2.13 BIOLOGICAL ENVIRONMENT

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 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 in the Threatened and Endangered Species section. Wetlands and other waters are also discussed.

The information below is summarized from the Natural Environment Study (NES) prepared by Monk & Associates that includes a Wetlands Delineation Report, maps depicting the confirmed Delineation of Waters of the U.S, a site assessment and protocol survey reports for the California red-legged frog, and California tiger salamander, and a CH2MHILL survey of heritage trees. All of these reports are available for public review at the Solano Transportation Authority, One Harbor Center, Suite 130, Suisun City, CA, during normal business hours.

Biological Communities and Wildlife Habitat within the Study Area

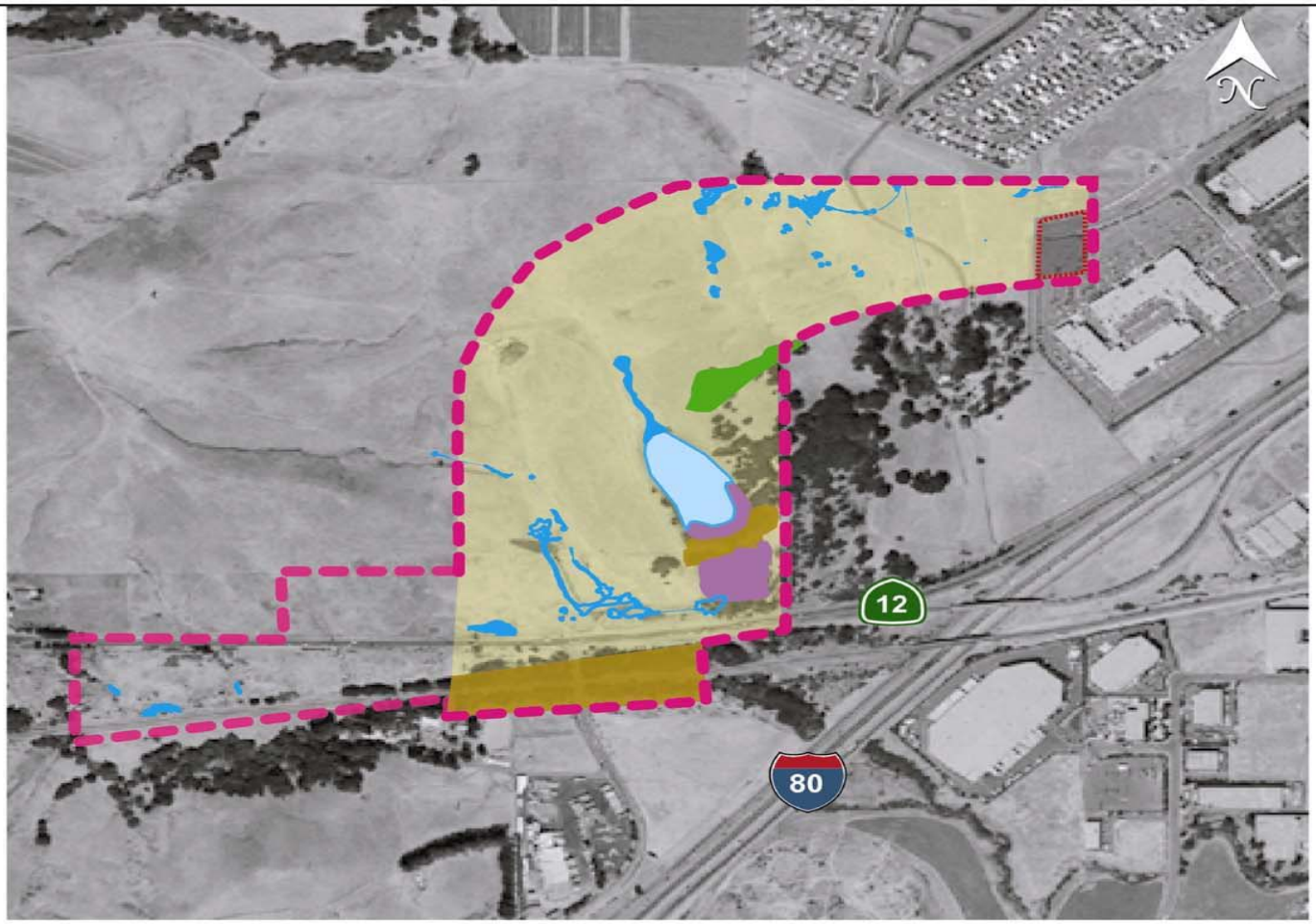
Figures 2.13-1, 2.13-2, and 2.13-3 illustrate the following habitat in the Project area.

California Annual Grassland California annual grassland habitats are characterized by dense to sparse cover of introduced Mediterranean grasses with flowering stems generally between 0.2 and 0.5 meters (0.7 and 1.6 feet). A variety of native and non-native forbs (broad-leaved plants) are often found within the grassland community. Most of the species associated with this habitat germinate in the fall, with flowering and seed production occurring during the spring. These species are dormant during the summer. Annual grassland habitats are widespread throughout the valleys and foothills of California at elevations below 1220 meters (4002 feet).

Annual grassland habitats within the study area primarily occur at the western end of the project. The annual grasslands on the West End of the study area north of SR12 and west of Business Park Drive are currently used for cattle grazing. Grassland areas east of Suisun Valley Road and north of I-80, including areas within the business park area, are ungrazed and characterized by tall annual grasses, including wild oat, foxtail barley, annual ryegrass and rip-gut brome.

Freshwater Marsh (Cattail Wetland). Freshwater marsh habitats are characterized by dense cover of perennial, emergent monocots, often 4 to 5 meters tall (13 to 16 feet), which form closed canopies. This wetland type occurs in quiet water areas that are either permanently flooded or inundated for extended periods of time. This wetland community is common along the margins of lakes and ponds. A freshwater marsh, dominated by dense cover of cattails (*Typha latifolia*), is located around the ponds on the West End of the study area just north of SR12.

MONK & ASSOCIATES



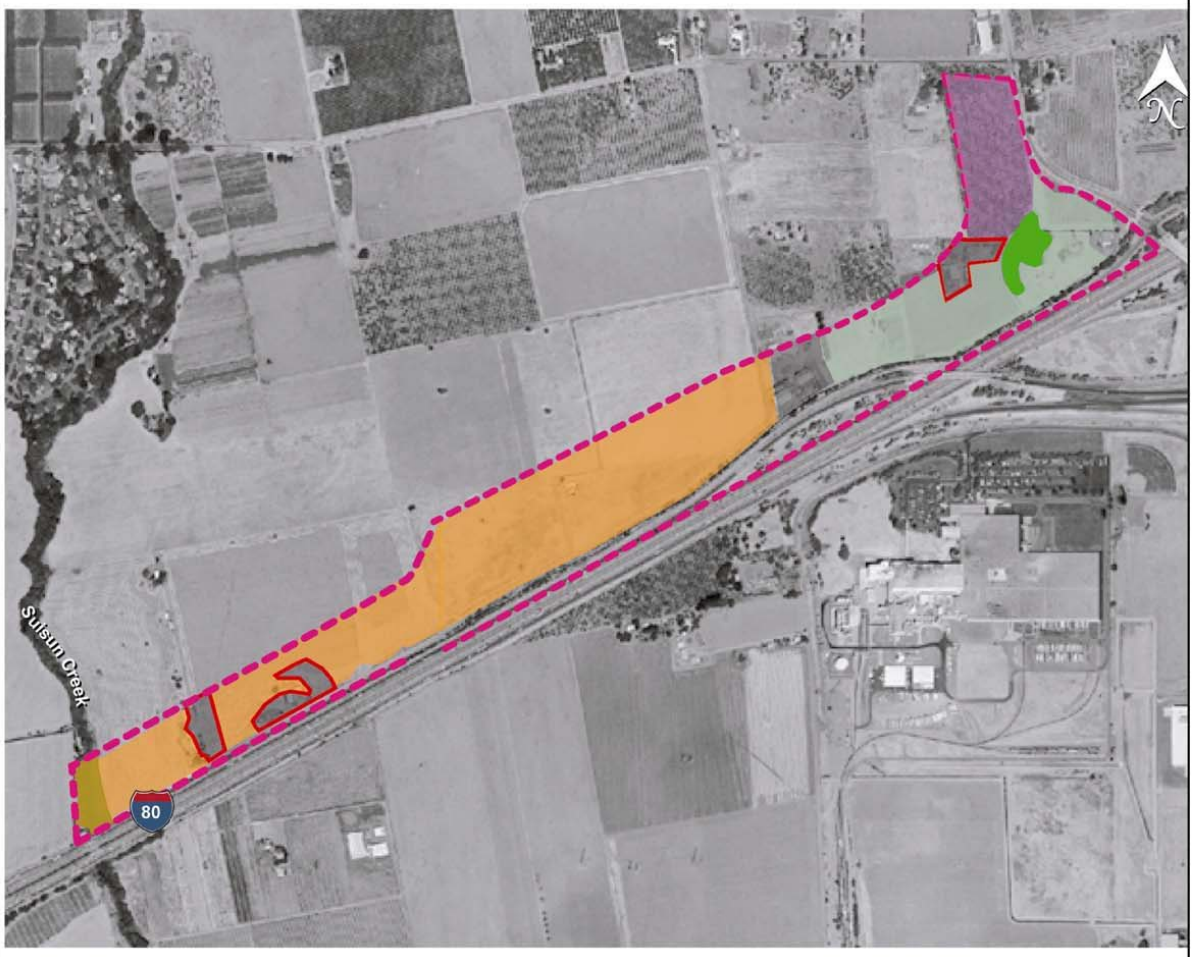
LEGEND

- Environmental Study Limits
- California Annual Grassland
- Mixed Riparian
- Open Water
- Coast Live Oak Woodland
- Freshwater Marsh
- No Access
- Developed/Landscaped
- Wetlands/Drainage Features

