Chapter 11
Alternatives to Take

The ESA requires that applicants for incidental take permits specify in an HCP what alternative actions to the take were considered and the reasons why those alternatives were not selected. The *Endangered Species Consultation Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998) identifies two alternatives commonly used in HCPs: (1) an alternative that would reduce take below levels anticipated for the proposed project and (2) an alternative that would avoid take and hence not require a permit from USFWS. The NCCP Act requires that project alternatives be considered in the EIR prepared for the NCCP (Section 2820[e]) but not in the NCCP itself.

This chapter identifies alternative measures considered that would avoid or minimize the potential for take of each wildlife species covered in this Plan. The following discussion is limited to wildlife species because the ESA requires alternatives to *take*. Take of listed plants is not prohibited by the ESA, and projects subject to Section 7 consultations will evaluate listed plants in the Biological Assessment and Biological Opinion associated with that consultation. As of the effective date of the Federal permit, take of covered species that are currently federally listed will be authorized as described in the Plan. Project alternatives are considered in more detail in the draft EIR/EIS that accompanies this draft Plan. This chapter evaluates alternatives to take for all of the wildlife species covered by the Plan:

- Bay checkerspot butterfly (threatened)
- California red-legged frog (threatened)
- California tiger salamander (threatened)
- Foothill yellow-legged frog
- Western pond turtle
- Least Bell's vireo (endangered)
- Western burrowing owl
- Tricolored blackbird
- San Joaquin kit fox (endangered)

11.1 Alternatives to Take of Bay Checkerspot Butterfly

The only known extant populations of Bay checkerspot butterfly occur within the study area. Primary impacts to this species include the expansion of urban areas or rural residential development that removes or isolates serpentine grassland habitat. These changes in land use can also increase recreational use on or limit the management of serpentine grasslands, which could also adversely affect the butterfly. Additionally, covered activities that facilitate future growth along the U.S. 101 corridor could lead to an increase in the amount of vehicle traffic and increase the rate of nitrogen deposition on serpentine grasslands in the permit area. Increased nitrogen deposition is known to change the alkalinity of serpentine soils, which reduces the competitive advantage that native plants experience in these areas, resulting in decreased abundance of the native host and larval plants of the Bay checkerspot butterfly (see discussion in Chapter 4 *Impact Assessment and Level of Take*).

Also, certain management actions for Bay checkerspot butterfly under the Plan could result in take of the species. Management actions will include livestock grazing and, in some areas, controlled burning to reduce the cover of nonnative plant species. Targeted use of herbicides, mowing, hand-weeding, or other aggressive removal techniques will be necessary in small areas to combat infestations of noxious weeds in serpentine grasslands such as barbed goatgrass. All of these actions could kill individual butterflies or their larvae. If Bay checkerspot butterflies do not disperse to new suitable habitat on their own the Implementing Entity may translocate butterflies to establish new populations in these areas, upon approval by the Wildlife Agencies. If translocation is implemented, butterfly mortality could occur during or after movement. Given these risks of mortality, one alternative is not to implement the management actions as described in the conservation strategy (see Chapter 5). This alternative is not preferred because active management is essential for the maintenance of the suitable habitat for the species. The benefits of this active management far outweigh the negative effects it may have on a small number of individuals. The management actions described in the conservation strategy will greatly benefit the species and will contribute substantially to its recovery.

An alternative prohibiting development on serpentine soils within the permit area would reduce but not eliminate take of the species, since nitrogen deposition from existing road traffic would continue to alter plant composition to the detriment of Bay checkerspot butterfly. This alternative is inconsistent with the currently adopted general plans of local jurisdictions and would therefore be infeasible.

In addition, because nonnative plants threaten to outcompete the host and nectar plants necessary for Bay checkerspot butterfly survival, some form of management is needed to maintain and increase viable habitat for the species. An alternative that eliminates take does not create a mechanism by which land is managed for the benefit of the butterfly and therefore is biologically inferior to the approach proposed by the Habitat Plan.

An alternative that limits growth or reduces traffic along the U.S. 101 corridor could reduce impacts to Bay checkerspot butterfly. However, this approach is infeasible because much of the traffic on U.S. 101 comes from outside the jurisdictions participating in this Plan. Furthermore, limiting growth along U.S. 101 is inconsistent with the approved general plans of the County and the Cities of San José, Morgan Hill and Gilroy.

