Executive Summary

Overview

The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP or Plan) is intended to provide an effective framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species. The Plan will allow Contra Costa County (County), the Contra Costa County Flood Control and Water Conservation District (County Flood Control District), the East Bay Regional Park District (EBRPD) and the Cities of Brentwood, Clayton, Oakley, and Pittsburg (collectively, the Permittees) to control endangered species permitting for activities and projects in the region that they perform or approve. The Plan will also provide for comprehensive species, wetlands, and ecosystem conservation and contribute to the recovery of endangered species in northern California. The Plan will avoid project-by-project permitting that is generally costly and time consuming for applicants and often results in uncoordinated and biologically ineffective mitigation.

The Permittees are asking the U.S. Fish and Wildlife Service (USFWS) to issue to them a 30-year permit that authorizes incidental take[1] on listed species under the federal Endangered Species Act (ESA). The Permittees are also asking the California Department of Fish and Game (CDFG) to issue to them a 30-year permit that authorizes take[2] of all covered species under the Natural Community Conservation Planning Act (NCCPA). The local jurisdictions will then be able to use those permits to extend take authorization to development and other activities that meet the terms of the Plan. USFWS and CDFG will also provide assurances to local jurisdictions and Plan participants that no further commitments of funds, land, or water will be required to address impacts on covered species beyond that described in the Plan. Local jurisdictions will provide similar assurances to local applicants.

The Plan is also intended to serve as the basis for subsequent applications for regional wetlands permits or permit programs currently in development. The

[1] *Take*, as defined by the Endangered Species Act, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures the species, including significant habitat modification."
[2] *Take* is defined under the California Fish and Game Code as any action or attempt to "hunt, pursue, catch, capture, or kill."

Permittees are working with the U.S. Army Corps of Engineers (USACE), the State Water Resources Control Board (SWRCB), the San Francisco Bay Regional Water Quality Control Board and Central Valley Regional Water Quality Control Board (RWQCBs), the U.S. Environmental Protection Agency (EPA) and CDFG to develop and operate regional permit programs for jurisdictional wetlands and waters under Sections 404 and 401 of the Clean Water Act (CWA), the Porter-Cologne Water Quality Control Act, and Section 1602 of the California Fish and Game Code relating to Streambed Alteration Agreements.

Geographic Scope

The HCP/NCCP *inventory area* is located in the eastern portion of Contra Costa County, California and covers approximately one-third of the County, or 174,018 acres (see Figure 1-1). The inventory area was defined as the area in which impacts would be evaluated and conservation would occur. Inventory-area boundaries were based on a combination of political, ecological, and hydrologic factors. Watershed boundaries were used to define the inventory area wherever possible.

The *permit area* is the area in which the Permittees are requesting authorization from USFWS and CDFG for activities and projects that may result in take of species covered by this Plan (i.e., covered activities). The permit area is land within the inventory area defined by the following parameters.

- The Urban Limit Line (ULL) of Contra Costa County or the city limits of the participating Cities of Pittsburg, Clayton, Oakley, and Brentwood, whichever is largest. This portion of the permit area is referred to in the Plan as the *urban development area* (UDA).
- The footprint of specific rural infrastructure projects or activities described in this Plan that are outside the UDA.
- The boundary of any land acquired in fee title or conservation easement and managed under this Plan (i.e., the HCP/NCCP Preserve System [Preserve System]). Permits are requested for this area to cover impacts that may occur during management and restoration of the Preserve System.

The city of Antioch is not participating in the HCP/NCCP and so is excluded from the UDA.

The HCP/NCCP has been designed to accommodate reasonable and expected growth of the participating jurisdictions based on current General Plans. However, participating jurisdictions have differing positions on where and how much future growth will occur. To respond to potential changes in land use policy among the participating jurisdictions, the HCP/NCCP permit area could expand or contract as a result of local land use decisions made independently of

the HCP/NCCP, provided that the revised permit area boundary is consistent with successful implementation of the HCP/NCCP conservation strategy.

To address this issue, two *urban development areas* are defined for the purposes of the analysis. The *initial urban development area* is most of the area within the current County ULL and city limits. Urban development within the initial urban development area is expected to result in 8,670 acres of impact to land cover types that may support covered species (see Figure 2-3). The *maximum urban development area* is the largest area to which urban development could expand under the terms of this HCP/NCCP. Urban development within the maximum urban development area is expected to result in 11,853 acres of impact to land cover types that may support covered species. With either urban development area, another 1,126 acres of impact are expected from rural infrastructure projects and activities within HCP/NCCP preserves. Thus, total impacts allowed under the Plan are 9,796 acres and 13,029 acres with the initial and maximum urban development areas, respectively.

