

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 Natural Environment Study (NES) prepared for the proposed project.¹ Information from the NES was supplemented by field surveys conducted by biologists on March 27 and 28, 2007, and on April 3, 2007. The purpose of the additional surveys was to verify current conditions along the various alternative routes, and to collect information for a protocol level Habitat Assessment for California red-legged frog.²

The *impact area* for the proposed project 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 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 through this undeveloped land 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 are 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

¹ Jones & Stokes, 2006. Natural Environment Study: Jepson Parkway Project. February. (J&S 09137.99.) Sacramento, CA. Prepared for Solano Transportation Authority, California Department of Transportation, and Federal Highway Administration.

² PBS&J, *Habitat Assessment for the California Red-legged Frog, Jepson Parkway*, Solano County, California, April 2007.

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.

This section evaluates project consistency with existing and future land use, consistency with relevant plans, and project effects on park and recreational resources. The proposed project is not in a coastal zone or in the vicinity of any wild and scenic rivers; therefore, these issues are not addressed.

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 and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife

(including anadromous fish passage) for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat into smaller, non-contiguous areas, and thereby lessening its biological value.

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 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 3.15.5. Wetlands and other waters are also discussed below in the preceding Section 3.15.2.

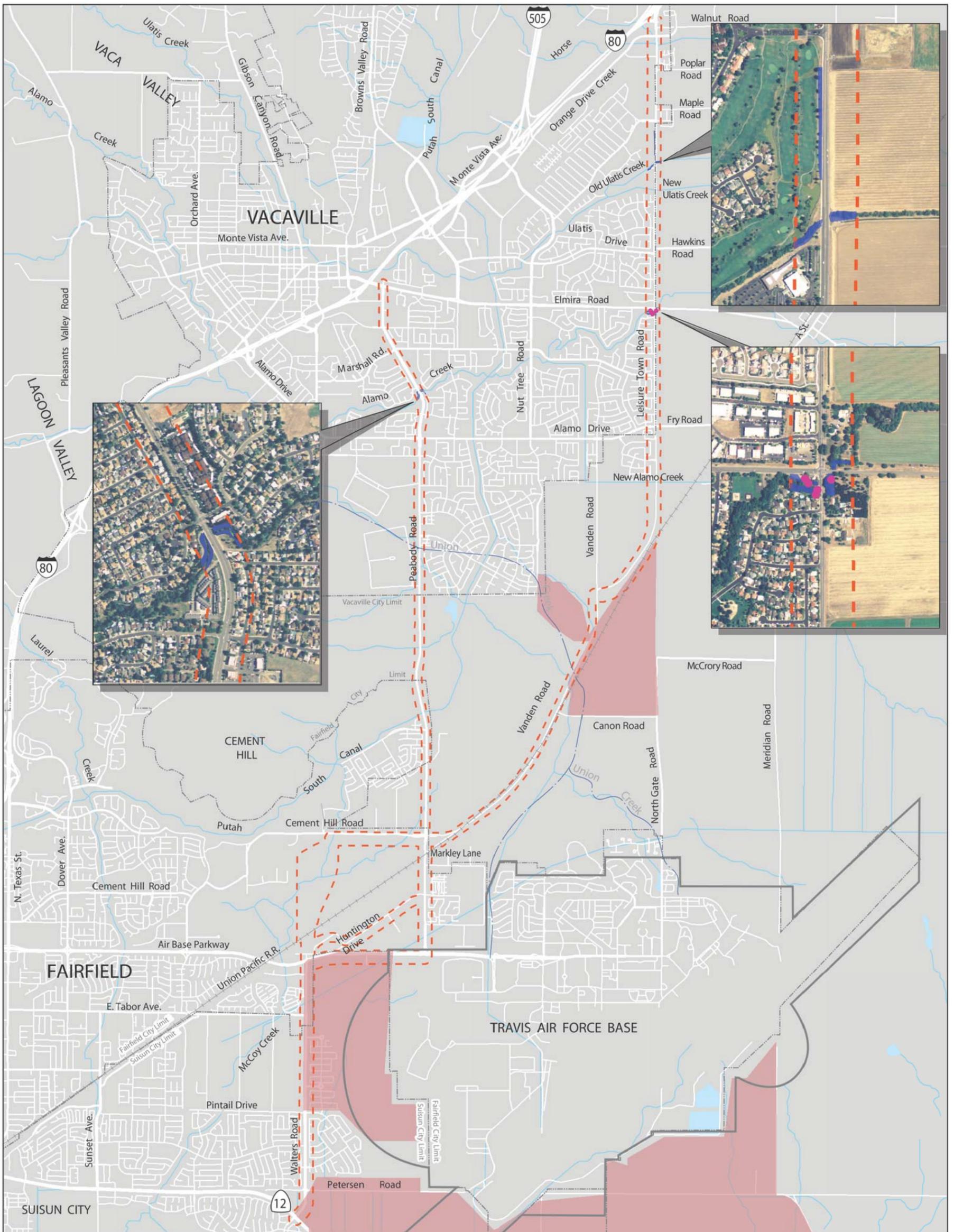
3.15.1.1 Regulatory Setting

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)
- US Army Corps of Engineers (Corps) no-net-loss policy for wetlands values (including riparian habitat) and California Fish and Game Code (CFGF) Section 1602 streambed alteration agreement (SAA) mitigation requirements for loss of riparian vegetation
- Solano Multispecies Habitat Conservation Plan – Final Working Draft 2.2
- 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.