In summary, implementation of this Plan is expected to provide a substantial net benefit to, and contribute to the recovery of, Bay checkerspot butterfly in the permit area. Serpentine grasslands will be protected and managed to the benefit of the species. Up to 300 acres (4%) of modeled primary habitat will be permanently affected by covered activities, but impacts would be limited to no more than 3% of the unprotected portion of each core and satellite habitat unit targeted for conservation (as defined in **Table 5-7**) with the exception of the Kirby/East Hills core unit which has a 11% allowance to accommodate the Kirby Landfill expansion (80 acres). The Reserve System will protect an estimated 3,800 acres of modeled primary habitat, all of which will be enhanced. An additional 754 acres of modeled primary habitat will be added to the Reserve System from existing open space, within which, degraded habitat will also be enhanced. This will result in a 341% increase of lands managed as primary habitat in type 1 open space and a total of 62% of existing modeled habitat preserved in type 1 open space. New reserves will ensure protection of the ranges of slopes, aspects, and microhabitats important to the species. Reserve management of habitat will enhance populations of larval host plants and adult nectar sources to allow for natural migration across reserves. These and additional management actions (see Chapter 5 *Conservation Strategy*) along with avoidance and minimization measures (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any alternatives that may reduce take.

11.2 Alternatives to Take of California Red-Legged Frog

California red-legged frogs utilize several land cover types for breeding and summer refugia, including riverine habitats, seasonal wetlands, freshwater marshes, and ponds. Frogs also aestivate in a variety of upland land cover types including annual grassland and oak woodland. As a result, impacts to California red-legged frog could occur from numerous covered activities that remove aquatic or upland habitats or that temporarily disturb areas utilized by the frog. These covered activities include urban and rural development as well as implementation of in-stream capital projects, rural water-supply projects, related operations and maintenance, and, to a lesser extent, implementation of the conservation strategy.

Take of California red-legged frog could be minimized or avoided if these covered activities did not encroach on habitat for this species; fill or disturb breeding or summer refugia sites (e.g., ponds, seasonal wetlands, streams); or

remove aestivation or movement habitat connecting breeding sites. Because habitat for the species is widespread (especially upland aestivation or dispersal habitat), avoidance of all take is infeasible. Similarly, in-stream capital projects, water-supply projects and related operations and maintenance have the potential to take red-legged frogs. However, failing to carry out flood control, as well as other needed services would jeopardize human health and safety and would not be feasible.

Conservation and management actions that take place on the Reserve System, particularly those that enhance, restore, or create habitat, have the potential to take California red-legged frogs. Increasing the connectivity between breeding sites and increasing the frequency of monitoring surveys in the study area have the potential to facilitate the spread of detrimental environmental factors (e.g., chytrid fungus, nonnative predators). Although these actions could harm individual frogs, they are designed to provide a substantial net benefit to the species on the reserves. Ultimately the benefits gained from Plan implementation are expected to strongly outweigh any potential impacts or take. Under the Plan, take will be minimized or avoided through implementation of the following conditions on development discussed in Chapter 6:

- Condition 3. *Maintain Hydrologic Conditions and Protect Water Quality*.
- Condition 4. *Avoidance and Minimization for In-Stream Projects*.
- Condition 5. *Avoidance and Minimization Measures for In-Stream Operations and Maintenance*.
- Condition 11. *Stream and Riparian Setbacks*.
- Condition 12. *Wetland and Pond Avoidance and Minimization*.

Take of California red-legged frog as a result of urban development could be avoided entirely if projects did not encroach on or near habitat for red-legged frog. However, this alternative is not feasible because it is inconsistent with adopted local General Plans and fails to meet the purpose and need of the Permittees to achieve reasonable amounts of urban development and growth within their jurisdictions.