Figure 2.13-1: West End Habitat Map

Map Preparation Date: December 20 2005

MONK & ASSOCIATES



LEGEND

- Environmental Study Limits
- California Annual Grassland
- Mixed Riparian
- Open Water
- Freshwater Marsh
- Developed/Landscaped
- Wetlands/Drainage Features
- Coast Live Oak Woodland
- Vineyard
- Orchard
- Cultivated Fields/Vineyards

Figure 2.13-2: Central Section Habitat Map

Map Preparation Date: December 20 2005

MONK & ASSOCIATES

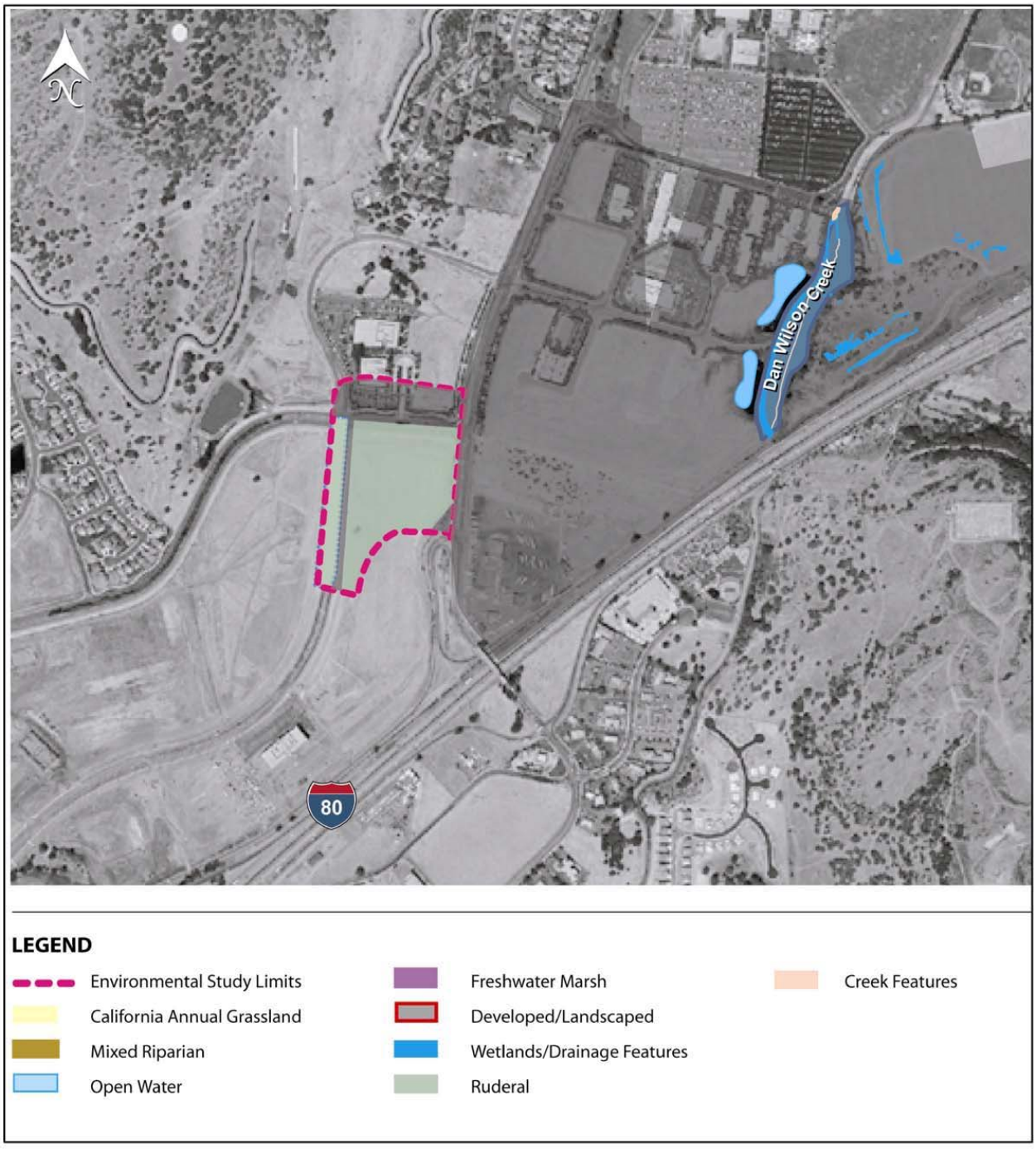


Figure 2.13-3: East End Habitat Map

Map Preparation Date: December 20 2005

Mixed Riparian Woodland. Mixed riparian woodland is characterized by medium to tall broadleaf, winter deciduous trees that often form relatively closed canopies. Riparian communities develop along rivers and streams. Mixed riparian woodlands occur along the edges of low-gradient streams throughout the Central Valley, generally at elevations less than 150 meters (492 feet). While this community was once widespread, much of the habitat has been lost due to flood control, agriculture, and urban expansion. Within the study area dense riparian habitat is associated with Suisun Creek, the two unnamed creeks on either side of Red Top Road, and on the West End of the study area north of SR12.

Riparian communities are important stopover areas for migratory warblers and other migratory passerine birds (perching birds) that need to feed and rest while on their long seasonal migrations.

Coast Live Oak Woodland. This community is characterized by medium-sized evergreen oaks with continuous or intermittent canopy. Live oak woodland typically occurs on north-facing slopes and in shaded ravines at elevations less than 1,000 meters (3,281 feet). This community occurs throughout the outer Coast Ranges from Sonoma County south to Santa Barbara County. Coast live oak woodland is present on the West End of the study area on the north side of SR12. A small, densely wooded area is present at the eastern end of the study area near Abernathy Road.

The live oak woodland present within the study area provides valuable wildlife habitat. Hundreds of vertebrate species and thousands of invertebrate species are known to be associated with California's oak habitats. Oak trees produce a variety of wildlife food opportunities. Oak acorns, leaves, wood, roots, pollen, and sap are sustenance for a myriad of insects, birds, and mammals. These trees form the basis of an elaborate food web, with herbivores eating the oak products and carnivores eating the herbivores. It is expected that many other birds, mammals, and reptiles could be found within this community in the project area at different times of the year.

Agricultural Areas. The eastern extent of the study area is located almost entirely within agricultural areas that include cultivated crops, vineyards, and orchards. Agricultural areas do not provide habitat for many resident wildlife species. The intense cultivation and manipulation of agricultural land, including pesticide and fertilizer applications, limits the number of species that can occupy or use this habitat.

Ruderal. Ruderal or weedy vegetation occurs over much of the central portion of the study area. Ruderal vegetation is adapted to high levels of disturbance, and persists almost indefinitely in areas with continuous disturbance. Ruderal vegetation within the study area includes common weed species such as mallow, rip-gut brome, wild radish, and field mustard.

Urban Mix. Developed and landscaped areas contain no natural plant communities. Developed areas include residential, commercial and industrial buildings, roadways, and parking lots.

Landscaped areas include vegetated areas that have been planted with horticultural species that are routinely maintained. Developed and landscaped areas occur in various places throughout the study area. Urban landscape communities consist of herbs,

shrubs, and trees planted for landscapes in parks and around homes, businesses, and other structures.

Tree Removal

Impact BIO1: The project would require the removal of approximately 85 native California trees and Heritage trees, as defined in the Fairfield City Code (Chapter 25, Section 25.36 through 25.38). The trees to be removed consist of approximately 7 Buckeye, 22 Willows, 2 Box Elder, 5 Walnut, 45 Oaks and 4 Bay trees. Tree and riparian habitat removal would be required at the following project locations: the proposed road crossing over Suisun Creek would result in removal of riparian habitat, and the proposed road widening at Red Top Road south of Highway 12 would result in removal of riparian habitat, along two unnamed creeks. Removal of California native trees (such as native oaks, buckeye, bay laurel, and madrone) that are greater than 6 inches DBH (diameter at breast height), or heritage trees, would be considered an *adverse biological impact*.

Mitigation Measure BIO1: A formal tree survey was conducted to determine the final number of heritage trees and California native trees (with a DBH greater than 6 inches) that would be impacted by the project. A Creek Revegetation and Enhancement Plan have been prepared which mitigates the impacts to California native trees. Each species of tree impacted by the project shall be replaced at a ratio of 3:1 (i.e., 3 trees of the same species will be replaced for every tree impacted). Replanting of native trees shall occur along Suisun Creek in areas where native trees would naturally occur, and in areas that can support more trees.

An irrigation system shall be installed in the tree mitigation area along Suisun Creek that will be maintained for three years, or until the trees have become established. Monitoring of tree survival shall be conducted for five consecutive years. Annual monitoring reports shall be submitted to the involved resource agencies.

WETLANDS AND OTHER WATERS

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

significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (ACOE) with oversight by the Environmental Protection Agency (EPA).

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 the Federal Highway Administration, 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 the California Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) 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 ACOE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

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

Impact BIO2: Waters of the United States and State: As proposed, the project alignment in the West End of the project area would impact 0.64-acre of waters of the United States and State. This acreage includes impacts to 642 linear feet (196 meters) (0.07-acre) of “other waters,” and impacts to 0.57-acre of seasonal wetlands. These impacts would be considered an adverse biological impact.

Mitigation Measure BIO2*:* Prior to impacting waters of the United States, an Individual Permit application and alternatives analysis shall be submitted to the Corps, pursuant to the 404 of the Clean Water Act. The Corps permit application will include a Mitigation and Monitoring Plan addressing impacts to waters of the United States, including wetlands. In addition, a permit should be issued by the RWQCB pursuant to Section 401 of the Clean Water Act.

Impacts to 0.57-acre of seasonal wetland habitat and 0.07-acre of other waters that will be impacted at the West End of the project area will be mitigated by creating a 1.5-acre breeding pond for California red-legged frog that will provide seasonal wetland habitat. Additional mitigation for impacts to waters of the U.S./State will be mitigated through the proposed creation of additional 0.3-acre of seasonal wetlands, as shown in Figure I.2. This will provide approximately 3:1 mitigation for impacts to waters of the U.S./State. Additional mitigation for impacts to waters of the U.S./State will include creek enhancement and preservation of existing wetlands and creek corridors in the project vicinity as approved and required by the agencies. The applicant will place all preserved wetlands in a perpetual Grant of Easement that usurps all development rights. No further

development, establishment of utilities, or any construction of any kind will be allowed within the dedicated open space preserve. The Grant of Easement shall designate Solano County as the grantee of the open space easement.