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

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 wetland ^a	38
Freshwater marsh ^a	5
Seasonal drainage ^a	3
Perennial drainage ^a	5
Pond	7
Riparian woodland	4
Total	1,312

Note:

- a. Includes jurisdictional and non-jurisdictional features.

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 Vanden Road, along Peabody Road between Foxboro Parkway and Cement Hill Road, and on virtually all of the grassland in the Walters Road Extension area. Fields along 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, Goodding's willows, 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 Impacts (including Permanent, Temporary, Direct, Indirect, and Cumulative)

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 (mitigation ratio 3:1)	Direct: 2.1 (mitigation ratio 3:1)	Direct: 2.1 (mitigation ratio 3:1)	Direct: 0.4 (mitigation ratio 3:1)
Loss of riparian woodland (acres)	No Impact	Indirect: 1.4 (mitigation ratio 3:1)	Indirect: 1.4 (mitigation ratio 3:1)	Indirect: 1.4 (mitigation ratio 3:1)	Indirect: 0.6 (mitigation ratio 3:1)
Habitat fragmentation	No Impact	Would result in minor fragmentation 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, seasonal drainages and a perennial pond, 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 in 2005 to minimize

fragmentation and impacts to vernal pools and endangered species. These alignment revisions included a shift in the alignment to west and the bridging of McCoy Creek and the detention basin. These design changes would lessen the severity of fragmentation by allowing wildlife movement through grassland areas occurring under spanned portions of the alignment adjacent to McCoy Creek and detention basin. However, some degree of fragmentation of grassland habitat would remain where the new road crossed over land at ground level. Wildlife movement would be restricted in these areas, or would force individuals to cross the road, resulting in road kills. Mitigation is identified for adverse effects on wildlife movement in these areas that would lessen the severity of the fragmentation (Mitigation Measure BR-7).

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 from implementation of the proposed action. Therefore, with these mitigation measures in place, no contribution to cumulative impacts would occur 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 1 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 March 1 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 April 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 2:1 (2 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. 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 CDFG 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 CDFG 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 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 80 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 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be adversely degraded. The Section 404 permit program is run by the Corps with oversight by the EPA.

Caltrans, FHWA, the Corps, EPA, and USFWS 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 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.

At the State level, wetlands and waters are regulated primarily by CDFG and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the California Coastal Commission or the Bay Conservation and Development Commission (BCDC) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify

CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the Corps may or may not be included in the area covered by a Streambed Alteration Agreement obtained from CDFG.

The Porter-Cologne Water Quality Control Act charges the State Water Resources Control Board (SWRCB) and the nine RWQCB with overseeing water quality throughout California. Typically, the SWRCB and RWQCB act in concert with the Corps under Section 404. The RWQCB also issues water quality certifications in compliance with Section 401 of the CWA in relation to permitting fill of federally jurisdictional waters. The U.S. Supreme Court has recently acted to limit the regulatory jurisdiction of the Corps under Section 404 of the Clean Water Act. However, this action did not limit the State's regulatory jurisdiction over waters of the State. Waters of the State are defined in Section 13050(e) of the Porter-Cologne Water Quality Control Act as "...any surface water or groundwater, including saline waters, within the boundaries of the state." Currently, an applicant would delineate the wetlands on their property using methodology presented in the 1987 U.S. Corps of Engineers Wetland Delineation Manual and the delineation would be verified by the Corps. In cases where an area meets the criteria to be considered a wetland, but the Corps does not have jurisdiction, the applicant is referred to the appropriate section for additional details.

3.15.2.2 Affected Environment

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 Walters Road Extension area are alkaline and support salt-tolerant wetland species, such as saltgrass, alkali heath, glasswort, and sand spurrey. In the Walters Road Extension, Air Base Parkway, and Walters Road portions of the study area, many 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 marshes are present within seasonal and perennial drainages in the study area, including New Alamo Creek; the upstream portion of Union Creek; a tributary to McCoy Creek detention basin; unnamed drainages; and agricultural ditches. Dominant plant species in both seasonal and perennial freshwater marshes include cattail, bulrush, and Himalayan blackberry. Freshwater marshes are productive wildlife habitats and provide food, cover, and water for many species of amphibians, reptiles, birds, and mammals.

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.

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. 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.