The urban development area covered under the HCP/NCCP at the end of the permit term could fall anywhere in the range defined by the initial urban development area and the maximum urban development area, depending on local land use decisions that occur during the permit term.

Covered Activities

The primary goal of this Plan is to obtain authorization for take of covered species under ESA and NCCPA for future urban development in the cities of Clayton, Pittsburg, Brentwood, and Oakley and specific areas of unincorporated Contra Costa County in accordance with approved land use plans. Covered activities within these approved urban boundaries are broadly defined to include all ground-disturbing activities controlled by permit holders via their land use planning process. Covered activities will also include specific rural infrastructure projects outside these urban boundaries that will support urban growth (e.g., road and flood control projects and maintenance; see Figure 2-4). A small amount of take of covered species is expected to occur within the preserves as a result of ongoing management, restoration, and monitoring activities by preserve managers and from limited public access. These routine activities will also be covered by the Plan.

Covered Species

This Plan proposes to provide take authorization for 28 listed and non-listed species (i.e., covered species) (Table ES-1). The Plan includes conservation measures to protect all 28 covered species, whether or not they are currently listed. Accordingly, should any non-listed covered species become listed during the permit term, additional conservation measures will not be required.

The basis for coverage of all 28 covered species is summarized in Table ES-3 at the end of this Executive Summary.

Table ES-1. Species Proposed for Coverage

Mammals	**Invertebrates**
Townsend's western big-eared bat	Longhorn fairy shrimp
San Joaquin kit fox	Vernal pool fairy shrimp
Birds	Midvalley fairy shrimp
Tricolored Blackbird	Vernal pool tadpole shrimp
Golden Eagle	**Plants**
Western Burrowing Owl	Mount Diablo manzanita
Swainson's Hawk	Brittlescale
Reptiles	San Joaquin spearscale
Silvery legless lizard	Big tarplant
Alameda whipsnake	Mount Diablo fairy lantern
Giant garter snake	Recurved larkspur
Western pond turtle	Round-leaved filaree
Amphibians	Diablo helianthella
California tiger salamander	Brewer's dwarf flax
California red-legged frog	Showy madia
Foothill yellow-legged frog	Adobe navarretia

Conservation Strategy

Collectively, the conservation strategy will mitigate the impacts of covered species and contribute to the recovery of these species in the inventory area. The conservation strategy is designed to achieve a comprehensive set of 33 biological goals and 91 biological objectives.

Preserve System

The heart of the conservation strategy is a system of new preserves linked to existing protected lands to form a network of protected land outside the area where new urban growth will be covered under the HCP/NCCP (see Figures 5-2 and 5-3). The conservation strategy is designed to create a preserve system that will:

- Preserve approximately 23,800 acres of land under the initial urban development area or approximately 30,300 acres of land under the maximum urban development area for the benefit of covered species, natural communities, biological diversity, and ecosystem function.
- Preserve major habitat connections linking existing protected lands.

- Enable management of habitats to enhance populations of covered species and maintain ecosystem processes.

The Plan describes a detailed but flexible process to assemble the Preserve System using acquisition of fee title or conservation easements, and partnerships with other conservation organizations already active in the region. Assembly of the Preserve System will be based on the availability of willing sellers. However, preserve assembly will be required to stay ahead of the impacts of covered activities.

Habitat Restoration

To achieve no net loss of jurisdictional wetlands and waters and to contribute to the recovery of certain covered species, the Plan requires not only preservation but also the restoration of certain land cover types. Restoration will be required for habitat loss of wetlands, riparian woodland, and oak savanna at ratios varying from 1:1 to 2:1. Additional restoration of some land cover types will also occur regardless of the amount of impact. Although the exact acreage is not known, restoration is estimated at 436 to 598 acres under the initial and maximum urban development areas, respectively.

Adaptive Management and Monitoring

The conservation strategy contains detailed guidelines and recommendations for management, enhancement, and restoration techniques of the following land cover types:

- Grassland, including native grassland
- Oak woodland and oak savanna
- Wetlands and ponds
- Streams and riparian woodland
- Chaparral/scrub

The Plan also contains a framework, guidelines, and organizational structure that will help the entity that implements the HCP/NCCP develop a detailed monitoring and adaptive management program during the initial years of implementation. The program will incorporate important principles of "learning by doing" into the operations of the Preserve System.