A riparian mitigation area has been identified along Green Valley Creek that will provide creek enhancement. This mitigation measure would reduce impacts to waters of the United States, and impacts to waters of the State, to a level considered *less than significant*.

PLANT SPECIES

Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and The 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). Please see the Threatened and Endangered Species Section in this document for detailed information regarding these species.

This section of the document discusses other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS) rare and endangered plants.

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. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Special Plant Species. The California Department of Fish and Game's Natural Diversity Database (CNDDB) report for the U.S. Geological Survey (USGS) quadrangles around the study area indicate that 38 special-status plant species occur in the vicinity of the project. Of the 38 species in the CNDDB report and the USFWS letter, only six may occur in the study area's area of effect; 32 of the species were excluded due to the absence of appropriate habitats. The six special-status plants with potential to occur are alkali milk-vetch (*Astragalus tener* var*. tener*), brittlescale (*Atriplex depressa*), big-scale balsamroot (*Balsamorhiza macrolepis* var*. macrolepis*), big tarplant (*Blepharizonia plumosa* var*. plumosa*), Diablo helianthella (*Helianthella castanea*), and Contra Costa goldfields (*Lasthenia conjugens*). These species are discussed in detail below.

Two List 3 plants are found within the study area: Streamside daisy (*Erigeron bioletti*), California Native Plant Society (CNPS), and long-petaled iris (*Iris longipetala*), a locally uncommon species, were observed on the West End of the study area. The remaining

plant species in the CNDDB report and USFWS letter may have historically occurred within the study area; however, suitable habitat within the study area no longer exists for these species and therefore these species will not be addressed. No state or federally-listed plants or CNPS List 1B plants were found within the study area.

Alkali Milk-Vetch (*Astragalus tener* var *tener*) Alkali milk-vetch is a CNPS List 1B species. It has no state or federal status. This annual herb is a member of the pea family. It is found in vernal pools with alkaline soils, and mesic grassland habitats with adobe clay soils where it blooms between March and June. Suitable habitat is present within the study area. This plant was not observed during appropriately-timed surveys conducted in 2003 and 2004.

Britterscale (*Atriplex depressa*) Brittlescale is a CNPS List 1B species. It has no state or federal status. This annual chenopod is found in chenopod scrub, meadows and seeps, playas, valley and foothill grassland habitats and vernal pools with alkaline or clay soils. It flowers between May and October. Suitable habitat is present within the study area. This plant was not observed during appropriately-timed surveys conducted in 2003 and 2004.

Big-Scale Balsamroot (*Balsamorhiza macrolepis* var *macrolepis*) Big-scale balsamroot is a CNPS List 1B species. It has no state or federal status. This member of the sunflower family is found in chaparral, woodland, and grassland habitats, sometimes on serpentinite soil. This perennial herb flowers between March and June. Suitable habitat is present within the study area. This plant was not observed during appropriately-timed surveys conducted in 2003 and 2004.

Big Tarplant (*Blepharizonia plumosa* ssp. *plumosa*) Big tarplant is a CNPS List 1B species. It has no state or federal status. This annual member of the sunflower family is found in grassland habitats at elevations between 50 and 505 meters (164 and 1,657 feet). It flowers between July and October. This plant was not observed during appropriately-timed surveys conducted in 2003 and 2004.

Diablo Helianthella (*Helianthella castanea*) Diablo helianthella is a CNPS List 1B species. It has no state or federal status. This member of the sunflower family is found in a variety of habitat types including broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and grassland. It is a perennial herb that blooms between April and June. This plant was not observed during appropriately-timed surveys conducted in 2003 and 2004.

Contra Costa Goldfields (*Lasthenia conjugens*) Contra Costa goldfields is a federal listed endangered species and is on CNPS List 1B. It has no state status. This species is found in valley and foothill grasslands, vernal pools, and cismontane woodlands. Its microhabitats in these communities are swales, and low depressions in open grassy areas (elevations of 3-1500 feet). It flowers between March and June. This plant was not observed during appropriately-timed surveys conducted in 2003 and 2004.

Streamside Daisy (*Erigeron biolettii*) Streamside daisy is a CNPS List 3 species. It has no state or federal status. Streamside daisy occurs on the West End of the study area. Streamside daisy is a semi-woody, yellow-flowered, perennial herb in the Sunflower Family (Asteraceae). Distinctive features of this species include discoid heads, purple-tipped, densely-glandular phyllaries in several series, and narrowly

oblanceolate leaves. Streamside daisy is found in mesic, rocky habitats (not necessarily stream sides) in North Coast woodlands, broadleaved upland forests and conifer forests in Humboldt, Mendocino, Marin, Napa, Solano and Sonoma counties (CNPS 2001). In spite of its wide distribution, it is rarely collected, and most existing collections are old.

Long-petaled Iris (*Iris longipetala*) Long-petaled iris occurs on the West End of the study area. This species is widely distributed in moist areas of the annual grassland, generally found on the easternmost east-facing slope of the property. The Napa Chapter of the CNPS considers this iris locally uncommon in Napa and Solano counties. However, this species is not included as a special-status species in the latest CNPS Inventory (CNPS 2001). It does not have a special state or federal status, either.

No mitigation is required for Plant Species in the Project area due to the fact that none of the species are status species.

ANIMAL SPECIES

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS, the National Marine Fisheries Service (NMFS) and the 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 in the section below. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NMFS 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

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

Wildlife Species of Concern

The CNDDB report for the study area indicates that 38 special-status animal species occur in the region of the proposed project. The USFWS' countywide list indicates that 86 special-status animal species, including fish and invertebrates, could occur in Solano County. The USFWS' countywide list overlaps with the CNDDB search. The combined lists for special status species potentially occurring in the project area are shown in Appendix A and B of the NES.

It should be noted that the CNDDB list is based on records submitted to the CNDDB by biologists who have identified the special-status species in the area. The USFWS' countywide list is based on distribution maps and habitat range maps of the special-

status species, and is not necessarily based upon known records of the special-status species in question. Twenty-five of the special-status species that appear on the CNDDB and USFWS lists have the potential to occur within the study area; these species are identified in Appendix A and B of the NES and are discussed below. All other special-status species known from the region would not be expected to occur within the study area due to lack of suitable habitat. These species are addressed in Appendix A and B of the NES but are not discussed in this report.

Fish

Four special-status fish species have potential to occur within the study area. Those species are discussed below:

River lamprey (*Lampetra ayresi*) is a federal species of concern and California species of special concern. Lamprey are born in freshwater streams, migrate out to the ocean, and return to fresh water as mature adults to spawn. The habitat requirements of spawning adults and ammocoetes have not been studied in California. Presumably, the adults need clean, gravelly riffles in permanent streams for spawning, while the ammocoetes require sandy backwaters or stream edges in which to bury themselves, where water quality is continuously high and temperatures cool. Suitable habitat for river lamprey is present in Suisun Creek. The proposed project, as currently designed, would not result in direct impacts to Suisun Creek. Consequently, no likely direct impacts to this species would be anticipated. However, this species would be considered in all phases of the project. If the water quality of Suisun Creek were to be negatively affected by the proposed project, USFWS would be consulted.

Pacific lamprey (*Lampetra tridentata*) is a federal species of concern. It has no state status. Adults are found in the ocean and move into freshwater streams to spawn in spring and summer. Spawning takes place in low-gradient sections of water, with gravel and sandy bottoms. Larval lamprey remain in the gravel of the stream bottoms for several years before they migrate to the ocean. Suitable habitat for Pacific lamprey is present in Suisun Creek. The proposed project, as currently designed, would not result in direct impacts to Suisun Creek. Consequently, no likely direct impacts to this species are anticipated. However, this species would be considered in all phases of the project. If the water quality of Suisun Creek were to be negatively affected by the proposed project, USFWS would be consulted.

Pacific pond turtle (*Actinemys marmorata=Clemmys marmorata*) is a federal “species of concern” and state “species of special concern.” The Pacific pond turtle is a habitat generalist, inhabiting a wide range of fresh and brackish, permanent and intermittent water bodies from sea level to about 4,500 feet above sea level. Typically, this species is found in ponds, marshes, ditches, streams, and rivers that have rocky or muddy bottoms. This turtle is most often found in aquatic environments with plant communities dominated by watercress, cattail, and other aquatic vegetation. It is a truly aquatic turtle that usually leaves the aquatic site to reproduce, aestivate, and overwinter. Recent field work has demonstrated that pacific pond turtles may overwinter on land or in water, or may remain active in water during the winter season; this pattern may vary considerably with latitude and habitat type and remains poorly understood (Jennings and Hayes 1994). It also requires upland areas for burrowing habitat where it digs nests and buries its eggs. These nests can extend from 52 feet to 1,219 feet from watercourses. Eggs are typically laid from March to August. Predators of juvenile pond turtles include the bullfrog

and Centrarchid fish (sunfish). This turtle is most visible between April and July when it can be observed basking in the sun. It eats plants, insects, worms, fish and carrion.

Pacific pond turtles are found in the ponds on the West End of the study area north of SR12 and at the ornamental ponds in the business park. The proposed project would not result in impacts to aquatic habitat occupied by this species, however, potentially occupied upland burrowing habitat could be impacted by the proposed project.