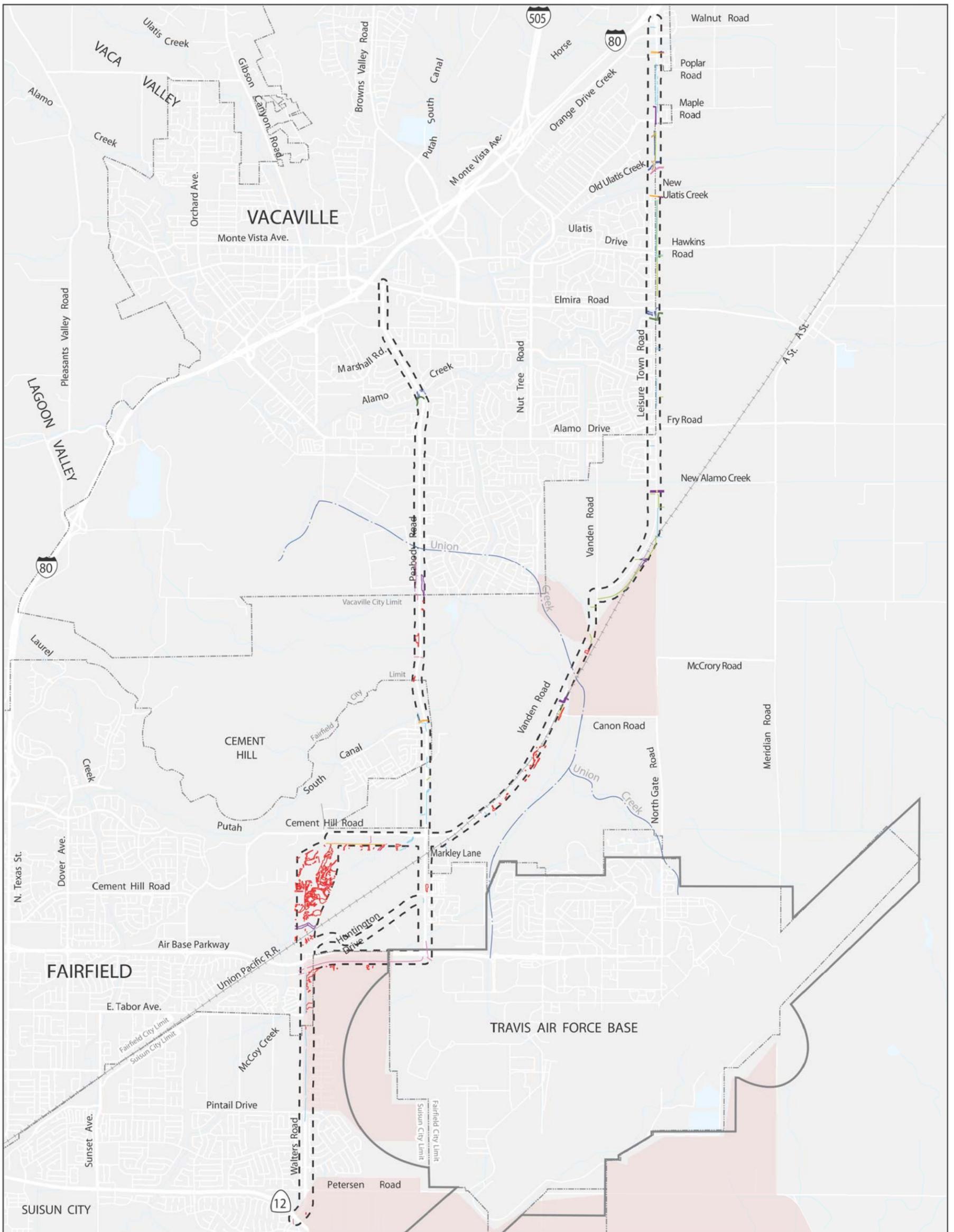
Perennial Pond

The perennial 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. There are also 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.

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

Methodology

Removing 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. Removal of jurisdictional wetlands is prohibited without prior approval from the Corps, and removal of 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 3.15-2.



LEGEND

- Jurisdictional Perennial Drainage
- Jurisdictional Perennial Drainage with Riparian
- Non-Jurisdictional Perennial Drainage
- Jurisdictional Seasonal Drainage
- Non-Jurisdictional Seasonal Drainage
- Perennial Freshwater Marsh
- Seasonal Freshwater Marsh
- Seasonal Wetland
- Pond



3.15-15

**Figure 3.15-2
Wetlands and Drainages**

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, 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 *Delineation of Waters of the United States Jepson Parkway Project*, JSA, October 2005. This delineation was resubmitted to the Corps on March 27, 2006, and is currently being reviewed for verification.

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Seasonal wetlands	No Impact	4.3	2.1	2.1	1.1
Freshwater marsh	No Impact	2.1	1.2	1.2	1.4
Seasonal drainages (Jurisdictional)	No Impact	0.1	0.4	<0.1	0.4
Seasonal drainages (Non-Jurisdictional)	No Impact	0.5	0.4	0.4	0.3
Perennial drainages (Jurisdictional)	No Impact	1.5	0.5	0.5	0.3
Perennial drainages (Non-Jurisdictional)	No Impact	1.1	1.1	1.1	<0.1
Perennial pond habitat	No Impact	7	0.7	0.7	No Impact

The following information was reviewed before the field delineation was conducted:

- 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
- Wetland Delineation Reports previously prepared for portions of the study area in the Walters Road Extension area along Walters Road, south of Air Base Parkway.³

³ 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.

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*.⁴ The delineation was submitted to the Corps on March 27, 2006 along with a letter requesting Corps verification of the delineation.

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 in a manner that would not hinder flows. It is assumed that the natural streamflow would distribute the material throughout the downstream river system.

Alternatives Discussion/ Wetland Only Practicable Finding

Avoidance alternatives to minimize harm to wetlands in compliance with Executive Order 11990 have been determined to be infeasible. Achievement of the project's purpose and need requires improvements to existing roadways or construction of new roadways that would have effects on wetlands. There are no practicable alternatives to construction on wetlands in the study area (though impacts to these wetlands can be minimized through bridging natural communities of special concern in the Walters Road Extension segment between Cement Hill Road and the UPRR tracks to the south). Based on these 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.

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

⁴ 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.

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 provide important habitat functions 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 smaller area, as Alternative B (Table 3.15-3). 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.