Another alternative to take from urban expansion is to require all development projects to avoid direct impacts to suitable habitat for this species. Presumably each project would be able to build on a portion of the site while setting aside the portion of the site suitable for the species. This alternative approach, however, would result in a patchwork of habitat that would not function well biologically on a regional scale because it would be interspersed with urban and rural development. In addition, this alternative would not address the indirect effects associated with development (e.g., decreased water quality, increased harm and harassment from humans and their pets). Therefore, this alternative was rejected because it would result in a biologically inferior outcome. The Plan is designed to accept a limited amount of take of red-legged frog habitat in exchange for protection, enhancement, and restoration of high-quality habitat outside urban and urbanizing areas. Most of the take will be in lower-quality habitat, although some of it will occur in higher-quality habitat as well.

Implementation of this Plan is expected to provide a net benefit to, and contribute to the recovery of, California red-legged frog in the permit area. The red-legged frog is threatened by loss of habitat and extensive fragmentation both between summer refugia and breeding sites and among wetland/pond complexes. Up to 415 acres (4%) of modeled primary habitat and 14,426 acres (4%) of secondary habitat will be affected by covered activities. The Reserve System will acquire, protect and enhance an estimated 1,300 acres of primary habitat and 30,000 acres of secondary habitat. In addition, 130 acres of primary habitat, 11,800 acres of secondary habitat will be added to the Reserve System from existing open space. Degraded habitat within existing open spaces added to the Reserve System will also be enhanced. This will result in an increase of 93% of modeled habitat in type 1 open space and a total of 26% of modeled habitat in type 1 open space. In addition to the Plan's requirements for California red-legged frog habitat acquisition, an estimated 117 acres of perennial wetlands and ponds and 10.4 miles of stream will be created or restored in the Reserve System if all impacts under the Plan occur. Some of these creation and restoration sites may be suitable habitat for the California red-legged frog. A network of core reserves will protect large blocks of breeding and non-breeding habitat. New linkages will be created in blocks of modeled habitat to facilitate dispersal and colonization throughout the study area and movement between breeding sites. Habitat management will improve quality of breeding habitat (e.g., predator eradication, woody debris and native vegetation installation, stream and riparian restoration) and upland habitat. These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit California red-legged frog in the permit area to a greater degree than any considered alternatives.

11.3 Alternatives to Take of California Tiger Salamander

California tiger salamanders utilize seasonal wetlands, marshes, and ponds during different times of the year, and upland habitat in close proximity to water habitat. Ponds and wetlands in the study area provide breeding habitat for California tiger salamander and adjacent uplands habitat accommodate year-round uses (e.g., upland refugia and dispersal).

California tiger salamander could be taken by rural development; a small portion of urban development; conversion of habitat to agriculture (e.g., vineyards); implementation of in-stream capital projects, rural water-supply capital projects and related operations and maintenance; and implementation of the conservation strategy. These projects could impact suitable breeding ponds and wetlands or suitable upland refugia. Rural development could also cause fragmentation of breeding habitat.

Take of California tiger salamander by rural development could be reduced by requiring all development projects to avoid all suitable habitat for this species.

However, as for the California red-legged frog, this alternative approach would result in a patchwork of habitat that would not function well biologically. Therefore, this alternative conservation approach was rejected because it would result in a biologically inferior outcome. The Plan is designed to accept a limited amount of impacts to tiger salamander habitat in exchange for protection, enhancement, and restoration of higher-quality habitat outside urban areas. Most of the take will be in lower-quality habitat, although a limited amount will be in higher-quality habitat. In addition, ancillary benefits for the California tiger salamander are gained through water quality protections required by Condition 3 and stream setbacks required by Condition 11 (see Chapter 6 *Conditions on Covered Activities and Application Process*).

Another alternative that may reduce take of California tiger salamander in the study area is the prohibition of irrigated agriculture on suitable breeding or movement/upland refugia habitat. However, only agricultural activities that require a County permit are covered by this Plan. Irrigation that is part of routine and ongoing agriculture does not require a permit from the County, and therefore is not subject to the restrictions of this Plan. In addition, most agriculture in the study area occurs on the valley floor, while known occurrences of California tiger salamander are generally in the foothills outside the valley floor. In addition, a "freedom to farm" policy in the County makes regulation of agriculture difficult to implement. Therefore, this alternative was rejected.