Recreation and Agriculture on Preserves

In addition to supporting ecosystem processes, habitat, and species, the preserves will also support other uses such as recreation, grazing, and crop production, as

long as these uses are compatible with the biological goals and objectives of the HCP/NCCP.

New preserves to be created under this Plan will provide recreational opportunities for hikers, cyclists, and equestrians. Recreational uses will be carefully designed and managed to conserve resource values.

Avoidance and Minimization Measures

As required by ESA, the conservation strategy also includes measures to avoid and minimize take of covered species. All covered activities will be required to adhere to these measures in order to receive take authorization from local jurisdictions (i.e., County and participating cities or special districts). The primary intent of these measures is to encourage individuals of covered wildlife species within the permit area to avoid or escape project construction zones. Populations of covered plant populations will be avoided when adequate conservation of these species is not available within HCP/NCCP preserves. Impacts will also be minimized by designing development projects adjacent to the HCP/NCCP Preserve System in ways that reduce their impacts on covered species and habitats. Avoidance and minimization has been evaluated by the Plan at the landscape level, allowing project-by-project surveys and compliance to be simplified from the current system.

Implementation

A new organization will be created to oversee assembly and operation of the Preserve System and ensure compliance with all terms of the HCP/NCCP, permits, and Implementing Agreement. This *Implementing Entity* will be run by a Governing Board of representatives from the cities and the County and an Executive Director. The Implementing Entity will be advised by representatives of USFWS, CDFG, other regulatory agencies (when regional wetlands permitting programs are established), local land management agencies, a pool of Science Advisors, and a public advisory committee. It is anticipated that the Implementing Entity will partner with existing agencies and organizations to conduct a significant portion of its responsibilities.

The Plan also includes a detailed process for land acquisition from willing sellers and allowances for landowners to provide land in lieu of fees under certain circumstances.

Funding

The cost of implementing the HCP/NCCP during the 30-year permit term is estimated at $297,090,000 or $350,040,000 for the initial and maximum urban

development areas, respectively (Table ES-2). This includes the cost of land acquisition, Plan administration, habitat management, habitat restoration, biological monitoring, and remedial measures.

Funding to implement the Plan will come from a variety of sources. These sources may be classified as fees on covered activities and non-fee public funding. Proponents of covered activities will pay a fee to receive permit coverage under the Plan, a much simpler process for mitigating endangered species impacts than would be possible a project-by-project basis. Non-fee public funding will either come from continued investment by local, state, and federal programs already funding conservation in this area or from existing state and federal sources reserved for areas with an approved HCP/NCCP. Additional information on funding sources is provided below:

- **Fees on Covered Activities.** A primary mitigation fee is the development fee. In the first year of Plan implementation, development fees will range from $5,960 per acre for specific infill parcels less than 10 acres in size to $23,838 per acre for parcels on natural land cover types in specific mapped areas (see Figure 9-1). Additional fees will be charged for impacts on jurisdictional wetlands and waters that range from $58,000 per acre to $172,000 per acre, depending on the wetland type, to pay for the direct and substantial cost of wetland restoration. Each covered road project has its own pre-defined fee. Some covered activities that cause temporary impacts will also be subject to a fee. All fees will be automatically adjusted annually using standard indices to keep pace with inflation and expected increases in land costs. Land may be contributed in lieu of fees.
- **Non-Fee Funding from Local, State, and Federal Sources.** Non-fee public funding can only be used for portions of the Plan that contribute to species recovery (not for mitigation). Local funding will take several forms, including continued investments in conservation by the East Bay Regional Park District and local land trusts. Federal and state funding sources will include USFWS grants under Section 6 of the ESA, Wildlife Conservation Board grants, and state park and resource bond measures. Some of these federal and state funding sources are generally available throughout the state and nation, while others can only be used to implement an approved HCP/NCCP. Although not assumed in revenue projections, funding may be supplemented by future local funding measures for parks and open space.

The costs of implementing the Plan were allocated between future development and the public using a "fair share" analysis that considered past and proposed development impacts and past and proposed conservation acquisitions. This analysis was based on the premise that the costs allocated to future development should be in proportion to the impacts caused by future development.