Alternative B. Under this alternative, permanent fill would be placed in perennial pond habitat. 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 C. Implementation of this alternative would result in the slightly less effects on ponds than Alternative B (Table 3.15-3). Mitigation has been identified for this impact (Mitigation Measures BR-4 to BR-9).

Alternative D. Implementation of this alternative would result in similar direct effects on perennial pond habitat, though in a slightly smaller area, as Alternative B (Table 3.15-3). Additional areas of

perennial pond habitat 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).

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 would not be likely to have a cumulatively considerable contribution.

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 the following permits:

- CWA Section 404 permit from the Corps, 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)]
- CFGC 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. Implementation of Mitigation Measures WQ-1 to WQ-3 under 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.
- 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: Design Roadway to Maintain Natural Hydrology and Reduce Habitat Fragmentation. To maintain as much of the natural hydrology within the Walters Road Extension segment of the Alternative B alignment as possible and to minimize placement of fill in waters of the United States and non-jurisdictional wetlands, the road design will include one or more of the following design options:

- To mitigate for impacts on the drainage south of Cement Hill Road, a new drainage will be constructed south of the widened road to carry the flow currently in the drainage. Alternatively, the drainage will be placed in a pipe with outlet structures that would continue to provide flow to the wetlands south of the road.
- Portions of the road between Cement Hill Road and the UPRR tracks will be designed as an elevated structure on piers to maintain existing hydrology between the west and east sides of the road. Pier foundations will be placed to avoid wetlands and the areas within the OHWMs of drainages to the greatest extent feasible.
- A bridge will be constructed over the pond and the freshwater marsh.
- Install barriers along ground-level portions of the Walters Road Extension that will discourage wildlife from crossing the road, and encourage movement towards spanned portions of the alignment along McCoy Creek and the detention basin.

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 alternatives, except the No Build Alternative, will result in the fill of wetlands, or other waters of the United States. As discussed in the regulatory setting above, pursuant to Section 404 of the CWA, fill of wetlands or other waters of the United States is prohibited without first acquiring a Section 404 Wetlands Fill Permit from the Corps, and a Section 401 Water Quality Certification from the RWQCB. 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) and to ensure no net loss of habitat functions and values. Waters of the United States in the study area include seasonal wetlands, freshwater marshes, and drainages. Any wetlands that do not fall under the jurisdiction of the Corps pursuant to Section 404 of the Clean Water Act (i.e., wetlands isolated from jurisdictional waters) are regulated as Waters of the State pursuant to the Porter Cologne Act Water Quality Control Act. Fill of waters 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 seasonal wetlands, freshwater marshes, and ponds that are not adjacent to waters of the United States and therefore not regulated under CWA Section 404.

Compensation for seasonal wetlands, freshwater marshes, and ponds will be provided at a minimum ratio of 2:1⁵ (2 acres of mitigation for every 1 acre of waters of the United States filled), or 9:1⁶ in areas of Critical Habitat where Contra Costa goldfields are present (9 acres of mitigation for every 1 acre of waters of the United States filled) and may be a combination of mitigation credits, off-site preservation, and on-site restoration/creation. Mitigation ratios for wetland habitats supporting threatened or endangered species will be higher, and are described in detail in Section 3.15.5, below. 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. Impacts on seasonal wetlands that support Contra Costa goldfields, vernal pool fairy shrimp, or vernal pool tadpole shrimp will likely require higher compensation ratios. Actual compensation ratios will be determined by State and federal agencies during the permitting process 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. Wildlands also offers Custom Mitigation Solutions where they work with local jurisdictions to streamline the mitigation approval process as they did for Caltrans on the Aitken Ranch Preserve Project in Placer County.⁷ 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 AFB. 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 invertebrates.

⁵ The Corps standard minimum mitigation ratio for fill of wetlands is 2:1, but may be higher depending on value of specific wetland habitats.

⁶ Personal communication, Michelle Tovar, USFWS meeting dated October 4, 2007.

⁷ <http://www.wildlandsinc.com/aitken.htm>

- 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 invertebrates.

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. 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 2:1 (2 acres 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 the guidelines for riparian habitat compensation.

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 recommended 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.

3.15.3 Plant Species

3.15.3.1 Regulatory Setting

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

This section discusses all the other special-status plant species, including CDFG protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS) rare and endangered plants, most or all of which are covered under the Draft MSHCP.

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

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 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

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, 2000.⁸ 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, a California Native Plant Society (CNPS) List 1B species, occurs in alkaline annual grasslands in the Walters Road Extension area.
- Pappose spikeweed, a CNPS List 1B species, and is covered under the Draft MSHCP, occurs in annual grasslands and vernal pools in the Walters Road Extension area.
- Gairdner's yampah, a CNPS List 4 species, and is covered under the Draft MSHCP, occurs in annual grasslands and seasonal wetlands in the Walters Road Extension area.
- Saline clover, a CNPS List 1B species, and is covered under the Draft MSHCP, occurs in vernal pools in the Walters Road Extension area.
- In addition, during the earlier surveys, dwarf downingia, 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 EIR/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.

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.

⁸ 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.

**Table 3.15-4
Summary of Impacts to Plant Species (Acres)**

Impact	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Loss of Britblescale	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

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

Impact BR-11: Would the Alternatives Result in Loss of Britblescale?

Alternative A. Under this alternative, the project would not be constructed. Therefore, no project-related impacts on brittlescale would occur.