Cooper's hawk (*Accipiter cooperi*) is a California species of special concern. This raptor is also protected under the Migratory Bird Treaty Act (50 CFR 10.13). Its nest, eggs, and young are also protected under California Fish and Game Code (Sections 3503, 3503.5, and 3800). The Cooper's hawk is a yearlong resident that typically nests in heavily-wooded areas along streams, rivers, or in close proximity to springs or seeps. There are also migratory Cooper's hawks that can be found locally in the fall and winter months. This species prefers to nest in tall canopies with an open under story, usually near openings. Cooper's hawks construct nests of sticks that may be reused in subsequent years near the trunks of large trees. In the region of the study area, Cooper's hawks nest from April through July. Prey consists primarily of avian species and to a lesser extent mammalian species. Prey is usually captured in flight.

The oak woodland found within the West End of study area provides suitable nesting habitat for this species. Preconstruction nesting surveys would be conducted before trees are impacted or removed within this portion of the study area.

Tricolored blackbird (*Agelaius tricolor*) is a federal species of concern and a state species of special concern. Active nests, eggs, and young are also protected pursuant to Fish and Game Code Section 3503. A gregarious species, the tricolored blackbird is typically found near fresh water, particularly near marsh habitat. Nesting colonies are typically found in stands of cattail and bulrush (*Scirpus* spp.), although they are also known to utilize blackberry patches and thistle clumps (*Cirsium* spp. and *Cynara* spp.) adjacent to water. Flooded lands, margins of ponds, and grassy fields in summer and winter provide typical foraging habitat for this species.

This species may occur within the West End of the study area. Potential nesting habitat occurs in the dense cattails around the ponds in the West End of the study area north of SR12, approximately 400 feet from the proposed North Connector. Nesting season surveys would be necessary to determine if this species could be impacted by the project. While no impacts to nesting habitat would result from the proposed project, construction during the nesting period could result in disturbance to this species.

Golden eagle (*Aquila chrysaetos*) is a state species of special concern. This raptor is also protected under the Eagle Protection Act and the Migratory Bird Treaty Act (50 CFR 10.13). Its nest, eggs, and young are also protected under California Fish and Game Code (Sections 3503, 3503.5, and 3800). Golden eagles are found breeding throughout western North America in remote, open habitats. Typical habitats in North America include savannah woodland habitats, grasslands, aspen parkland, high and low deserts, and in taiga and zone habitats. Golden eagles feed on fresh carrion or take live prey ranging in size from small rodents to as large as newborn fawns. More typical prey includes rabbits, hares, and waterfowl. Golden eagles build nests in large trees, often oaks or conifers, or on large vertical cliffs. On rare occasions nests are found on the ground, especially in expansive prairie habitats where cliffs and/or trees are scarce.

Often this species will return each year to the same nest, stacking new sticks on the existing nest structure. Over time, nests can become piled so high with sticks that they topple over, leaving huge debris piles beneath trees or at the base of cliffs. Golden eagles nest from January until September, with peak nesting occurring in March through July.

Golden eagles likely forage over the grassland habitats found within the study area. This species is unlikely to nest within the study area due to limited potential nest sites and susceptibility to disturbance due to the close proximity of nearby roads and highways. However, preconstruction nesting surveys would be conducted before trees are impacted or removed within the study area. If golden eagles are identified within the study area, a buffer area would have to be established during the nesting season.

Grasshopper sparrow (*Ammodramus savannarum*) is a federal species of concern. Active nests, eggs, and young are also protected pursuant to Fish and Game Code Section 3503 and by the Migratory Bird Treaty Act. This often shy and elusive sparrow is typically found in dry, dense grasslands, especially those with a variety of grass and tall forb species. This sparrow feeds primarily upon insects, and also on grass and forb seeds. Typically, it builds a grass/forb nest at the base of a dense clump of grasses or forb vegetation. Grassland found in the West End of the study area may provide habitat for this species, however, grazing activities have reduced the densities of grass and forb vegetation, thereby limiting nesting opportunities. Thus, the grasshopper sparrow is unlikely to be affected by the proposed project. Regardless, preconstruction surveys for ground-nesting species would be conducted prior to any ground disturbance within the study area.

Short-eared owl (*Asio flammeus*) is a California species of special concern. It is also protected by the Migratory Bird Treaty Act (50 CFR Section 10.13), and its nest, eggs, and young are protected under California Fish and Game Code (Sections 3503, 3503.5, and 3800). Short-eared owls often hunt over grasslands, lowland meadows and marsh habitats where they seek small mammal prey, particularly microtine rodents (e.g., California meadow vole, *Microtus californicus*). Tule patches or tall grasses are needed for nesting and for seclusion during the day. Nests consist of a slight depression on the ground or rarely in a burrow.

This species has potential to migrate through the study area and to forage on the site. The study area may provide potential seasonal foraging habitat for this species, however, suitable nesting habitat is absent within the study area. Regardless, preconstruction surveys for ground-nesting species would be conducted prior to any ground disturbance within the study area. If this owl is found nesting onsite, appropriate nesting buffers would be established until the young have fledged.

Western burrowing owl (*Athene cunicularia hypugaea*) is a federal species of concern and a California species of special concern. Its nest, eggs, and young are also protected under California Fish and Game Code (Sections 3503, 3503.5, and 3800). The burrowing owl is also protected from direct take under the Migratory Bird Treaty Act (50 CFR 10.13). Burrowing owl habitat can be found in annual and perennial grasslands, characterized by low-growing vegetation. Typically, the burrowing owl utilizes rodent burrows, usually ground squirrel burrows, for nesting and cover. They may also on occasion dig their own burrows, or use manmade objects such as concrete culverts or riprap piles for cover. They exhibit high site fidelity, reusing burrows year after year.

Occupancy of suitable burrowing owl habitat can be verified at a site by observation of a pair of burrowing owls during the spring and summer months or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement (white wash) at or near a burrow. Burrowing owls typically are not observed in grasslands with tall vegetation or wooded areas because the vegetation obscures their ability to detect avian and terrestrial predators. Since burrowing owls spend the majority of their time sitting at the mouths of their burrows, grazed grasslands seem to be their preferred habitat because it allows them an unobstructed 360 degree view of their environment.

Burrowing owls were observed in the West End of the study area north of SR12 in November 2003 and March 2004. The West End of the study area provides suitable nesting habitat for the burrowing owl. Nesting surveys would be conducted in the spring of the year prior to construction. If burrowing owls are not identified during the spring nesting surveys, preconstruction surveys would still be necessary 15 days prior to earth-moving activities to avoid impacting any owls that may have moved into the study area. Spring nesting surveys for burrowing owls would be conducted in accordance with the survey requirements detailed in the CDFG's October 17, 1995 Staff Report on Burrowing Owl Mitigation.

White-tailed kite (*Elanus caeruleus*) is a federal species of concern and is fully protected under the California Fish and Game Code. Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time (Section 3511). It is also protected under the Federal Migratory Bird Treaty Act (50 CFR 10.13). The white-tailed kite is typically found foraging in grassland, marsh, or cultivated fields where there are dense-topped trees or shrubs for nesting and perching. They nest in a wide variety of trees of moderate height and sometimes in tall bushes, such as coyote bush. Native trees that are used for nesting include live and deciduous oaks (*Quercus* spp.), willows (*Salix* spp.), cottonwoods (*Populus* spp.), sycamores (*Platanus* spp.), maples (*Acer* spp.), and Monterey cypress (*Cupressus macrocarpa*). Although the surrounding terrain may be semiarid, kites often reside near water sources, where prey is more abundant. The particular characteristics of the nesting site do not appear to be as important as its proximity to a suitable food source (Shuford 1993). Kites primarily hunt small mammals, with California meadow voles (*Microtus californicus*) accounting from between 50 to 100 percent of their diet.

This species is likely to forage over the study area and may nest within the study area. Preconstruction nesting surveys would be conducted before trees or shrubs are impacted or removed within the study area. If nesting kites were to be found within the study area, a buffer would be established until the young have fledged.

Northern harrier (*Circus cyaneus*) is a California species of special concern. This raptor is also protected under California Fish and Game Code Section 3503.5, which protects nesting raptors and their eggs/young, as well as the Migratory Bird Treaty Act. Northern harriers build grass-lined nests on the ground within dense, low-lying vegetation in a variety of habitats, though they are typically found nesting in grassland or marsh habitats. They usually nest on level to near-level ground. This species is particularly vulnerable to ground predators while nesting and is subject to disturbance by agricultural practices.

The grassland community in the West End of the study area north of SR12 provides suitable foraging and nesting habitat for the northern harrier. A northern harrier was

observed foraging over grassland habitat in this area. Preconstruction nesting surveys would be conducted before earth-moving activities commence within the study area. If nesting northern harriers are found within the study area, a buffer would be established until the young have fledged.

Loggerhead shrike (*Lanius ludovicianus*) is a California species of special concern and a federal species of concern. Active nests, eggs, and young are also protected pursuant to Fish and Game Code Section 3503 and the Migratory Bird Treaty Act. It is also protected under Fish and Game Code section 3800. This small, predaceous bird of open and often arid habitats prefers areas with scattered shrubs, trees, posts, fences, utility lines, and other acceptable perching locations. This shrike preys mostly upon large insects, but also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various invertebrates. It typically constructs a stick nest on a stable branch in a densely foliated tree or shrub such as blackberry, rose (*Rosa* spp.) and willows (*Salix* spp). Site selection is apparently based on the degree of protective cover rather than on a particular plant species. Although nest height varies from 1.5 to 30 feet above ground, it is rarely less than 3 feet. The open grassland community in the West End of the study area provides suitable hunting ground for loggerhead shrikes, and the willows, oaks, and eucalyptus trees provide potentially suitable nesting habitat. A loggerhead shrike was observed in the West End of the study area in March 2004. Preconstruction nesting surveys would be conducted before trees are impacted or removed within the study area.

Pallid bat (*Antrozous pallidus*) is a California species of special concern, but has no federal status. This bat is a locally common species of low elevations in California, occurring throughout the State except for in the high Sierra Nevada from Shasta to Kern Counties, and the northwestern corner of the state from Del Norte and western Siskiyou Counties to northern Mendocino County. It occurs in a wide variety of habitats and is most common in open, dry habitats with rocky areas for roosting. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings; these roosts must protect bats from high temperatures. Night roosts may be in more open sites such as porches and open buildings. A social bat, it roosts in groups of 20 or more.

