

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

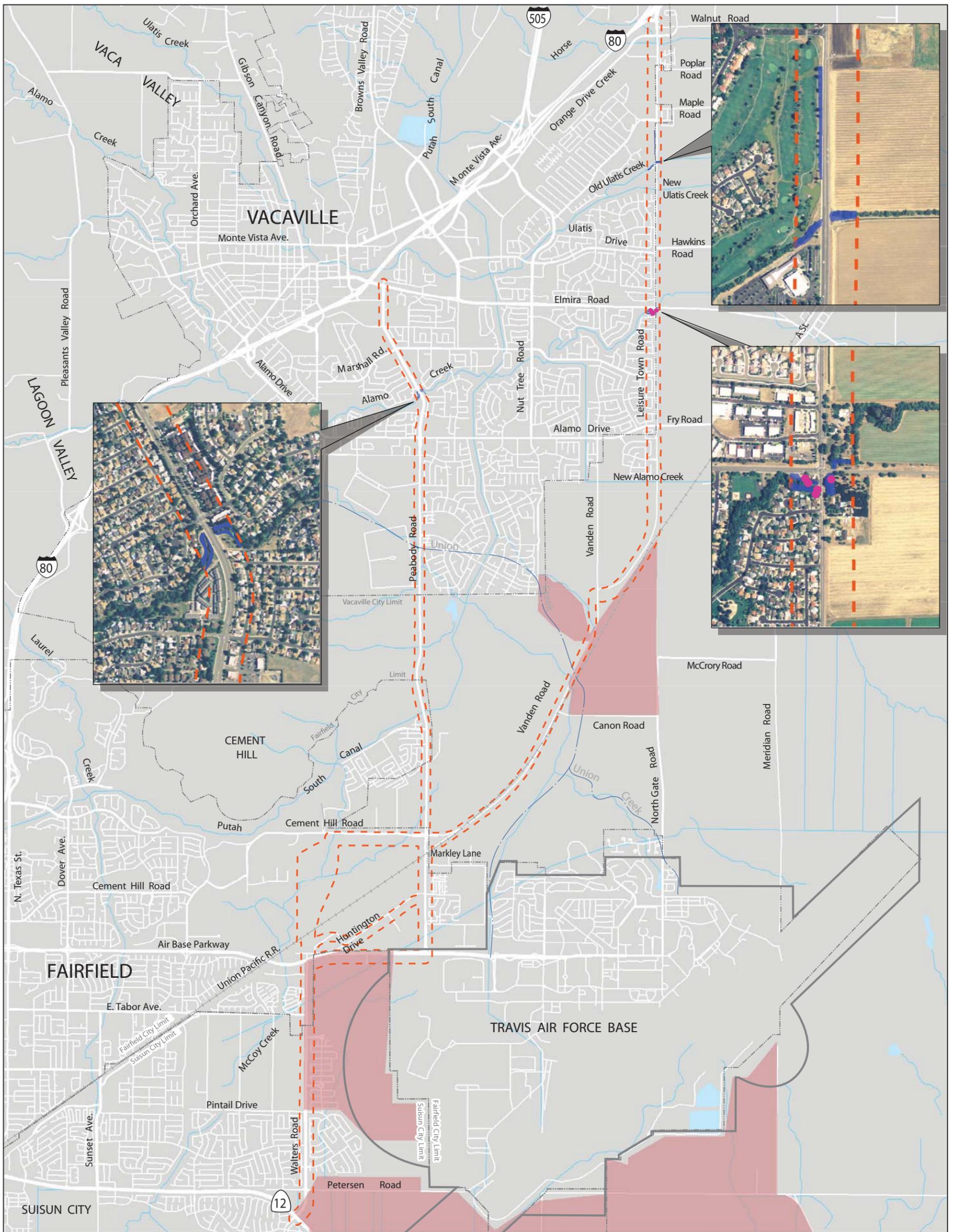
Common natural communities are habitats that have low species diversity, are widespread, reestablish naturally after disturbance, or support primarily non-native species. These communities are not generally protected by agencies unless the specific site is habitat for or supports special-status species (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

<ul style="list-style-type: none"> --- EXISTING ROW --- PROPOSED ROW --- LIMIT OF WORK --- 250' EXTENT FROM LIMIT OF WORK (BSA) --- FLOW LINES --- STORMWATER DRAIN PIPE/CULVERT/OUTLET --- EDGE OF PROPOSED PAVEMENT / SIDEWALK 	<p>UPLAND HABITAT TYPE</p> <ul style="list-style-type: none"> --- AGRICULTURAL LAND --- RUDEERAL --- RIPARIAN WOODLAND <p>WETLANDS</p> <ul style="list-style-type: none"> --- PERENNIAL FRESHWATER MARSH
<p>WATERS OF THE US</p> <ul style="list-style-type: none"> --- PERENNIAL DRAINAGE (P.D.) --- SEASONAL DRAINAGE 	<p>NON-JURISDICTIONAL OTHER WATERS</p> <ul style="list-style-type: none"> --- POND (ARTIFICIAL) --- IRRIGATION