Alternative B. Brittlescale was identified in seasonal wetlands north of McCoy Creek in the Walters Road Extension segment. Under this alternative, all of the brittlescale plants in the study area would be avoided. Potential indirect impacts on the seasonal wetlands that support the brittlescale would be avoided by including culverts in the road design to maintain existing hydrologic conditions. Mitigation has been identified to further reduce this impact (Mitigation Measures BR-10 through BR-13 and BR-15).

Alternatives C, D, and E. Brittlescale 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 to reduce this impact (Mitigation Measures BR-10 to BR-13 and BR-15).

Alternatives C, D, and E. Gairdner'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 to further reduce this impact (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 reduce the impact of loss of special-status plants or their habitat from implementation of Alternative B. 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 environmental awareness training 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: Contra Costa goldfields, and other special-status plants, but will also include VELB, vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and special-status birds. 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. 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 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.
- No pets or firearms will be allowed in the study area.
- To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated staging areas.

Any worker who encounters damaged vegetation or causes harm to a special-status plant 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.

Mitigation Measure BR-11: Retain a Biologist to Monitor Construction Activities. STA or the appropriate local agency will retain a biologist to make daily monitoring visits to all construction areas located in and adjacent to special-status plant populations. 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 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 4 feet high (Tensor Polygrid or equivalent). The fencing will be tightly strung on posts set at maximum intervals of 10 feet.

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. 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: Construct the Walters Road Extension on an Elevated Structure. STA or the appropriate local agency will design and construct portions of the Walters Road Extension on an elevated structure (causeway) between Cement Hill Road and the UPRR tracks to maintain existing hydrological conditions.

3.15.4 Animal Species

3.15.4.1 Regulatory Setting

Many State and federal laws regulate impacts to wildlife. USFWS, the National Oceanic and Atmospheric Administration (NOAA Fisheries), and CDFG 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 State or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed below in Section 3.15.5, Threatened and Endangered Species. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and 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
- Marine Mammal Protection Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1601 – 1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

In addition to State and federal laws regulating impacts to wildlife, there are often local regulations (example: county or city) that need to be considered when developing projects. If work is being done on federal land (Bureau of Land Management or Forest Service, for example), then those agencies' regulations, policies, and Habitat Conservation Plans are followed.

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 the 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 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 Solano HCP has not yet been adopted (at the time of publication), it is expected to be adopted in the very near future, and 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 HCP.

3.15.4.2 Affected Environment

The study area contains habitat for several federally threatened or endangered wildlife species: vernal pool fairy shrimp, vernal pool tadpole shrimp, VELB, and California tiger salamander. Because these species are federally listed as threatened or endangered, their presence in the study area, potential to be affected by the project, and proposed mitigation 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 a covered species 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 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 to 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 a covered species 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. Additional records for this species in the vicinity are contained in the CNDDDB.
- Swainson’s hawk (*Buteo swainsoni*) is a State threatened species, is protected under the MBTA and CFGC Section 3503.5, and is a covered species 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 1 to 3 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 a covered species 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 a covered species 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 raptors, cliff swallows, and barn swallows, 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 invertebrates were conducted September 13, 2000, and from November 2000 through April 2001.
- A habitat assessment for vernal pool invertebrates 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 2000.⁹
- Delta green ground beetle surveys were conducted in early 2000.
- Focused VELB surveys were conducted on October 9, 2001, and October 13, 2005.
- Fisheries surveys were conducted on July 9, 2002.

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

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			

⁹ 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.

**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 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 (2005) 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 provides 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. This impact would be the 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 it is determined 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. No burrowing owls were observed along the Alternative B, C and D alignments during surveys. CNDDDB records indicate that owls could occur in the southern portion of 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 between one and three miles from the study area.¹⁰ 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 could 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).

¹⁰ CNDDDB, July, 2007.

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 2005), 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 15) and if nests are present in or adjacent to the study area. This disturbance could cause nest abandonment. There 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 15) and if nests are present in or adjacent to the study area. This disturbance could cause nest abandonment. There 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 raptors, cliff swallows, and barn swallows, 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 15). 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. There 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 impacts and compensating for remaining impacts, the proposed action would not be likely to have a cumulatively considerable contribution to effects on these species.

3.15.4.4 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 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.¹¹ 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 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. 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 recommends mitigation of the removal of suitable Swainson's hawk foraging habitat at a ratio determined by the distance to the nearest active nest.¹² Because the nearest known nest is 1 mile from the study area, the required 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

¹¹ California Department of Fish and Game. 1995. Staff Report on Burrowing Owl Mitigation.

¹² California Department of Fish and Game. 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (*Buteo swainsoni*) in the Central Valley of California.

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. It may also be feasible to combine this mitigation requirement with wetland or vernal pool upland mitigation discussed 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 15), 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 15) 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 15), 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 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 FHWA, are required to consult with USFWS and 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 permit. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the State level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. CDFG is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

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.

In 2000, Caltrans, and STA initiated the NEPA/404 integration process to coordinate the review and approval of key EIR/EIS elements and how these elements address impacts to waters of the United States and associated sensitive species. Members of the NEPA/404 group for the Jepson Parkway Project include the above-listed agencies (with the exception of FTA); the San Francisco Bay 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 EIR/EIS. Caltrans and STA has continued to meet with the NEPA/404 group to discuss project impacts on sensitive species, most recently in January 2008.

3.15.5.2 Affected Environment

A search of the CNDDDB (2005) was conducted to determine whether any special-status species were known to occur in the vicinity of the study area. The search encompassed a 5-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 a list 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 action by USFWS. The list provided by USFWS is included in Appendix F.