Suitable roosting habitat for this bat occurs on cliffs in the West End of the study area north of SR12, although these cliffs would not be impacted by the proposed project. In general, trees in the area of impact do not provide suitable roosting or nesting cavities. Regardless, preconstruction surveys would be conducted before trees or potential roost structures are impacted or removed within the study area.

Yuma myotis bat (*Myotis yumanensis*) is a federal species of concern. It has no state status. This myotis is common and widespread in California. It is found in a wide variety of habitats ranging from sea level to 11,000 feet, but is uncommon to rare above 8,000 feet. Optimal habitats are open forests and woodlands with sources of water over which to feed, and it roosts in buildings, mines, caves or crevices. This species also has been seen roosting in abandoned swallow nests and under bridges. Suitable roosting habitat for this bat occurs within the study area around bridges and/or swallow habitat. Preconstruction surveys would be conducted before trees or potential roost structures are impacted or removed within the study area.

Project Impacts and Mitigation Measures
Mitigation for habitat loss resulting from construction of the North Connector project would include the establishment of a permanent conservation easement over lands considered to be important to special-status species, such as California red-legged frog, that would be impacted by the project. Mitigation for impacts to California red-legged frog habitat includes creation of breeding pond habitat that would result in a net gain of open water habitat and associated wetlands. The land acquisition will result in a net gain of permanently preserved land in the area. Finally, the mitigation measures identified below for each special status species and biological resources that may be affected by the proposed project serve to mitigate for cumulative impacts to those species and resources in the area. Several mitigation measures call for preservation ratios of 1:1, which will result in a net increase in preserved resources.

This mitigation would offset the negative effects of the project and would result in *less than significant* cumulative biological impacts.

Impact BIO3: Pacific pond turtle: The pacific pond turtle is a state species of special concern. Pacific pond turtles are found in the ponds located in the West End of the study area north of SR12 and in the ornamental ponds in the business park. The proposed project would not result in impacts to aquatic habitat; however, potentially occupied upland burrow sites may be impacted by the proposed project. Impacts to this species would therefore be considered potentially adverse.

Mitigation Measure BIO3: Since avoidance of potentially occupied upland burrow sites is not possible, mitigation would include preserving affected upland habitat within 1000 feet of the pond located in the West End of the study area at a 1:1 ratio, or as otherwise determined mutually by the STA and the resource agencies. Land identified to mitigate impacts to Pacific pond turtle would be protected in perpetuity either by a conservation easement or via fee title acquisition.

Impact BIO4: Nesting Raptor: A red-tailed hawk (*Buteo jamaicensis*) was observed displaying territorial behavior over a eucalyptus tree located in the West End of the study area north of SR12. If tree removal or ground disturbance is proposed between March 1st and September 1st nesting raptors, such as Cooper's hawk, golden eagle, western burrowing owl, short-eared owl, white-tailed kite, and northern harrier could be impacted. Birds and their nests are protected under California Fish and Game Code (Sections 3503, 3503.5), and the Migratory Bird Treaty Act. Impacts to nesting raptors, their eggs, and/or young are regarded as a potentially adverse.

Mitigation Measure BIO4: In order to avoid impacts to nesting raptors, a nesting survey should be conducted 15 days[1] prior to commencing with construction work if this work would commence between March 1st and September 1st. The raptor nesting surveys should include examination of all trees within 1000 feet of the entire proposed construction corridor, not just trees slated for removal. Nesting surveys should be conducted in the spring the year prior to construction of the project, and again 15 days prior to construction of the project.

If nesting raptors are identified during the surveys, the drip line of the nest tree should be fenced with orange construction fencing, and a 500-foot radius around the nest tree

[1] Department of Fish and Game Draft Agreement, Fremont Grade Separation, April 20, 2005.

should be staked with bright orange lath or other suitable staking. No construction or earth-moving activity shall occur within this 500-foot staked buffer until it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1st. This date may be earlier than August 1st, or later, and would have to be determined by a qualified raptor biologist.

A nesting survey should also be conducted for ground nesting raptors, such as western burrowing owl, short-eared owl, and northern harrier. Grasshopper sparrow nests can also be looked for during this survey. The West End of the study area provides suitable nesting habitat for these species. Ground nesting surveys should be conducted in the spring the year prior to construction of the project and again 15 days prior to construction of the project.

Spring nesting surveys for burrowing owls and the other ground nesting birds would be conducted in accordance with the survey requirements detailed in the CDFG October 17, 1995 Staff Report on Burrowing Owl. CDFG's survey requirements in the Staff Report read as follows: “a minimum of four sunrise/sunset surveys will be conducted before they will accept a negative finding.” If burrowing owls are not identified during the spring nesting surveys, preconstruction surveys would still be necessary 15 days prior to earth-moving activities to avoid impacting any owls that may have moved into the study area. The CDFG Staff Report states that preconstruction surveys need to be completed within 15 days of grading prior to CDFG accepting a survey conclusion that no burrowing owl occur in a proposed study area (i.e., negative findings). If no owls were found during these surveys, no further regard for the burrowing owl would be necessary.

If burrowing owls are detected on the site during the breeding season (peak of the breeding season is April 15 through July 15), and appear to be engaged in nesting behavior, a fenced 300-foot buffer would be required between the nest site(s) (i.e., the active burrow(s) and any earth-moving activity or other disturbance in the study area. This 300-foot buffer could be removed once it is determined by a qualified raptor biologist that the young have fledged. Typically, the young fledge by August 31. This date may be earlier than August 31, or later, and would have to be determined by a qualified raptor biologist. This mitigation is sufficient for the short-eared owl, northern harrier, and grasshopper sparrow as well.

If burrowing owls were found in the study area, a qualified raptor biologist would also need to delineate the extent of burrowing owl habitat on the site. To mitigate impacts to burrowing owls, CDFG requires 6.5 acres (2.6 hectares) of replacement habitat be set aside and protected in perpetuity per pair of burrowing owls or unpaired resident bird. Such a set-aside would offset permanent impacts to burrowing owl habitat. The following example illustrates how the extent of mitigation land necessary to offset impacts to burrowing owls would be determined: if two pair of burrowing owls are identified in the study area, or if one pair and one resident bird are identified, 13 acres (5.2 hectares) of mitigation land must be acquired. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to CDFG. Land identified to offset impacts to burrowing owls must be protected in perpetuity either by a conservation easement or via fee title acquisition. A Mitigation Plan and Mitigation Agreement must be prepared and submitted to CDFG for approval. The Solano Transportation Agency (lead agency) must receive copies of the Mitigation Plan and Mitigation Agreement by and

between the applicant and CDFG prior to issuing a grading permit for the proposed project.

The mitigation plan would need to identify the mitigation site and any activities necessary to enhance the site, including the construction of artificial burrows and maintenance of California ground squirrel populations in the mitigation preserve. In addition, for each pair of burrowing owls found in the construction area, three artificial nesting burrows would be created at the preserve site. The Plan should also include a description of monitoring and management methods proposed at the mitigation site.

Monitoring and management of any lands identified for mitigation purposes would be the responsibility of the applicant for at least five years. An annual report would be prepared for submittal to CDFG by December 31st of each monitoring year. Contingency measures for any anticipated problems should be identified in the plan.

Impact BIO5: Nesting Passerine and Special Status Bird Species: If tree removal or ground disturbance is proposed between the months of March 1st and September 1st, nesting passerine birds, and special-status birds such as grasshopper sparrow, loggerhead shrike, and tricolored blackbirds could be impacted. Birds and their nests are protected under California Fish and Game Code (Sections 3503, 3503.5), and the Migratory Bird Treaty Act. Impacts to nesting birds, their eggs, and/or young are regarded as a potentially adverse.

Mitigation Measure BIO5: In order to avoid impacts to common nesting birds and special-status birds, a nesting survey should be conducted 15 days prior to commencing with construction work if this work would commence between March 1st and September 1st. Nesting surveys should be conducted throughout the entire construction corridor in the spring the year prior to construction of the project and again 15 days prior to construction of the project.

If special-status birds, such as loggerhead shrike or tricolored blackbird, are identified nesting within the area of affect, a 200-foot radius around the nest should be staked with bright orange spray painted lath or other suitable staking. No construction or earth-moving activity should occur within this 200-foot staked buffer until it is determined by a qualified biologist that the young have fledged and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1st, but may occur earlier or later, and would have to be determined by a qualified biologist.

If common passerine birds such as American robins, scrub jays, and northern mockingbird are identified nesting in the trees proposed for removal, tree removal should be postponed until it is determined by a qualified ornithologist that the young have fledged and have attained sufficient flight skills to leave the study area. Typically, most passerine birds can be expected to complete nesting by July 1st, with young attaining sufficient flight skills by early July.

Impact BIO6: Special Status Bats: The pallid bat is a state species of special concern, and the Yuma myotis bat is a federal species of concern. These bats may utilize trees or other potential roost structures found within the study area. Impacts to occupied roost trees or structures would be considered potentially adverse.

Mitigation Measure BIO6: Preconstruction surveys should be conducted before trees or potential roost structures are impacted or removed within the entire study area. A biologist with experience conducting bat surveys should conduct this survey. If no bats are found during the survey, tree removal and structure demolition work shall be conducted within one month of the survey. If a maternity colony is observed during the surveys, no eviction/exclusion should be allowed during the maternity season (typically between April 15 and July 30). If a non-reproductive group of bats are found within a building or roost tree, they should be evicted by a qualified biologist and excluded from the roost site prior to work activities during the suitable time frame for bat eviction/exclusion (i.e., February 20 to April 14 and July 30 to October 15).

THREATENED AND ENDANGERED SPECIES

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the USFWS and the NMFS 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. The 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.

Valley Elderberry Longhorn Beetle. The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) was designated as federally threatened in its entire range on August 8, 1980 (Federal Register 45: 52803-52807). Critical habitat was designated for this species at the same time.

