternatives C and E are not practicable.

- **Alternatives C and E also would require the acquisition of lands dedicated as preservation areas for special status plants.** As described in the Travis Air Force Base letter referenced above, Alternatives C and E have the potential to affect an area of high habitat value, consisting of a combination of natural and created vernal pools and seasonal wetlands with good populations of Contra Costa goldfields (*Lasthenia conjugens*), and a contiguous property that is being developed as a mitigation bank. This site includes vernal pools where efforts are currently underway to propagate and preserve goldfields and other listed and special status plant species. Travis officials have agreed to maintain this area of the Air Base for preservation of vernal pools, wetlands, and these plant species. Acquiring these lands for Alternative C or Alternative E would violate this agreement. In essence, these lands are not available for use in the Jepson Parkway project. Because of the homeland defense issue and the potential impacts to dedicated wetland and plant preservation areas, both Alternative C and Alternative E appear not to be practicable.
- **Alternative B is the remaining practicable alternative.** Alternative B would affect seasonal wetlands, freshwater marsh, and seasonal and perennial drainages along the proposed Walters Road extension and Cement Hill Road. The area along the proposed Walters Road extension between the McCoy Flood Control channel and Cement Hill Road contains some of the highest quality seasonal wetlands and perennial drainages in the project corridor. These areas provide habitat for wetland vegetation and wildlife, and also provide for flood storage. Minimization measures have been incorporated into the project including narrowing the median and widening as much as possible to the west side along the developed portion of Walters Road between Tabor Avenue and Air Base Parkway, and by shifting the roadway alignment and providing bridges to maintain existing hydrological drainages and avoid wetland areas in the undeveloped portion. Bridge structures are proposed north of the proposed grade separation of the UPRR, to bridge the McCoy Flood Control Channel, preserve the hydrological connection between the large wetland areas south of the Strassberger Detention Pond, bridge the detention pond, and possibly bridge the complex of small wetlands north of the pond. Constructing these bridges would add approximately 670 feet of structure to the project.

Table 4-2 summarizes the impacts of the four build alternatives.

**Table 4-2
Summary of Impacts by Alternative**

Affected Resource	Alternative B	Alternative C	Alternative D	Alternative E
Section 4(f)				
Parks and Recreation	No Impact	No Impact	No Impact	Use of Section 4(f) Resources
Meet Project Purpose and Need				
Safe north-south route for local trips without using I-80 (intersections below local LOS standards in 2015)	3	3	3	4
Use existing roadways to minimize impacts	Walters Road Extension	Yes	Yes	Yes
Enhance multi-modal options – transit/bikes/peds	Yes	Yes	Yes	Yes
Potential National Security Conflict from Proposed Flyover Ramp at Air Base Parkway and Peabody Road				
Visual access to base facilities	No	Yes	No	Yes
Interference with helicopter flight paths	No	Yes	No	Yes
Community Impacts				
Jobs Lost	58 jobs	40 jobs	224 jobs	80 jobs
Relocations				
Residential - Single Family/Multi family (units)	0	0	0	26/10
Non-residential (structures)	12	11	17	5
Biological Resources				
Loss of Contra Costa Goldfield habitat (acres) ^a				
Direct	0.40	0.24	0.27	0.24
Temporary (Direct)	0.17	0.22	0.15	0.22
Indirect	2.45	4.58	2.51	4.58
Total	3.02	5.04	2.93	5.04
Direct loss of vernal pool crustacean habitat (acres) ^b	4.69	1.45	1.45	0.96
Loss or degradation of suitable upland habitat for California Tiger Salamander (acres)	22.7	22.7	22.7	1.6
Loss of jurisdictional wetlands (acres)	2.94	1.17	1.17	0.40
Loss of other Waters of the U.S. (acres)	1.90	1.52	1.13	0.64
Loss of Swainson's Hawk nesting and foraging habitat (acres)	58.5	57.4	49.0	32.1
Loss of riparian woodland (acres)	2.1	2.1	2.1	0.4
Loss of Pappose spikeweed (acres)	1.0	0	0	0
Loss of Gairdner's yampah (acres)	2.0	0	0	0
Loss of Saline Clover (acres)	1.0	0	0	0
Loss of elderberry shrubs that are habitat for Valley Elderberry Longhorn Beetle (shrubs)	4 shrubs, 16 stems	4 shrubs, 16 stems	4 shrubs, 16 stems	13 shrubs, 26 stems
Farm/Agricultural Lands				
Conversion of Farmlands (acres)/ Williamson Act Contract (parcels)	75.4 acre/ 1 parcels	68.6 acre/ 2 parcels	64.5 acre/ 1 parcels	29.6 acre/ 6 parcels