Some of the management actions prescribed by this Plan may cause take of some individual California tiger salamanders. Specifically, increasing the connectivity between breeding sites and increasing the frequency of monitoring surveys in the study area have the potential to facilitate the spread of detrimental environmental factors (e.g., chytrid fungus, nonnative predators). It is also possible that increasing connectivity and the number of California tiger salamander populations could further facilitate hybridization between the California tiger salamander and the Texas salamander. However, the conservation strategy includes management and research actions to prevent or reduce these threats. Ultimately the benefits gained from Plan implementation are expected to strongly outweigh any potential impacts or take.

Implementation of this Plan is expected to provide a substantial net benefit to, and contribute to the recovery of, California tiger salamander in the permit area. The tiger salamander is threatened by loss of habitat and extensive fragmentation both between upland and breeding sites and among wetland/pond complexes. Up to 91 acres (9%) of modeled breeding habitat and 14,384 acres (4%) of modeled non-breeding habitat will be affected by covered activities. The Reserve System will acquire and protect an estimated 150 acres of breeding habitat and 30,000 acres of non-breeding habitat. In addition, 45 acres of breeding habitat and 11,700 acres of non-breeding habitat will be added to the Reserve System from existing open space. This will result in an increase of 91% of lands managed as species habitat in type 1 open space and a total of 27% of existing modeled habitat preserved in type 1 open space. Within the Reserve System an estimated 147 acres of perennial wetlands, seasonal wetlands, and ponds will be created or restored if all impacts under the Plan occur. Some of these creation and restoration sites may be suitable habitat for the California tiger salamander.

A network of core reserves will protect large blocks of breeding and non-breeding habitat. New linkages will be created in blocks of modeled habitat to facilitate dispersal and colonization throughout the study area and movement between breeding sites. Habitat management will improve the quality of breeding habitat (e.g., predator eradication and wetland enhancement and restoration) and upland habitat. These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any considered alternatives.

11.4 Alternatives to Take of Foothill Yellow-Legged Frog

Foothill yellow-legged frogs require shallow, flowing water in small to moderate-sized streams with at least some cobble-sized substrate. This species would be affected by projects implemented in the stream channel or that result in the removal of cobblestone substrate or riparian vegetation, particularly in reaches above reservoirs. Ground-disturbing activities, such as maintenance of stream banks, levees, and channel rights-of-way (e.g., bank repair, vegetation management), could increase erosion and sediment discharge that could disrupt breeding of foothill yellow-legged frogs. Projects that place structures in the channel (e.g., culvert installation) or that require stream access may crush individuals and expose adults, metamorphs, and tadpoles. If water pulses from reservoirs are released during the foothill yellow-legged frog egg-laying period, they could dislodge egg masses, causing mortality.

One alternative to take of yellow-legged frog would be to refrain from implementing flood-control and other in-stream capital projects. However, this alternative would not provide flood protection to many neighborhoods and areas that are currently vulnerable to flooding. In addition, many of these flood-control projects are part of the SCVWD Clean, Safe Creeks and Natural Flood Protection Plan or the Coyote Watershed Stream Stewardship Plan. The former is a 15-year, countywide plan funded by a special tax that directs the SCVWD to protect public health and safety, in part through the construction of flood-control projects. The latter plan was developed by the SCVWD to address flooding and environmental issues in the Coyote watershed through an integrated approach to watershed management. The alternative of not implementing in-stream capital projects is infeasible because it would not provide needed flood protection and because it is inconsistent with the adopted and funded plans of SCVWD.

Another alternative to take of yellow-legged frog is to refrain from levee improvements within the study area. However, this would be out of compliance with levee-recertification requirements being developed by the Federal Emergency Management Agency and would affect public safety. Therefore this is not a feasible alternative.

Implementation of this Plan is expected to provide a substantial net benefit to, and contribute to the recovery of, foothill yellow-legged frog in the permit area. Up to 8.7 stream miles (<1%) of modeled primary and secondary habitat will be affected by covered activities. The Reserve System will protect an estimated 30 stream miles of modeled primary habitat and 50 miles of modeled secondary habitat. In addition, 7 stream miles of modeled primary habitat and 17 stream miles of modeled secondary habitat will be added to the Reserve System from existing open space. This will result in an 88% increase of protected modeled primary and secondary habitat in type 1 open space and protection of a total of 32% of modeled primary and secondary habitat in type 1 open space. In addition to the Plan's acquisition requirements of primary foothill yellow-legged frog habitat, the Reserve System will contain an estimated 10.4 miles of restored streams if all impacts under the Plan occur. Some of these 10.4 miles of restored streams may also be suitable for the foothill yellow-legged frog. Protection of streams with perennial flows will target reaches with high habitat value or restoration potential. Restoration and enhancement of perennial streams will ensure improvement of habitat quality and breeding success. These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any considered alternatives.