The valley elderberry longhorn beetle is a medium-sized (about 2 cm/8 inches long) beetle. The forewings of the female are dark metallic green with red margins, whereas

those of the male are primarily red with dark green spots. This beetle is associated with elderberry trees (*Sambucus* spp.) during its entire life cycle. Elderberry trees/shrubs are associated with riparian habitats which occur along rivers and streams. It appears that in order to serve as habitat, the shrubs must have stems that are 1.0 inch or greater in diameter at ground level. The adults eat the elderberry foliage until about June when they mate. The females lay eggs in crevices in the bark. Upon hatching the larvae then begin to tunnel into the tree where they will spend 1-2 years eating the interior wood which is their sole food source. The adults emerge from pupation inside the wood of these trees in the spring as the tree begins to flower. The exit holes made by the emerging adults are distinctive, small, oval openings (Barr 1991). Often these holes are the only indication that the beetles occur in an area.

Valley elderberry longhorn beetle is reported to occur along the eastside of Green Valley Road, north and south of the intersection with Business Center Drive, which is in close proximity to the study area (City of Fairfield 2000). Surveys for this species were conducted by Monk & Associates biologists in May 17 and June 6, 2004, and February 22, 2006 to determine if this species is present within the study area. Several of the elderberry trees/shrubs present along Suisun Creek had appropriately-sized beetle exit holes indicating past use by valley elderberry longhorn beetle. While most of the exit holes were from previous years, fresh exit holes were found on an elderberry tree/shrub near the southern end of the study area along the creek. All of these holes indicate that habitat for valley elderberry longhorn beetle occurs within the project area along Suisun Creek.

The extent of valley elderberry longhorn beetle habitat along Suisun Creek was determined in accordance with U.S. Fish and Wildlife Service's *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999). All elderberry plants along Suisun Creek were mapped using a Trimble Pro-XR Global Positioning System (GPS) having sub-meter accuracy. In addition, all valley elderberry shrub/trees with individual stems or clusters of stems greater than one inch in diameter at ground level were tagged using numbered aluminum tree tags and then entered as a data point in the GPS file. Similarly, the "diameter size class" of the recorded stems was entered into the GPS file. Mitigation measures detailed in this report will address potential impacts to this species.

Callippe silverspot butterfly (*Speyeria callippe callippe*) is a federal endangered species. It has no state status. This butterfly is found in native and non-native annual grassland habitats that support either its host and/or food plants. Female Callippe silverspots lay their eggs on the dry remains of Johnny jump-up (*Viola pedunculata*) plants or on the surrounding debris. Within about one week of hatching, the larvae eat their egg shells and then wander a short distance to spin a silk pad upon which they spend the summer and winter. Upon completion of their diapause the following spring, the larvae immediately seek out Johnny jump-ups on which to feed. In May, each larva forms a pupa. Adults emerge in about two weeks and live for approximately three weeks. The flight period of this butterfly ranges from mid-May to early-July, typically ending around July 4th[2]. Adult nectar plants that this butterfly feeds on includes Italian thistle, milk thistle (*Silybum marianum*), bull thistle (*Cirsium vulgare*), California buckeye (*Aesculus californica*), and coyote mint (*Monardella villosa*). Ideal habitat conditions for this species are grasslands on hilltops (where mating occurs) that support larval food plants and/or nectar plants. However, all three of these habitat components need not be

[2] D. Arnold, Entomologist, personal communication with S. Lynch of Monk & Associates, Inc., 1998.

present in one area. Presence of the larval food plant (Johnny jump-up) may be enough for this butterfly to lay its eggs. Once the larvae metamorphose, adult butterflies may travel up to several miles to find suitable nectar plants.

The presence of Johnny jump-ups in the grasslands within the West End of the study area provides potential host plants for Callippe silverspot butterfly. Surveys for Johnny jump-up plants were conducted in March 2004. Two distinct populations of Johnny jump-up were identified in the West End of the study area. The project as currently designed does not impact either population of host plant. Consequently, no direct impacts to Callippe silverspot butterfly, or the host plant, are anticipated.

California freshwater shrimp (*Syncaris pacifica*) is a state and federal endangered species. This shrimp is known from only 11 streams in Napa, Sonoma, and Marin Counties. The 11 streams are East Austin, Salmon, Lagunitas, Big Austin, Sonoma, Huichica, Green Valley, Jonive, Walker, Yulupa, and Blucher. The freshwater shrimp inhabits quiet portions of tree-lined streams with underwater vegetation and undercut banks with exposed tree roots.

Decline in shrimp populations is attributed to degradation and loss of their habitat resulting from increased urbanization, overgrazing, agricultural development, dam construction, and water pollution. This shrimp is also threatened by the introduction of exotic predators, especially sunfish. Although this shrimp species has a very restricted range and is known from only 11 streams, potential habitat for this species occurs along Suisun Creek. The proposed project, as currently designed, would not result in direct impacts to Suisun Creek. Consequently, no likely direct impacts to California freshwater shrimp are anticipated. If water quality in Suisun Creek were anticipated to be negatively affected by the proposed project, a qualified biologist would conduct surveys for this invertebrate species.

Steelhead. All naturally spawned populations of the Central Valley steelhead (*Oncorhynchus mykiss*) found in the Sacramento and San Joaquin Rivers and their tributaries were designated as federally threatened on June 17, 1998. Central Valley steelhead does not have a state status. Steelhead are the anadromous (that is, fish species born in the stream that migrate to the ocean for their adult phase) form of rainbow trout, a salmonid species native to western North America and the Pacific Coast of Asia. In North America, steelhead are found in Pacific Ocean drainages from southern California through Alaska. In California, known populations occur in coastal rivers and streams from Malibu Creek in Los Angeles County up to the Smith River near the Oregon border, and in the Sacramento River system. Steelhead were once abundant in coastal and Central Valley rivers and streams. A rough estimate of the total statewide steelhead population is 250,000 adults. This is less than half the population of 30 years ago. The major factor causing steelhead population decline is freshwater habitat loss and degradation. This has resulted from three main factors: inadequate stream flows, blocked access to historic spawning and rearing areas due to dams, and human activities that discharge sediment and debris into waterways. Suitable habitat for steelhead is present in Suisun Creek, and the NMFS has records of steelhead in this creek[3]. The proposed project, as currently designed, will not result in direct impacts to Suisun Creek, however, riparian habitat will be removed. This may result in indirect impacts to this fish species. During a pre-project consultation meeting with Ms. Maura

[3] G. Stern, NMFS, pers. comm. with H. Kingma, Monk & Associates, Inc., January 12, 2004

Egan-Moody of NMFS on March 18, 2004, mitigation requirements were discussed. This species would be considered in all phases of the project. If the water quality of Suisun Creek were to be negatively affected by the proposed project, NMFS would be consulted.

Chinook Salmon. The Sacramento-San Joaquin Chinook salmon (*Oncorhynchus tshawytscha)* of California is divided into four groups, or races: winter, spring, fall, and late-fall, based on the timing of the migration of spawning adults. The Sacramento River winter-run Chinook salmon was listed as federally threatened in 1989 and reclassified as endangered in 1994. This race of Chinook salmon was state listed as endangered in 1989. The Central Valley spring-run Chinook salmon was designated as federally threatened in all naturally spawned spring-run populations from the Sacramento and San Joaquin River mainstreams and their tributaries on December 29, 1999. This race of Chinook salmon is also a state-listed threatened species. The Central Valley fall/late fall-run Chinook salmon is a federal candidate species and a California species of special concern. Suitable habitat for Chinook salmon is present in Suisun Creek, and NMFS has historical records of fall-run Chinook salmon in this creek. The study area includes "essential fish habitat" for fall-run Chinook salmon, as well as winter- and spring-run[4] . The proposed project, as currently designed, would not result in direct impacts to Suisun Creek. Consequently, no likely direct impacts to this fish species or any essential fish habitat are anticipated. However, this species would be considered in all phases of the project. If the water quality of Suisun Creek were to be negatively affected by the proposed project, NMFS would be consulted.

California tiger salamander On July 27, 2004 the USFWS determined that they would list the Central California Distinct Population Segment (DPS) of California tiger salamander (CTS) (*Ambystoma californiense*) as threatened and would down list the status of the Sonoma and Santa Barbara DPSs from endangered to threatened. (The listing changes became effective on September 3, 2004). The Santa Barbara DPS was originally listed as endangered by the USFWS on September 21, 2000 while the Sonoma County DPS was originally emergency listed as endangered by the USFWS on July 22, 2002. The study area occurs within the region where populations of CTS are designated by the USFWS as the Central California DPS.

On August 10, 2004, the USFWS designated Critical Habitat for the Central California DPS. USFWS proposed 47 critical habitat units for the salamander, encompassing a total of 382,666 acres (154,859 hectares), in portions of 20 counties in Central California: Alameda, Amador, Calaveras, Contra Costa, Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Clara, Solano, Stanislaus, Tulare, and Yolo. This critical habitat rule does not include San Mateo or Santa Cruz counties, or the Sonoma or Santa Barbara populations.

The CTS is also a California "species of special concern." This title affords the CTS no legally mandated protection; however, pursuant to CEQA (14 CCR §15380), this species must be considered in any project that will undergo, or is currently undergoing CEQA review, and/or any project that must obtain an environmental permit(s) from a public agency (e.g., the U.S. Army Corps of Engineers). The CTS is also protected under Title 14 of the California Code of Regulations (CCR). Under Title 14, CCR 41 (1996), CTS is

[4] S. Boring, NMFS, pers. comm. with D. Waller, CH2M Hill, April 3, 2003

a protected amphibian that may only be taken or possessed under a special permit issued by the CDFG pursuant to sections 650 and 670.7 of these regulations, or Section 2081 of the Fish and Game Code.