Source: PBS&J, 2009

Note: Impact categories not shown on table do not help to discriminate among alternatives.

a. Includes some Vernal Pool habitat

b. Does not include any Goldfield habitat

Preliminary concurrence in Alternative B as the LEDPA was discussed at the November 20, 2008 meeting. The signatory agencies provided final concurrence regarding Alternative B as the LEDPA in letters of concurrence submitted to STA and Caltrans. The signatories' letters of concurrence and/or agreement with the LEDPA determination are included in Appendix B.

4.2.2 Consultation under Endangered Species Acts

Extensive informal consultation with the USFWS, other resource agencies, and EPA has been conducted to inform the identification of the Preferred Alternative. A Biological Assessment (BA) was completed and submitted to the USFWS and NMFS, and the USFWS was requested to enter formal consultation regarding impacts to California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, and Contra Costa goldfields. (Latin names for these species are provided in Section 3.15, Biology). In May 2010, the USFWS returned a no-jeopardy Biological Opinion stipulating minimization and compensation measures for impacts to California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, and Contra Costa goldfields. A copy of the USFWS Biological Opinion is provided in Appendix J.

On April 6, 2009, Caltrans sent a letter to NMFS that requested consultation regarding impacts to Central Valley steelhead. NMFS returned its letter of concurrence on May 20, 2009 and determined that the proposed project would not be likely to adversely affect the Central Valley steelhead. A copy of the NMFS letter is provided in Appendix B.

Representatives of the CDFG have been included in all NEPA-404 MOU coordination information exchange and meetings. CDFG provided comments on the Draft EIS; copies of the comments and responses are provided in Volume II of this Final EIS. As the project will address these CDFG issues and requirements, no further CDFG consultation is anticipated during this phase of project development. The project will require a streambed alteration agreement with CDFG to be obtained during the design phase.

4.2.3 Consultations Under Section 4(f) of the Department of Transportation Act

All build alternatives were evaluated for potential use of Section 4(f) protected property. Alternative E would have used land from three such properties, and a Draft Section 4(f) Evaluation was prepared and circulated with the Draft EIS; the final Section 4(f) Evaluation is included herein as Appendix A. None of the other build alternatives had 4(f) impacts; however, construction of Alternative B would need to be coordinated with development of the City of Fairfield's proposed extension of the City's linear park within the abandoned Sacramento Northern Railroad right-of-way, which crosses Cement Hill Road in the vicinity of the proposed Walters Road Extension. Alternative B was identified as the preferred alternative. Consistent with the agencies' previously developed joint planning of the proposed linear park and this future transportation facility, if the Walters Road Extension segment of Alternative B is constructed after the linear park is extended, then the City and STA will coordinate to ensure that construction of the roadway improvements would not permanently interfere with the activities or purpose of the linear park and that the linear park property is restored to a condition that is

as good or better than that which existed prior to construction of the Alternative B improvements. The City of Fairfield also will ensure that adequate detours or other temporary measures are in place to avoid or minimize impacts on park users.

4.3 Tribal Coordination

The National Historic Preservation Act (NHPA) Section 106 (36 CFR 800) regulations require that the agency official make a reasonable and good faith effort to identify any Indian tribes that might attach religious and cultural significance to historic properties in the area of potential effects (APE) and invite them to be consulting parties. Any such Indian tribes that request in writing to be a consulting party shall be a consulting party (36 CFR 800.3).

The agency official is also responsible for gathering information from any Indian tribe identified pursuant to 36 CFR 800.3(f) to assist in identifying properties, including those not located on tribal lands, that may be of religious or cultural significance to them and may be eligible for the National Register of Historic Places (NRHP), recognizing that an Indian tribe maybe reluctant to divulge specific information regarding the location, nature, and activities associated with such sites. The agency official should address concerns raised about confidentiality pursuant to 36 CFR 800.11(c).