11.5 Alternatives to Take of Western Pond Turtle

Western pond turtles utilize riverine habitats as well as seasonal wetlands, marshes, ponds, and upland habitat in close proximity to water. Uplands in the study area adjacent to ponds and wetlands with the appropriate soil substrate provide breeding habitat for western pond turtle, and adjacent upland habitat also accommodates year-round uses (e.g., aestivation, refugia, dispersal). In addition, this species requires basking sites in the water for year-round use.

Western pond turtle could be affected by rural development; a small portion of urban development; conversion of habitat to agriculture (e.g., vineyards); implementation of in-stream capital projects, rural water-supply capital projects and related operations and maintenance; and implementation of the conservation strategy. These projects could impact suitable breeding uplands adjacent to ponds and wetlands or suitable upland aestivation habitat. Rural development could also cause fragmentation of breeding habitat.

Take of western pond turtle by rural development could be reduced by requiring all development projects to avoid all suitable habitat for this species. However, as discussed above for the California red-legged frog, this alternative approach would result in a patchwork of habitat that would not function well biologically. Therefore, this alternative conservation approach was rejected because it would result in a biologically inferior outcome. The Plan is designed to accept a limited amount of impact to pond turtle habitat in exchange for protection, enhancement, and restoration of higher-quality habitat outside urban areas. Most of the take will be in lower-quality habitat, although a limited amount will be in higher-

quality habitat. In addition, indirect impacts to riverine habitat are avoided and minimized through water-quality protections required by Condition 3 and stream setbacks required by Condition 11 (see Chapter 6 *Conditions on Covered Activities and Application Process*).

Another alternative that may reduce take of western pond turtle in the study area is the prohibition of irrigated agriculture on suitable breeding or movement/aestivation habitat. However, only agricultural activities that require a County permit are covered by this Plan. Irrigation is part of routine and ongoing agriculture, does not require a permit from the County, and therefore is not subject to the restrictions of this Plan. In addition, most agriculture in the study area occurs on the valley floor, while known occurrences of western pond turtle are generally in the foothills outside the valley floor. Also, a "freedom to farm" policy in the County makes regulation of agriculture difficult to implement. Therefore, this alternative was rejected.

Implementation of this Plan is expected to provide a substantial net benefit to, and contribute to the recovery of, western pond turtle in the permit area. Up to 2,264 acres (3%) of modeled primary habitat and 8,811 acres (4%) of secondary habitat will be affected by covered activities. The Reserve System will acquire and protect an estimated 7,000 acres of modeled primary habitat and 20,000 acres of modeled secondary habitat. In addition, 2,800 acres of primary habitat and 9,100 acres of secondary habitat will be added to the Reserve System from existing open space. This will result in an 87% increase of lands managed as species habitat in type 1 open space and preservation of a total of 27% of existing modeled habitat in type 1 open space. Within the Reserve System, a minimum of 20 acres of ponds will be created and 1 stream mile restored, regardless of impacts. If all impacts under the Plan occur, up to 72 acres of ponds and 10.4 miles of streams will be created or restored. Some of these creation and restoration sites may be suitable habitat for the western pond turtle. A network of core reserves will protect large blocks of breeding and non-breeding habitat. New linkages will be created in blocks of modeled habitat to facilitate dispersal and colonization throughout the study area and movement between breeding sites. Habitat management will improve quality of breeding habitat (e.g., predator eradication and access control programs, woody debris and native vegetation installation) and upland habitat (e.g., grassland management). These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any considered alternatives.

11.6 Alternatives to Take of Least Bell's Vireo

Least Bell's vireo is currently not known to breed in the study area, but it has been observed foraging on both Llagas and Coyote Creeks in the study area in recent years. It has also been documented successfully breeding east of the study area, in the San Joaquin River National Wildlife Refuge, for two consecutive years. It is reasonable to assume that the species breeding and foraging range

will expand northward into the study area, especially given that riparian habitat will be preserved, enhanced, and restored during the permit term. Therefore, the Plan anticipates impacts to and conservation of the species and its habitat.