The CTS occurs in grasslands and open oak woodland that provide suitable aestivation (i.e., summer retreats) and/or breeding habitats. California tiger salamander spend the majority of their lives underground in California ground squirrel (*Spermophilus beechyi*) burrows, Botta's pocket gopher (*Thomomys bottae*) burrows, and other subterranean refugia. This salamander has also been found in areas with no apparent underground retreats. In these areas it may utilize cracks in the ground or may burrow into loose soil, or seek refuge in and under rotting logs or fallen branches. The CTS emerges from its aestivation sites for only a few nights each year during the rainy season to migrate to its breeding ponds, typically during a driving rainstorm. Seasonal wetlands, vernal pools, or artificial impoundments such as stock ponds that typically do not support fish, bullfrogs, red swamp crayfish, or signal crayfish provide suitable breeding habitat. Breeding ponds and streams typically hold water at least until the month of May to allow time for larvae to fully metamorphose. Since the tiger salamander may migrate up to 0.62-mile or more from its underground retreats to breeding ponds (Brode 1997; Monk & Associates unpublished data 1997), unobstructed migration corridors are critical to this animal's survival.

The closest mapped critical habitat in Solano County is 17 miles east of the project area in Central Valley habitats. The closest records for CTS are in vernal pool habitats located approximately 7.8 miles east of the study area (CNDDB 2003). Since there is no mapped critical habitat within many miles of the project site, and since there are no records for CTS in similar habitats as found within the study area in Solano County, CTS are unlikely to be present within the study area. However, a habitat assessment for CTS was prepared for the study area following the joint USFWS/CDFG protocol: *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (October 2003). This guidance document provides two procedures to accurately assess the likelihood of CTS presence in the vicinity of a project site, including: 1) an assessment of CTS locality records and potential CTS habitat in and around the study area; and 2) focused field surveys of breeding pools and their associated uplands to determine whether CTS are likely to be present. On April 26, 2004, a CTS site assessment report was submitted to CDFG and USFWS (M&A 2004a) that requested authorization to conduct spring larval surveys for CTS in the ponds north of Highway 12 on the West End of the project area. On April 27, 2004, prior to the July 27, 2004 federal listing of the Central California DPS of the CTS, authorization was received from CDFG (Mr. Scott Wilson – Region 3) to conduct funnel trapping for CTS in these ponds. Funnel trapping and dip-netting yielded negative findings. On October 11, 2004 the California tiger salamander survey report was submitted to CDFG and USFWS (M&A 2004d). The assessment and survey demonstrates that CTS do not likely occur within the study area. As such, no impacts are expected to occur to CTS from implementation of the proposed project. The USFWS has been contacted to determine if they concur with this finding.

California red-legged frog The California red-legged frog (*Rana aurora draytonii*) is a federal listed threatened species and a state "species of special concern." The study area is east of the Jameson Canyon-Lower Napa River core recovery area for California red-legged frog (USFWS 2002). The California red-legged frog is typically found in slow-flowing portions of perennial streams and in intermittent streams that maintain water in the summer months. This frog is also found in hillside seeps that maintain pool

environments or saturated soils throughout the summer months (Monk & Associates, Inc. personal observations). Riparian vegetation such as willows and emergent vegetation such as cattails (*Typha* spp.) are preferred red-legged frog habitats, though not necessary for this species to be present. This frog is also found in ponds. Larval California red-legged frogs require 11-20 weeks of permanent water to reach metamorphosis.

Populations of California red-legged frog will be reduced or eliminated from aquatic habitats supporting non-native species such as bullfrogs, Centrarchid fish species (such as sunfish, blue gill, or large mouth bass), and signal and red swamp crayfish, all of which are known California red-legged frog predators. However, the presence of these non-native species does not preclude the presence of the California red-legged frog (Monk & Associates unpublished data).

In April and May of 2003, biologists conducted surveys to evaluate the suitability of habitats for California red-legged frog in the other portions of the study area. The areas surveyed in April and May of 2003 included Suisun Creek and the West End of the project area north of Highway 12. Areas surveyed also included Dan Wilson Creek. However, this creek is no longer part of the North Connector Project area and thus is not discussed further in this report. The habitat assessments completed for Suisun Creek and the West End of the project area were submitted to the USFWS in a report dated June 23, 2003 (M&A 2003a). The report concluded there was suitable habitat for the California red-legged frog and that protocol surveys of Suisun Creek should commence. The report also documented that on May 27, 2003 biologists observed California red-legged frog in a drainage feature on the West End of the project area. Accordingly, California red-legged frog are assumed to be present throughout the West End of the project area, and therefore no further surveys of this area were required. A juvenile California red-legged frog was also observed in the same drainage on March 17, 2004.

Written authorization was received in an email from USFWS on August 19, 2003 to conduct protocol surveys in Suisun Creek. Biologists conducted the protocol surveys for California red-legged frog in Suisun Creek in August and September of 2003. No California red-legged frogs were observed during the protocol surveys. The protocol California red-legged frog survey report was submitted to the USFWS on September 29, 2003. In addition, biologists conducted a habitat assessment survey for this species along the creeks south of Highway 12, near Red Top Road, and no California red-legged frogs were observed in association with these intermittent creeks. The report concluded that there may be marginal habitat for California red-legged frogs within the two intermittent unnamed creeks at Red Top Road. Protocol surveys for California red-legged frog were conducted in the creeks along Highway 12, west of I-80 at Red Top Road in September 2004. (M&A 2004c)

Other amphibian studies augmented information on the presence of California red-legged frogs in the study area. In May, 2004 funnel trapping for California tiger salamander larvae was being conducted in the stock ponds on the West End of the project area. On May 6, 2004 numerous California red-legged frog larvae were found in the funnel traps in the large pond on the Mangels' property. No California red-legged frog larvae were found in the smaller pond on the Mangels' property. At that time, all the funnel traps were pulled and the survey was discontinued.

Impact BIO7: Valley Elderberry Longhorn Beetle: This species is known to occur in elderberry shrubs along the eastside of Green Valley Road, north and south of the

intersection with Business Center Drive, which is in proximity to the study area. The elderberry trees/shrubs along Suisun Creek provide potential habitat for valley elderberry longhorn beetle. This beetle is a federally listed threatened species. A total of 12 elderberry plants will be affected, which include 37 stems greater than 1 inch but less than 3 inches, and 6 stems greater than 3 inches but less than 5 inches. Removal or damage to elderberry trees/shrubs potentially supporting valley elderberry longhorn beetles is considered potentially adverse.

Mitigation Measure BIO7: Valley elderberry longhorn beetle habitat was identified along Suisun Creek. Several of the elderberry trees/shrubs present along Suisun Creek had appropriately-sized beetle exit holes indicating past use by valley elderberry longhorn beetle. Suitable habitat will be avoided and preserved to the extent feasible. Complete avoidance, resulting in no adverse effects, will be assumed outside the 100-foot buffer that will be established from the edge of the proposed bridge alignment over Suisun Creek and the preserved elderberry plants. Protection measures detailed in the U.S. Fish and Wildlife Service's *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999) will be implemented. All preserved plants will be fenced off and these areas will be designated as avoidance areas that will be protected from disturbance during construction of the bridge. In addition, restoration and maintenance measures detailed in the U.S. Fish and Wildlife Service's *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999) will be implemented to restore any damage done to the 100-foot buffer area during construction. These areas will be re-vegetated and appropriate erosion control measures will be installed.

The following mitigation measures were developed in accordance with U.S. Fish and Wildlife Service's *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999). All elderberry plants with one or more stems measuring 1.0 inch or more in diameter that would be removed by the proposed project will be transplanted. A total of 12 elderberry plants will be affected by the project and will be transplanted. In addition, 55 elderberry seedlings and/or cuttings will be planted to mitigate for the number of stems (and their associated size classes) that will be impacted by the bridge construction. The elderberry plants and cuttings will be transplanted to conservation area along Suisun Creek. A biological monitor shall be present during all transplanting activities. Transplanting should occur when plants are dormant (November through mid-February). Cuttings should be taken when shoots are just beginning to newly sprout.

A conservation area along Suisun Creek will be established for protection of valley elderberry longhorn beetle habitat. The conservation area will provide at least 1,800 square feet for each planted elderberry shrub or for each group of five elderberry cuttings or seedlings and up to 5 associated riparian native species. Since 122 plants must be planted (12 elderberry plants, 55 elderberry seedlings and/or cuttings, and 55 riparian associated plants), approximately 0.95-acre (41,400 square feet) will be required for the valley elderberry longhorn beetle mitigation plantings. Finally, in opportune areas, the conservation area along Suisun Creek will be seeded with native grasses and herbaceous species to further enhance these preserved elderberry habitats.

In addition, a minimum of 55 riparian associated species will be planted in the conservation area, including a mix of native trees commonly associated with riparian communities, such as box elder (*Acer negundo californica*), walnut (*Juglans californica* var. *hindsii*), California ash (*Fraxinus dipetala*), and arroyo willow (*Salix lasiolepis)*, and

native riparian under story plants, such as mugwort (*Artemisia douglasiana*), snowberry (*Symphoricarpos albus laevigatus*), California rose (*Rosa californica*), and California blackberry (*Rubus ursinus*). Cuttings and seedlings of the other riparian plants will also be obtained locally along Suisun Creek. The transplanting procedure and other details regarding the mitigation for valley elderberry longhorn beetle are provided in the Biological Assessment document prepared for the USFWS.

Maintenance measures detailed in the U.S. Fish and Wildlife Service's *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999) will be implemented in the conservation area along Suisun Creek following the bridge construction. The conservation area will be fenced with signs designating this area as a protected preserve. The conservation area will be weeded annually and all trash within the conservation area will be removed. Annual mowing and weed abatement for fire control will only occur from July through April. Weeding will not occur within 5 feet of the preserved elderberry shrubs, and mowing activities will avoid damaging the plants within the conservation area. No insecticides, herbicides, or other chemicals that could harm the valley elderberry longhorn beetle or its host plant will be used in the conservation area, or within 100 feet of a preserved plant with stems measuring 1 inch in diameter or more.