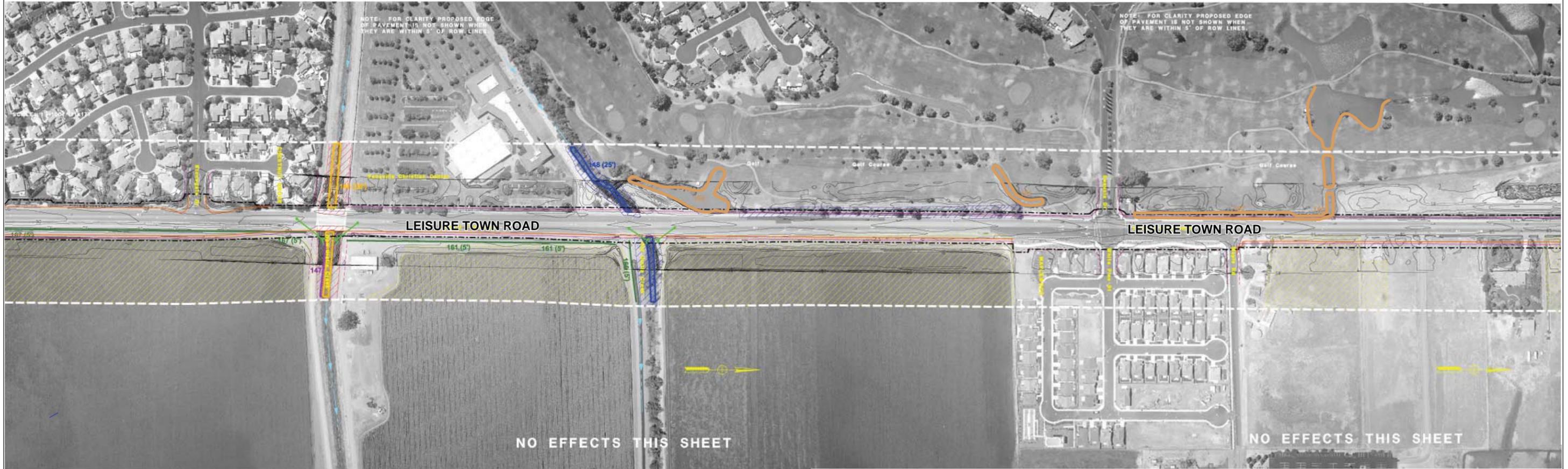
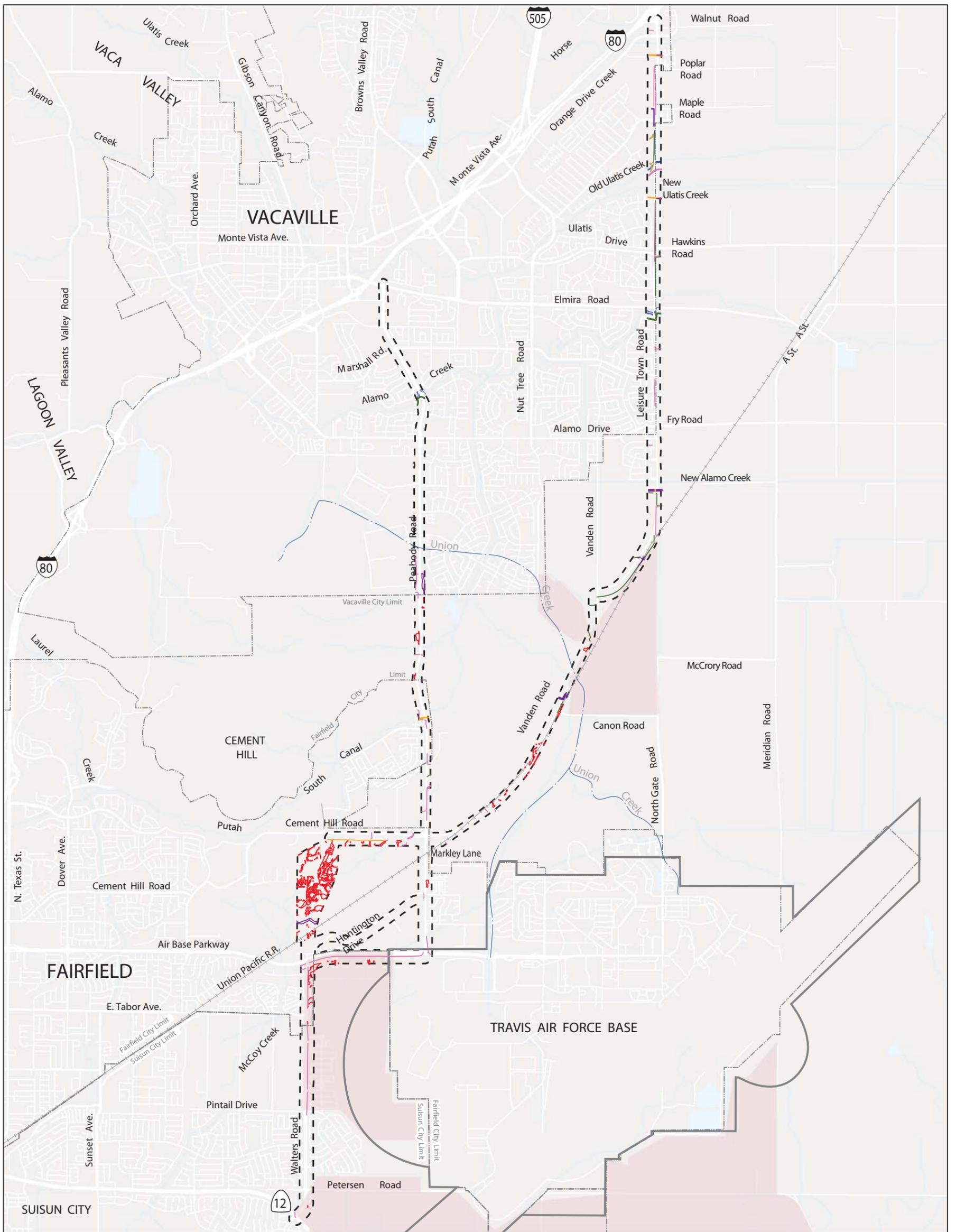


Figure 3.15-2
Perennial Ponds near the Golf Course on Leisure Town Road



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>
Other Waters					
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:

- Britblescale (*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 (CNDDDB 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 Burrel 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 ration 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.