Least Bell's vireos breed in the early successional riparian habitat during the spring and summer months.

Take of least Bell's vireo could result from covered activities that remove or alter early successional riparian habitat within the study area, particularly in the southern part of the study area. Impacts could also occur from any activity that diminishes dynamic riverine events (i.e., floods) that create early successional habitats, although such action may not rise to the level of take. Additional direct and indirect impacts could occur from adjacent land uses that alter associated riverine habitat or increase nearby populations of nest predators (e.g., domestic cats) or nest parasites (e.g., brown-headed cowbirds). While take of most migratory birds is prohibited under the Migratory Bird Treaty Act of 1918, take of least Bell's vireo would permitted under a Special Purpose Permit for ESA-listed species (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998: Appendix 5).

Alternative covered activities that do not include in-stream capital flood-control projects or vegetation removal for stream maintenance could reduce or eliminate impacts to least Bell's vireo. However, this alternative would put the upstream communities of Gilroy and Morgan Hill and unincorporated portions of the County at greater risk of flooding. It would also be incompatible with the Clean, Safe Creeks and Flood Protection Plan, a 15-year, countywide, special-tax-funded plan, which directs the SCVWD to protect public health and safety, in part through the construction of flood-control projects. Because the vireo requires early successional habitats, some vegetation removal is likely necessary to maintain suitable habitat. For these reasons, this alternative was rejected.

Implementation of this Plan is expected to provide a net benefit to least Bell's vireo in the permit area. Up to 115 acres (4%) of modeled primary habitat will be affected by covered activities. The Reserve System will acquire and protect a minimum of 460 acres of modeled primary habitat. In addition, 2 acres of modeled primary habitat will be added to the Reserve System from existing open space. All species habitat will be enhanced. This will result in a 865% increase of preserved modeled habitat as type 1 open space and a total of 20% of modeled habitat preserved as type 1 open space. In addition to the Plan's acquisition requirements of least Bell's vireo primary habitat, the Reserve System will include a minimum of 50 acres of restored riparian forest and scrub, regardless of impacts. If all impacts under the Plan occur, up to 353 acres of riparian forest and scrub and Central California alluvial sycamore woodland will be restored, some of which may be primary habitat for the least Bell's vireo. New reserves will increase habitat connectivity by targeting areas along rivers. Habitat management will ensure improvement of habitat quality and favor increased reproductive success through riparian woodland and forest enhancement and restoration. The Plan also requires 1:1 restoration for any loss of riparian forest and scrub communities (including *willow riparian forest and scrub* and *mixed riparian forest and woodland*, see **Table 5-12** and text in Chapter 5 *Conservation*

Strategy) These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any considered alternatives.

11.7 Alternatives to Take of Western Burrowing Owl

Western burrowing owl habitat includes annual grassland, serpentine bunchgrass grassland, valley oak woodland, agricultural, barren land cover types with flat (0–5%) or moderate (5–25%) slopes, and ruderal habitats on the valley floor. Only a few of these sites, primarily in San José, are occupied by breeding owls on a consistent basis, but there is the potential for these small pockets of habitat to support breeding pairs. Specific sites that support the owl are targeted for nearby land acquisition to protect this species and provide additional habitat for fledging young birds. Western burrowing owls use the ground squirrel burrows for shelter and breeding. Primary threats to this species by covered activities include development of their habitat in suburban and rural areas and ground squirrel control along levees and dams and in rural areas. While take of most migratory birds is prohibited under the Migratory Bird Treaty Act of 1918, take of western borrowing owl would be permitted under a Special Purpose Permit in the event that this species was federally listed (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998: Appendix 5).

An alternative to covered activities that eliminate or greatly reduce suburban or rural development could reduce take of the western burrowing owls and their habitat. However, based on general conservation biology principles development within already developed areas is preferable in order to reduce impacts to other covered species. Areas that are near known owl populations are targeted for protection and/or management within the Reserve System (see Section 5.4.6 *Western Burrowing Owl*). Therefore, an alternative to eliminate development in burrowing owl habitat was rejected.