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 invertebrates were conducted in vernal pools along Air Base Parkway and adjacent to the proposed Walters Road Extension.
- A habitat assessment for vernal pool invertebrates 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).¹³

¹³ 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.

**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
Invertebrates					
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E/-	Found in large, deep vernal pools in annual grasslands. Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, and Glenn Counties.	HA	No large, deep vernal pools present in the study area.
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.
Vernal pool tadpole shrimp	<i>Lepidurus packardi</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.
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.	P	Potential habitat present in the study area. No beetles located during focused surveys and species considered to be not present.
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.
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.
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	Study area is outside of the known range for the species.

**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		General Habitat Description	Habitat Present/Absent	Rationale
		Federal/State				
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.
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.
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.
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.
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.
Amphibians						
California red-legged frog	<i>Rana aurora draytoni</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	Suitable 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.

**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
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 0.7 miles of breeding habitat.	P	Upland habitat is present within 0.7 miles of CTS breeding site (CNDDDB 2005). No suitable breeding habitat in the study area.
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.
Giant garter snake	<i>Thamnophis couchi gigas</i>	T/T	Found in sloughs, canals, low-gradient streams, and freshwater marsh habitats where there is a prey base of small fish and amphibians. Also found in irrigation ditches and rice fields. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter. Occurs in the Central Valley from the vicinity of Burrell in Fresno County north to near Chico in Butte County. Believed to have been extirpated from areas south of Fresno.	HA	Study area is on the edge of the species' range. Disturbance (i.e., concrete-lined drainage crossings located in an urbanized setting) make habitat unsuitable in the study area.
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.
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.

**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
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.
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.
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.
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 foraging. May avoid valley-oak riparian habitats where scrub jays are abundant.	HA	No suitable habitat present in the study area.
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.
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.

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
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.
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.
Contra Costa goldfields	<i>Lasthenia conjugens</i>	E/-	Found in vernal pools.	P	Habitat and species present in the study area.
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.
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.
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.
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.

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.

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
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.					

- Delta green ground beetle surveys were conducted in conjunction with the vernal pool invertebrate 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 2006.¹⁴
- Focused surveys for valley elderberry longhorn beetle (VELB) were conducted on October 9, 2001 and October 13, 2005.
- Fisheries surveys were conducted on July 9, 2002.

Based on the prefield 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 an included species 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 2006.¹⁵ 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.

Vernal Pool Invertebrates

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 vernal pools along Leisure Town Road, adjacent to Vanden Road, along the Walters Road Extension between Cement Hill Road and Air Base Parkway, and along the east side of Walters Road. Suitable habitat was defined as isolated, seasonally ponded waters that provide an aquatic ecosystem for various durations from November through April.

¹⁴ Personal communication, Richard Arnold, Entomological Consulting Services, Ltd. July 2, 2007

Delta Green Ground Beetle

Delta green ground beetle (*Elaphrus viridis*) is federally listed as threatened, and is covered under the Draft MSHCP. 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 in Solano County, but the species is difficult to observe, and could occur over a wider area if suitable habitat is present. Although marginally suitable habitat for this species occurs in vernal pool grasslands along Leisure Town Road, Vanden Road, 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 2006.¹⁶ Additionally, the soils in the study area are not the Pescadero Clay soils typically associated with the habitat for this species.

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. In the study area, suitable habitat for VELB (blue elderberry shrubs) was identified in the along Old Alamo Creek near the intersection of Leisure Town Road and Elmira Road and between Old Alamo Creek and Arbor Oaks Drive. Additional elderberry shrubs were observed along Old Alamo Creek at its intersection with Peabody Road. No evidence of VELB use (exit holes) was observed in any of the elderberry shrubs. All of the shrubs grow in the riparian zone of Old Alamo Creek and are within 100 feet of the project footprint. According to the CNDDDB (2005), the VELB population closest to these elderberry shrubs is approximately 7 miles west-southwest of the shrub location. This population is located 0.5 miles west of I-80 on the north edge of Fairfield in Solano County.

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 habitat less suitable for this species. A review of CNDDDB records, and discussions with local amphibian expert Mark Jennings of Rana Resources in Davis, California,¹⁷ revealed that the nearest record for this species is approximately 14 miles to the west. According to the Draft MSHCP, occurrence of California red-

¹⁵ Personal communication, Richard Arnold, Entomological Consulting Services, Ltd. July 2, 2007

¹⁶ Personal communication, Richard Arnold, Entomological Consulting Services, Ltd. July 2, 2007

¹⁷ Habitat Assessment for the California Red-legged Frog, Jepson Parkway, Solano County, California. PBS&J, 2007.

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.

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 mile from upland sites to a breeding pond (68 FR 28647).

In the project region, one known breeding site and several suitable aquatic habitat sites are located north of Vanden Road and within 0.7 miles of the project site. Most of the seasonal wetlands in the study area either 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.

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

Methodology

A direct impact was identified for vernal pool invertebrates 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 invertebrates when the entire pool was outside the project footprint but within 250 feet of the right-of-way. Direct impacts on California tiger salamander upland habitat were assessed within 0.7 mile of aquatic habitat. 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 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.