The conservation area along Suisun Creek will be protected in perpetuity as habitat for valley elderberry longhorn beetle. To achieve this, the conservation area will be permanently dedicated in a non-revocable conservation easement, or via fee title acquisition and transfer of the property to a conservation organization. Deed restrictions will be imposed on the property that specifies the allowable activities within the conservation area. Activities will be limited to passive access necessary to repair and maintain the conservation easement area. No development of any kind shall occur in the conservation area. A copy of the recorded conservation easement deed will be provided to the USFWS prior to project implementation. The conserved property would have to be managed by a resource agency or conservation organization acceptable to both the CDFG and the USFWS. The conservator would also require a cash endowment, the interest from which would be used to manage or otherwise monitor the conservation area in perpetuity. The USFWS will be provided with written documentation that funding and management of the conservation area will be provided in perpetuity.

Monitoring of the conservation area will be conducted for ten consecutive years. A minimum survival rate of 60 percent of the elderberry plants/cuttings and 60 percent of the native riparian plantings is required throughout the monitoring period. If survival rates fall below 60 percent, replacement plants will be installed within one year of discovery to bring the number of plants back to the original number of plantings. The USFWS may evaluate the site if there is severe damage to the plants due to circumstances beyond the applicant's control, such as flooding, fire, or vandalism. At the end of each monitoring year, a detailed annual monitoring report will be prepared that presents and analyzes the data from the monitoring project. The monitoring report will document the health and vigor of any transplanted elderberry plants and cuttings, and the associated native riparian plants within the conservation area established for the project. Any observations of beetles or exit holes will be reported. Photographs of the conservation area will be included in the report. The annual monitoring report will be provided to the USFWS and CDFG by December 31 of each year.

Impact BIO8: Steelhead: NMFS has records of steelhead presence in Suisun Creek, as it is suitable habitat. The proposed project, as currently designed, would not result in direct impacts to Suisun Creek. A clear span bridge design is proposed over Suisun Creek to minimize impacts to steelhead and steelhead habitat; however, riparian habitat would be removed. This may result in impacts to habitat that supports this fish species. Impacts to this species are regarded as potentially adverse.

Mitigation Measure BIO8*:* A clear span bridge design is proposed over Suisun Creek to minimize impacts to steelhead and steelhead habitat; however, bridge construction will require the removal of riparian vegetation. Removal of riparian trees could affect known steelhead habitat. To minimize potential impacts to steelhead, riparian tree removal and bridge construction will be conducted between June 15 and October 15, when steelhead are not expected to be in this reach of Suisun Creek.

Tree removal and any other necessary limb cutting will be conducted under the supervision of a certified arborist. To minimize re-sprouting, all stumps will be painted with Round-up, or a similar product, by a licensed pest control applicator.

During a pre-project meeting with NMFS on March 18, 2004, various mitigation options were discussed to compensate for this potential impact to steelhead and its habitat. Riparian trees removed for this project will be replaced at a ratio of 3:1 (three trees of the same species will be replanted for every tree removed). Riparian planting will be conducted along Suisun Creek. A creek re-vegetation and enhancement plan has been prepared for this project to address impacts to riparian trees. Mitigation for impacts to native trees was further discussed earlier in this section.

In addition, Best Management Practices (BMPs) will be employed during construction to minimize and/or prevent water quality impacts to Suisun Creek. Silt fencing will be installed along the top-of-bank to prevent sediment or construction materials from rolling down the banks. In addition, a hammock, or similar material, will be deployed over the creek during construction to capture any construction debris that could fall into the creek.

Californian Tiger Salamander: The California tiger salamander is proposed for federal listing as a threatened species. It is also a state species of concern, and is protected under Title 14 of the California Code of Regulations (CCR). Under Title 14, CCR 41 (1996), California tiger salamander is a protected amphibian that may only be taken or possessed under a special permit issued by the CDFG pursuant to sections 650 and 670.7 of these regulations, or Section 2081 of the Fish and Game Code.

California tiger salamander (CTS) are not known to occur in this area of Solano County, however, this species is known from vernal pool habitats located approximately 7.8 miles east of the study area (CNDDB 2003). Accordingly, a habitat assessment for CTS was conducted following the joint USFWS/CDFG protocol: *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (October 2003). This guidance document provides two procedures to accurately assess the likelihood of CTS presence in the vicinity of a project site, including: 1) an assessment of CTS locality records and potential CTS habitat in and around the study area; and 2) focused field surveys of breeding pools and their associated uplands to determine whether CTS are likely to be present.

The only potential breeding habitats found within the proposed North Connector alignments are the two ponds found on property owned by the Mangels' located at the

west end of the project site. These ponds are large and deep. One is approximately 6 acres and the other is approximately 1.5 acres. Depths in these ponds are in excess of 8 feet. In addition, there is extensive emergent vegetation on the shoreline of the smaller pond, and similarly, such vegetation grows in thick patches along the shoreline of the large pond. Dip-nets were used where conditions allowed; however, due to the depths of the ponds, and the thick emergent vegetation along the shoreline, the ponds could not be effectively surveyed using seines or dip nets.

Funnel traps were set at approximate 100-foot intervals along the shorelines to the two ponds. A total of 16 funnel traps were used to conduct the survey. The traps were deployed in late afternoon, and were checked the following morning. California red-legged frog larvae were discovered in the funnel traps the first morning, and the funnel traps were pulled. Biologists conducted two days of dip-netting around the ponds in addition to the funnel trapping. Funnel trapping and dip-netting yielded negative results for California tiger salamander. The assessment and subsequent survey demonstrates that CTS are not present within the study area. No mitigation is therefore proposed.

Impact BIO9: California Red Legged Frog: The California red-legged frog is a federally listed threatened species and a state species of special concern. Protocol-level surveys were conducted for California red-legged frogs along Dan Wilson Creek and Suisun Creek. No California red-legged frogs were observed during the diurnal or nocturnal surveys along either creek. In May 2003, one California red-legged frog adult was observed in the West End of the study area north of SR12 at the edge of a plunge pool in one of the unnamed drainages. A juvenile California red-legged frog was observed in the same drainage in March 2004. Construction of the road could result in impacts to California red-legged frogs and/or its habitat. Impacts to California red-legged frog, larvae, or occupied habitat are considered an adverse effect.

Mitigation Measure BIO9: The proposed roadway alignment through the West End of the project area cannot be adjusted due to site topography and other engineering constraints. Consequently, occupied and potentially occupied California red-legged frog habitat will be impacted by the proposed project. Approximately 0.59-acre of seasonal wetlands and seeps at the West End of the project area will be impacted by the proposed project. This frog has been observed on at least two occasions in a drainage feature at the West End of the North Connector Project. While the drainage known to support California red-legged frogs will not be filled by the project, 0.59-acre of other drainage features, seasonal wetlands and seeps within the West End of the project area that may also provide habitat for California red-legged frogs will be impacted by the proposed roadway and associated grading activities. Finally, this frog is known to occur in the large stock pond at the West End of the project area. This pond will not be directly affected, although uplands surrounding occupied habitat will be impacted by the proposed project. It is estimated that 17.7 acres of upland habitat that provides dispersal habitat for California red-legged frogs will be impacted by the proposed roadway and associated grading activities.

These issues were discussed with Ms. Cecilia Brown (USFWS) during a pre-project consultation meeting on August 14, 2003. In accordance with guidance from USFWS, the project shall mitigate for impacts to California red-legged frog habitat by creating a 1.5-acre breeding pond for this species. Impacts to California red-legged frog aquatic habitat would thus be mitigated at a greater than 2:1 ratio (replacement: impacted). The proposed location of the new breeding site is to the north and east of the new roadway

alignment. A total of 10.8 acres of upland around this breeding pond would also be preserved in a conservation easement.

The area of the 1.5-acre mitigation pond is based on the invert elevation of the spillway, which will limit the inundation acreage of this pond. This pond would be graded so that water would pond approximately thirteen feet deep. This depth is necessary to keep cattails (*Typha* spp.) and/or bulrush (*Schoenoplectus* spp.) from growing into the center of the pond so that open waters remain a component of the mitigation pond.

The mitigation pond would be constructed approximately one year prior to impacting occupied habitat. This would allow sufficient time for vegetation and a food base for California red-legged frogs to develop in the pond prior to any impacts to existing habitat. Monitoring will confirm that the mitigation pond provides optimal California red-legged frog habitat prior to the loss of any existing habitat. Once it is determined that the mitigation pond is holding water and vegetation is established, an authorized biologist will conduct preconstruction surveys for this species within the areas of impact. Any California red-legged frogs found during these surveys will be salvaged and relocated to the mitigation pond.

The created pond would be managed for California red-legged frogs and would be monitored by a biologist for a minimum of five years, or as determined by USFWS. The biological monitor would check the mitigation pond several times each year to ensure that success criteria are being met. Success criteria would likely include:

(1) establishment of a California red-legged frog population that is breeding in the mitigation pond; (2) determination that California red-legged frog predators are not becoming established at the mitigation pond; (3) demonstration that aquatic and emergent vegetation is well-established at the mitigation pond; and (4) demonstration that the mitigation pond is supporting adequate hydrologic conditions to provide optimal breeding habitat. The success criteria would be agreed upon by the STA and USFWS prior to impacting existing California red-legged frog habitat.

Use of the created pond by amphibians would also be monitored each year over a five year period. Relative abundance indices would be developed for California red-legged frogs and all other amphibians using the pond. If at any time it is determined that the mitigation pond is not meeting the established success criteria, remedial action would be necessary. Annual monitoring reports would be prepared and submitted to USFWS each year over the five-year monitoring period.

Approximately 10.8 acres of mitigation land will be placed in a dedicated open space preserve. This will provide mitigation for impacts to upland dispersal habitat. The preserve will be placed in a Conservation Easement that usurps all development rights. The mitigation property would be owned in fee by the existing land owner, Solano County, or a qualified conservation organization. Allowable uses within this open space preserve shall be limited to maintenance of the pond. No further development, establishment of utilities, or any construction of any kind will be allowed within the dedicated open space preserve. If allowed at all, grazing will be limited to dry season grazing only when livestock cannot damage the pond berm. The Grant of Easement shall designate Solano County as the grantee of the open space easement.

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