An alternative to rodent control on levees was also considered. However, ground squirrel burrows can destabilize levees and dams, and eliminating ground squirrel control measures would not be consistent with the SCVWD Dam Maintenance Program or SCVWD stream maintenance needs. Therefore, this alternative was rejected.

Implementation of this Plan is expected to provide a substantial net benefit to, and contribute to the recovery of, western burrowing owl in the permit area. Up to 10,443 acres (8%) of modeled overwintering habitat will be affected by covered activities. The Reserve System will acquire and protect an estimated 17,000 acres of modeled species overwintering habitat and acquire or manage 5,300 acres of western burrowing owl nesting habitat (occupied and potential). Of the 5,300 acres, a minimum of 600 acres of occupied nesting habitat must be protected in fee title or conservation easement. For the remaining 4,700 acres, land acquisition (fee title or easement) or management agreements may be used,

with land acquisition prioritized over management agreements. In addition, 4,310 acres of modeled overwintering habitat will be added to the Reserve System from existing open space. The geographic breakdown of these newly managed areas for burrowing owls would include the following minimum acreages: 3,700 acres in the North San José/Baylands region, 800 acres in the Gilroy region, 530 acres in the Morgan Hill region, and 270 acres in the South San José region as shown in **Figure 5-10**. The conservation strategy will ensure management of both breeding and overwintering habitat. These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any considered alternatives.

11.8 Alternatives to Take of Tricolored Blackbird

Tricolored blackbirds breed colonially in freshwater marshes and other wetland habitats with reeds, cattails, or other emergent or non-emergent wetland vegetation (such as blackberry). This species also requires foraging habitat that includes agricultural fields, wetlands, marshes, annual grassland, and riparian scrub. Potential tricolored blackbird breeding sites will be directly affected by any covered activities that result in the removal or permanent alteration of wetland or marsh habitat and/or adjacent foraging habitat. Conversion of lands from native or agricultural land cover to rural, suburban or urban use could result in the degradation of foraging habitat for this species. While take of most migratory birds is prohibited under the Migratory Bird Treaty Act of 1918, take of tricolored blackbird would be permitted under a Special Purpose Permit in the event that this species was federally listed (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998: Appendix 5).

An alternative that prohibits development in or closely adjacent to marshes, wetlands and wetland vegetation would reduce take of tricolored blackbird habitat. Currently, the Plan includes extensive avoidance and minimization measures for these habitats (see Conditions 11 and 12 in, Chapter 6 *Conditions on Covered Activities and Application Process*) as well as specific conditions to survey for and avoid tricolored blackbird populations and individuals (see Condition 17 in Chapter 6 *Conditions on Covered Activities and Application Process*). The Plan also includes required conservation measures for habitat creation and preservation to ensure at least 2 acres of freshwater wetlands are preserved and one acre restored for each acre of freshwater wetlands lost to covered activities. Similarly, impacts to streams require 3:1 preservation and 1:1 restoration.

Alternative covered activities that do not include in-stream capital flood-control projects or vegetation removal for stream maintenance could reduce or eliminate impacts to tricolored blackbird. However, this alternative could put the upstream areas at greater risk of flooding and it would also be incompatible with the Clean, Safe Creeks and Flood Protection Plan of SCVWD. Therefore, this alternative was rejected.

Alternatives that entirely eliminate conversion of native or agricultural land to rural, suburban or urban use could prevent some take of tricolored blackbird foraging habitat, however this option is incompatible with the County General Plan and the General Plan of the cities of Gilroy and Morgan Hill (there will be little agricultural conversion in San José) and was therefore rejected. Further, surveys during the design phase of a project will require avoidance and minimization of impacts to tricolored blackbird (see Condition 17 in Chapter 6 *Conditions on Covered Activities and Application Process*).