As described in section 3.8, Cultural Resources, the Native American Heritage Commission (NAHC) was contacted for information regarding important religious and cultural sites that might be located in the corridor. A letter received from the NAHC in September 2001 indicated that there are no sacred Native American sites or cultural resources in the corridor. There was no response from Native American individuals contacted in September 2001. After subsequent contact on November 25, 2002, by telephone, Kesner Flores (Wintun) communicated that he knows of no problems or issues regarding Native American sites or remains in the current corridor.¹

¹ Flores, Kesner. Cortina Band of Indians and the Wintun Environmental Protection Agency. November 25, 2002—telephone conversation. Fitzgerald, R. T., T. L. Jones, and A. Schroth.

Chapter 5 **List of Preparers**

5.1 List of Preparers

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Howell Chan, Senior Environmental Planner, Office of Environmental Analysis.

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Jennifer Darcanglo, Office Chief, Office of Cultural Resource Studies.

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Norman Gonsalves, Senior Environmental Engineer, Office of Environmental Engineering, Water Quality.

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Ahmad Hashemi, Senior Environmental Planner, Office of Natural Sciences and Permitting.

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Dale Jones, Headquarters Environmental Coordinator, Division of Environmental Analysis.

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Management Team

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Contribution: Environmental Project Management and Project Preparation

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Contribution: Project Preparation

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John Lum, Multimedia Designer, 9 years of experience.

Contribution: Visual Simulations

Jackie Ha, Publications Specialist. 9 years of experience.

Contribution: Document Coordination

Kevin Tran, Publications. Two Years of experience.

5.1.3 Jones & Stokes

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Contribution: Project Oversight

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Contribution: Technical Studies on Wildlife Biology

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Contribution: Technical Studies on Hydrology and Water Quality, Floodplain Evaluation

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Chapter 6 **Distribution List**

Copies of the Final EIS are being provided to the following organizations and individuals. In addition, a copy of the Final EIS is being provided to every agency representative or individual who provided comments or commented to the court reporter on the Draft EIS.

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Director
Department of Health Services

Caltrans Aeronautics Program
Manager

Chief
Bureau of School Planning,
Department of Education

Director
Department of Food and Agriculture

Executive Director
Public Utilities Commission

Executive Secretary
Native American Heritage
Commission

Chief, Environmental Planning
Office of Project Development &
Management, Department of
General Services

Regional Agencies

San Francisco Bay Regional Water
Quality Board
1515 Clay Street, Suite 1400
San Francisco, CA 94612

Central Valley Regional Water Quality
Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Metropolitan Transportation
Commission
Steve Hemminger, Executive Director
101 Eight Street - Metrocenter
Oakland, CA 94607

Association of Bay Area Governments
Ken Kirkey, Director of Planning
P.O. Box 2050
Oakland, CA 94604

Bay Area Air Quality Management
District
Jack Broadbent, Executive Officer
939 Ellis Street
San Francisco, CA 94109

Yolo-Solano Air Quality Management
District
Mat Ehrhardt, Executive Director
1947 Galileo Court, Suite 103
Davis, CA 95618

Capitol Corridor Joint Powers
Authority
300 Lakeside Drive, 14th Floor, East
Oakland, CA 94612

County and City Agencies

Paul Wiese, County Engineer
Solano County
675 Texas Street, Suite 5500
Fairfield, CA 94533

Solano County Planning Director
675 Texas Street, Suite 5500
Fairfield, CA 94533

Michael D. Johnson
Solano County Administrator
675 Texas Street, Suite 6500
Fairfield, CA 94533

Gene Cortright, Director of Public
Works
City of Fairfield
1000 Webster Street
Fairfield, CA 94533

Community Development Director
City of Fairfield
1000 Webster Street
Fairfield, CA 94533

Sean Quinn, City Manager
City Manager's Office, City of
Fairfield
1000 Webster Street
Fairfield, CA 94533

Fernando G. Bravo, P.E., Public
Works Director
Suisun City
701 Civic Center Boulevard
Suisun City, CA 94585

Heather McCollister, Community
Development Director
Suisun City
701 Civic Center Boulevard
Suisun City, CA 94585