**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		0.39	0.24	0.27	0.24
Temporary Construction		0.17	0.22	0.15	0.22
Indirect		5.31	4.58	2.51	4.58
Total		5.87	5.04	2.93	5.04
		(mitigation ratio 9:1* preservation; 1:1 restoration)	(mitigation ratio 9:1* preservation; 2:1 creation)		
Loss of vernal pool invertebrates (acres)	No Impact				
Direct		1.58	1.42	1.42	0.94
Indirect		1.01	0.03	0.03	0.02
Total		2.59	1.45	1.45	0.96
		(mitigation ratio 2:1 preservation; 1:1 creation)			
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 that are habitat for Valley Elderberry Longhorn Beetle	No Impact	8 shrubs	8 shrubs	8 shrubs	13 shrubs
Loss or degradation of suitable habitat for California Tiger Salamander (acres)					
Upland Habitat	No Impact	10.7	10.7	10.7	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 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.)

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. 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. Mitigation has been identified for this impact (Mitigation Measures BR-10 to BR-12, BR-20 and BR-21).

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. 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. 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 Invertebrates?

Alternative A. Under this alternative, no construction activities would occur. Therefore, no project-related impacts on vernal pool invertebrates would occur.

Alternative B. This alternative could adversely affect wetlands identified as suitable vernal pool invertebrate 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). 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 invertebrate 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). 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 invertebrate habitat located adjacent to Leisure Town Road and Vanden Road and along the east side of

existing Walters Road (Table 3.15-7). 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 invertebrate 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). 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 vernal pool invertebrates 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, despite extensive, focused surveys. Therefore, no project-related impacts on Delta green ground beetle would occur (Table 3.15-7).

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. Under these alternatives, five elderberry shrubs along Old Alamo Creek may be adversely affected by construction activities (Table 3.15-7). Three shrubs would be directly affected, and two shrubs would be indirectly affected. Mitigation has been identified for this impact (Mitigation Measure BR-24).

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). Five shrubs would be directly affected, and eight shrubs would be indirectly affected. Mitigation has been identified for this impact (Mitigation Measure BR-24).

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 this alternative, 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-25 and BR-26).

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-25 and BR-26).

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 general 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 HCP/BRCPP. 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 invertebrates, 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: Revise Project Plans to Avoid Contra Costa Goldfields. To avoid impacts on Contra Costa goldfields habit, widening proposed for existing Walters Road under all of the build alternatives shall be designed to minimize right-of-way acquisition east of the existing roadway. This shall be achieved by shifting the alignment to the west and minimizing shoulder, lane, and median widths in areas adjacent to Contra Costa goldfield habitat.

To avoid and minimize impacts to Contra Costa goldfields along the Walters Road Extension under Alternative B, the road design will include one or more of the following design options as described in Mitigation Measure BR-7:

- To mitigate for impacts on the drainage south of Cement Hill Road, a new drainage will be constructed south of the widened road to carry the flow currently in the drainage. Alternatively, the drainage will be placed in a pipe with outlet structures that would continue to provide flow to the wetlands south of the road.
- The road between Cement Hill Road and the UPRR tracks will be designed as an elevated structure on piers to maintain existing hydrology between the west and east sides of the road. Pier foundations will be placed to avoid wetlands and the areas within the OHWMs of drainages to the greatest extent feasible.
- A bridge will be constructed over the pond and the freshwater marsh.
- Culverts will be placed beneath the Walters Road Extension at a minimum of every 500 feet to maintain hydrologic connectivity throughout the study area.

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. Compensation for permanent loss (areas directly affected in the study area) of Contra Costa goldfields will consist of the following:

- As described in the Draft MSHCP, occupied Contra Costa goldfields habitat will be preserved in perpetuity at a 9:1 ratio (9 acres of credits purchased at an approved mitigation bank or 9 acres of occupied habitat preserved for each 1 acre of occupied habitat removed during construction).
- As described in the Draft MSHCP, Contra Costa goldfields habitat will be created/restored at a 1:1 ratio (1 acre of Contra Costa goldfields habitat restored for each 1 acre of occupied habitat removed).
- As described in the Draft MSHCP, Vernal pool upland habitats (up to a 500-foot radius) will be preserved at a 3:1 ratio. (3 acres of Contra Costa goldfields habitat restored for each 1 acre of occupied habitat removed).

Compensation for temporary loss (areas indirectly affected in the study area) of Contra Costa goldfields will consist of the following:

- As described in the Draft MSHCP, occupied Contra Costa goldfields habitat will be preserved in perpetuity at a 3:1 ratio (3 acres of occupied habitat preserved for each 1 acre of occupied habitat indirectly affected during construction).
- As described in the Draft MSHCP, Vernal pool upland habitats (up to a 500-foot radius) will be preserved at a 1:1 ratio (1 acre of Contra Costa goldfields habitat restored for each 1 acre of occupied habitat removed).

Final compensation requirements, the feasibility of creating a preservation area (including protection and management options), and the methods for restoration will be determined in future coordination with the resource agencies and in compliance with the USFWS Biological Opinion for the project.

Mitigation Measure BR-22: Minimize Potential Impacts on Listed Vernal Pool Branchiopods and Delta Green Ground Beetle. STA or the appropriate local agency will ensure that the contractor will minimize potential impacts within 250 feet of listed vernal pool fairy shrimp and vernal pool tadpole shrimp habitat identified through implementation of Mitigation Measure BR-12, by conducting construction activities in the dry season, which is generally between May 1 and October 15 or before the first fall soaking rains (rainfall more than 1 inch).