Implementation of this Plan is expected to provide a substantial net benefit to, and contribute to the recovery of, tricolored blackbird in the permit area. Up to 11,454 acres (8%) of modeled habitat will be affected by covered activities. The Reserve System will acquire and protect an estimated 19,000 acres of modeled species habitat. In addition, 3,840 acres of modeled species habitat will be added to the Reserve System from existing open space. All species habitat within the Reserve System will be enhanced. This will result in a 207% increase of lands managed as species habitat and the protection of a total of 24% of existing modeled habitat as type 1 open space. Within the Reserve System, a minimum of 40 acres of ponds and perennial wetlands will be created or restored, regardless of impacts. If all impacts under the Plan occur, up to 117 acres of ponds and perennial wetlands will be created or restored. Some of these creation and restoration sites may be suitable habitat for the Tricolored blackbird. New reserves will ensure protection of at least four currently occupied or historic breeding sites and nearby foraging habitat. These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any considered alternatives.

11.9 Alternatives to Take of San Joaquin Kit Fox

The primary impact to San Joaquin kit fox from covered activities is additional habitat fragmentation and associated reduction of adequate corridors in the southern portion of the study area near the Pajaro River and Pacheco Creek. The primary mechanism of this impact is human population growth in Gilroy and increased urbanization in southeastern Gilroy and limited rural development along the SR 152 corridor east of Gilroy (within unincorporated Santa Clara County). San Joaquin kit fox may move through the southeastern portion of the study area from San Benito County to adjacent Merced and Stanislaus Counties. This loss of habitat or movement corridors could result in harm to San Joaquin kit fox and hence constitute take. Another potential cause of take is construction of rural roads or increases in rural vehicle traffic along SR 152 that could result in mortality.

One alternative to take is the prohibition of rural development along the SR 152 corridor east of Gilroy. However, this is inconsistent with the County General Plan. Rural development along SR 152 east of Gilroy is expected to occur at very low densities and is not expected to increase substantially during the permit

term due to its distance from public services, large parcel sizes, and strong local tradition of agriculture in the Pacheco Creek valley and ranching in the adjacent hills. As such, threats to kit fox in this area from rural development are relatively low. Because habitat in the study area is not known to be occupied by kit fox, it is legally and practicably infeasible to preclude growth in all areas of unoccupied but suitable habitat for the species, so this alternative was rejected.

An alternative that limits traffic on rural roads within suitable secondary habitat (movement corridors) for San Joaquin kit fox may reduce the incidence of mortality on roads and therefore reduce take in the study area. This alternative was deemed infeasible and rejected because limiting traffic on rural roads is not under the control of the Permittees or the Plan. Furthermore, SR 152 is the only route that crosses from south Santa Clara County to the San Joaquin Valley. Directing traffic to other routes would be infeasible and would divert heavy traffic to other routes, some of which already receive heavy use. This alternative could have severe impacts on traffic elsewhere in the region and could negate the benefits provided to San Joaquin kit fox in the south part of the study area by increasing vehicle mortality of kit foxes elsewhere in its range. It could also increase impacts to Bay checkerspot butterfly by increasing vehicular emissions in the study area from slower traffic. Because San Joaquin kit fox have not been sited in the study area in recent years, take from vehicular collision is highly unlikely at this time. As described in Chapter 5, there are several wide undercrossings available to kit fox and other species under SR 152 that would already limit the risk of vehicle collisions.

Implementation of this Plan is expected to provide a net benefit to San Joaquin kit fox in the permit area. The study area is outside the core range of the kit fox but is important as a movement route, although that may change with the habitat acquisition and management proposed by the conservation strategy. As such, the corridor study proposed by the Plan as well as actions that enhance key corridor routes are likely to benefit the species.

Up to 278 acres (<1%) of modeled habitat will be affected by covered activities. The Reserve System will acquire and protect an estimated 4,100 acres of modeled secondary habitat. Within the Reserve System all habitat will be enhanced. This will result in an increase of 81% of protected modeled habitat in type 1 open space and a total of 22% of modeled habitat protected in type 1 open space. A network of core reserves and movement routes will protect a critical linkage for San Joaquin kit fox through the study area to adjacent populations in Alameda and Contra Costa Counties. Grassland and oak woodlands will be managed to support a sustainable prey population. Barriers to passage will be removed and structural improvements to facilitate movement will be implemented to improve species passage across SR 152. A public-awareness campaign will encourage species-compatible land uses outside the Reserve System. These and additional management actions (see Chapter 5 *Conservation Strategy*) and conditions on covered activities (see Chapter 6 *Conditions on Covered Activities and Application Process*) are expected to benefit the species in the permit area to a greater degree than any considered alternatives.