Suzanne Bragdon, City Manager
Suisun City
701 Civic Center Boulevard
Suisun City, CA 94585

Dale Pfeiffer, Director of Public
Works
City of Vacaville
650 Merchant Street
Vacaville, CA 95688

Scott Sexton, Community
Development Director
City of Vacaville
650 Merchant Street
Vacaville, CA 95688

David Van Kirk, City Manager
City of Vacaville
650 Merchant Street
Vacaville, CA 95688

Vallejo Transit
Transportation Division, Vallejo City
Hall
555 Santa Clara Street
Vallejo, CA 94590

Rio Vista Delta Breeze
City of Rio Vista
One Main Street
Rio Vista, CA 94571

Fairfield-Suisun Transit
City of Fairfield, Public Works
1000 Webster Street
Fairfield, CA 94533

Tim Burke, Project Manager
Al Patch Park
City of Vacaville Public Works
Engineering
650 Merchant Street
Vacaville, CA 95688

Leigh Coop, Director
Facilities, Vacaville Unified School
District
751 School Street
Vacaville, CA 95688

Solano County Clerk
675 Texas Street, Suite 1900
Fairfield, California 94533

Fairfield Civic Center Public Library
1150 Kentucky Street
Fairfield, CA 94533

Suisun City Public Library
333 Sunset, Suite 280
Suisun City, CA 94585

Vacaville Public Library
1020 Ulatis Drive
Vacaville, CA 95687

Fairfield-Suisun Unified School
District
2490 Hilborn Road
Fairfield, CA 94534

Gerald F. Fisher, Superintendent-
President
Solano Community College
4000 Suisun Valley Road, Building
600
Fairfield, CA 94534-3197

Andrew Swanson, Airport Manager
Nut Tree Airport, Solano County
General Services Department
301 County Airport Road, Suite 205
Vacaville, CA 95688

Business Organizations/Associations/Organizations

California Native Plant Society
2707 K Street, Suite 1
Sacramento, CA 95816-5113

California Wildlife Federation
1012 J Street
Sacramento, CA 95814

Museum of Vertebrate Zoology
2593 Life Sciences Building
Berkeley, CA 94720

Native American Tribal Councils
Inter-Tribal Council of California
2755 Cottage Way, Suite 14
Sacramento, CA 95825

Sierra Club
2530 San Pablo Avenue
Berkeley, CA 94702

Fairfield-Suisun Chamber of
Commerce
1111 Webster Street
Fairfield, CA

Business Manager
Operating Engineers Local #3
474 Valencia Street
San Francisco, Ca 94103

Vacaville Chamber of Commerce
300 Main Street, Suite A
Vacaville, CA

Solano County Orderly Growth
Committee
4160 Suisun Valley Road, E710
Fairfield, CA 94534

Solano Land Trust
1001 Texas Street, Suite C
Fairfield, CA 94533

Greenbelt Alliance
Solano-Napa Office
1652 West Texas Street, Suite 163
Fairfield, CA 94533

Cambridge Estates HOA
c/o Eileen Carter, LLW Properties
1652 W. Texas Street, Suite 106
Fairfield, CA 94533

Terrell A. Anderson, Manager
Industry and Public Projects
Union Pacific Railroad
9451 Atkinson Street
Roseville, CA 95747

Dan Nicolaus
Citation Northern
1785 Arnold Drive, Suite 100
Martinez, CA 94553

PG&E - Electric Distribution
Martha Bowman
158 Peabody Road
Vacaville, CA 95687

Comcast - Fairfield
Paul Alabona
1179 N. McDowell Boulevard,
Suite D
Petaluma, CA 94954

Pacific Bell Napa - (AT&T)
Martha Ramos-Hernandez
40 Executive Court
Napa, CA 94558

Kinder Morgan
Don Quinn
1100 Town and Country Road
Orange, CA 92868

PG&E Gas
Pete Miskovich
5555 Florin-Perkins Road
Sacramento, CA 95826

Solano Irrigation District
Joel Tetzlaff
508 Elmira Road
Vacaville, CA 95687

Amtrak District Office
Art Loyd, Public Relations Director
1 California Street, Suite 500
San Francisco, CA 94111