Mitigation Measure BR-23: Compensate for Permanent Losses of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat and Delta Green Ground Beetle. 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 using compensation ratios approved by USFWS and described below:

- As described in the MSHCP, in areas considered to be occupied Contra Costa goldfields habitat, compensation for loss of vernal pool crustacean and delta green ground beetle habitat will be accomplished concurrently with compensation for Contra Costa goldfields.
- As described in the MSHCP, suitable vernal pool crustacean and delta green ground beetle habitat not occupied Contra Costa goldfields will be preserved at a 2:1 ratio (2 acres preserved for every 1 acre of habitat directly or indirectly affected). Preservation lands will be established at a USFWS-approved conservation area, or preservation credits will be purchased from a USFWS-approved mitigation bank.
- As described in the MSHCP, suitable vernal pool crustacean and delta green ground beetle habitat not occupied by Contra Costa goldfields will be created at a 1:1 ratio (1 acre created for every 1 acre of habitat directly affected). Vernal pools will be created at a USFWS-approved conservation area, or creation credits will be purchased from a USFWS-approved mitigation bank.

Final compensation requirements, the feasibility of creating a preservation area (including protection and management options), and the methods for restoration will be determined in future coordination with the resource agencies and in compliance with the USFWS Biological Opinion for the project.

Mitigation Measure BR-24: Compensate for Impacts on Valley Elderberry Longhorn Beetle.

Consistent with the Draft MSHCP, STA or the appropriate local agency will ensure that the contractor will minimize potential construction-related impacts on VELB by maintaining a distance from elderberry shrubs of at least 20 feet. If this setback is not possible at all locations, STA or the appropriate local agency will implement the following measures, consistent with the requirements of the Biological Opinion.

- All elderberry shrubs with one or more stems measuring 1 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*.¹⁸
- Each elderberry stem measuring 1 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.¹⁹ A mixture of native grasses and forbs also will be planted in the conservation area.

¹⁸ U.S. Fish and Wildlife Service. 1999. Conservation guidelines for the valley elderberry longhorn beetle. July 9. Sacramento, CA.

¹⁹ Jones & Stokes, Delineation of Waters of the United States Jepson Parkway Project, Table 6, October 2005.

- 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-25: 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 Biological Opinion:

- To minimize disturbance of breeding and dispersing California tiger salamanders, all construction activity within California tiger salamander upland habitat (defined as all habitat within 0.7 miles of aquatic habitat) will be conducted during the dry season between May 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 for approval to extend the work period.
- To minimize disturbance and mortality of adult and juvenile California tiger salamanders in aquatic habitat, STA or the appropriate local agency will minimize the extent of ground-disturbing activities within aquatic habitats by limiting 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 wetland site and construction area.
- To minimize disturbance and mortality of adult and juvenile California tiger salamanders within underground burrows, STA or the appropriate local agency will minimize the extent of ground-disturbing activities within upland habitat (grasslands within 0.7 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 0.7 miles of aquatic habitat.
- 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. The biologist will look for California tiger salamanders during grading, excavation, and vegetation-removal activities. If a California tiger salamander is discovered, construction activities will cease until the salamander has been removed from the construction area and released near a suitable burrow at least 300 feet away from the construction area.

Mitigation Measure BR-26: Compensate for Removal and Disturbance of California Tiger Salamander Habitat. Consistent with the Draft MSHCP, 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 Biological Opinion. STA or the

appropriate local agency will preserve additional upland habitat within a USFWS-approved conservation area at a minimum 1:1 ratio (1 acre created or preserved for each 1 acre removed) and aquatic habitat at a minimum 3:1 ratio. STA or the appropriate local agency will coordinate or consult with USFWS to determine the appropriate compensation ratio and location of the conservation area.

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

Methodology

Because existing and ongoing development and agricultural activities are extensive in the project region, this analysis assumes that project construction activities would not introduce or spread new noxious weed species into previously uninfested areas. Table 3.15-8 identifies the potential 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.

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.

**Table 3.15-8
Invasive Plant Species Potentially Located in Study Area**

Invasive Plant Species	CDFA Rating	Cal-IPC Rating
Giant reed	-	A-1
Bellardia	-	B
Black mustard	-	B
Italian thistle	C	B
Yellow star-thistle	C	A-1
Bull thistle	-	B
Field bindweed	C	-
Bermuda grass	C	-
Blue gum	-	A-1
Fig	-	A-2
Sweet fennel	-	A-1
Perennial peppergrass	B	A-1
Poverty weed	C	A-1
Hyssop loosestrife	-	-
Harding grass	-	B
Himalayan blackberry	-	A-1
Medusa-head	C	A-1

Notes:

The CDFA and Cal-IPC lists assign ratings to each of the species on the lists. These ratings reflect CDFA 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 CDFA 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.

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 increase or decrease the area currently occupied by invasive weeds or the potential for spreading invasive weed species. Mitigation Measures BR-27 and BR-28 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-27 and BR-28 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-27 and BR-28 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 be anticipated to have a cumulatively considerable contribution to effects on the spread of invasive weed species.

3.15.6.3 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BR-27: Educate Construction Crews on Invasive Species Control and Prevention, and Monitor Compliance. Consistent with the Draft MSHCP, 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. STA or the appropriate local agency will ensure that the contractor will implement measures set forth in the SWPPP to revegetate and restore disturbed areas immediately after construction is complete.

Mitigation Measure BR-28: 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.