Table ES-2. HCP/NCCP Cost and Funding Overview

Type	Amount	
	Initial Urban Development Area	Maximum Urban Development Area
Estimated Costs (rounded to nearest $10,000)		
Land acquisition	$191,640,000	$235,680,000
Management costs over permit term	$105,450,000	$114,360,000
Total estimated costs	$297,090,000	$350,040,000
Projected Funding		
Fee Funding		
Fees on new development in Urban Development Area	$118,183,000	$169,723,000
Wetland impact fees	$22,240,000	$24,010,000
Fees on rural infrastructure (e.g., roads, detention basins, pipelines)	$8,932,000	$8,932,000
Total projected fee funding	$149,350,000	$202,670,000
Non-Fee Funding		
Maintenance of existing conservation effort (local, State, Federal)	$85,000,000	$85,000,000
Byron Airport clear zone acquisitions	$6,500,000	$6,500,000
New Wildlife Agency funds (Section 6, park bonds, etc.)*	$58,000,000	$58,000,000
Total Non-Fee Funding	$149,500,000	$149,500,000
TOTAL PROJECTED FUNDING (Permit Term)	$298,850,000	$352,170,000

*Estimates only. State and federal contributions are described in the HCP/NCCP in terms of acres.

Table ES-3. Summary Evaluation of Species Proposed for Coverage by the East Contra Costa County HCP/NCCP

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Townsend's western big-eared bat *Corynorhinus townsendii townsendii* -/CSC	Initial Urban Development Area (UDA): 40% (13,000 acres) of annual grassland outside parks and open space Maximum UDA: 54% (16,500 acres) of annual grassland outside parks and open space	Initial UDA: 7% (2,533 acres) of annual grassland outside parks and open space and 0% (0 acres) of rock outcrop Maximum UDA: 12% (4,152 acres) of annual grassland outside parks and open space and 0% (0 acres) to rock outcrop	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Inventory acquired land with potential habitat using a bat detector. Develop a pilot project to evaluate the suitability of artificial hibernacula.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because roosting sites (caves, abandoned buildings, and abandoned mines) will be protected and an estimated 40-56% of suitable foraging habitat outside parks and open space will be conserved. Few recent sightings of this bat species have been reported, and there are no published records of Townsend's western big-eared bat (TBEB) within Contra Costa County. However, the species likely roosts in the inventory area in suitable roosting sites. At least two mines exist in the inventory area (Black Diamond Mines Regional Preserve and mines within Antioch adjacent to Black Diamond Mines Regional Park and designed as a high priority for conservation by the HCP/NCCP), but it is unknown if Townsend's western big-eared bat occurs in them. Indirect impacts (Table 4-1), such as increased harassment or disturbance due to overall population growth or recreation within the preserves, may affect small numbers of individual bats that roost in buildings, bridges, or other structures within the inventory area.

Conditions on Covered Activities: Covered activities are not anticipated to directly affect these habitat features. However, planning surveys conducted by HCP/NCCP applicants will identify potential habitat for TBEB. Planning and preconstruction surveys are required in areas with suitable TBEB roosting habitat. If occupied sites are identified, seasonal restrictions on construction are required (Chapter 6, section 6.3.3).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
San Joaquin kit fox *Vulpes macrotus mutica* FE/ST	Initial UDA: 43% (17,164 acres) of core habitat outside parks and open space Maximum UDA: 51% (20,465 acres) of core habitat outside parks and open space	Initial UDA: 7% (2,841 acres) of core habitat outside parks and open space Maximum UDA: 11% (4,576 acres) of core habitat outside parks and open space	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Test management methods to increase prey in grasslands. Monitor ground squirrel population density as a potential indicator of habitat quality. Estimate relevant demographic parameters such as adult survivorship and age structure, if appropriate.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 43-51% of suitable foraging habitat outside parks and open space will be conserved. The conservation strategy will protect 17,164-20,465 acres of suitable core habitat for San Joaquin kit fox in the inventory area (Table 5-13). A network of core preserves will protect a critical linkage for San Joaquin kit fox between its range outside Contra Costa County and most known locations in Contra Costa County. For example, habitat linkages will be acquired and protected to ensure that kit foxes can continue to move between the Contra Costa–Alameda County line and Black Diamond Mines Regional Preserve at the northwestern corner of the species' entire range. This important regional linkage will be made by connecting existing large protected areas. Annual grassland within preserves will be managed to enhance small-mammal populations (a prey base for kit fox) (Conservation Measure 2.5) and to enhance the native plant component of this vegetation community (Conservation Measure 2.4).

Conditions on Covered Activities: Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (Conservation Measures 1.6 and 1.9). Prior to submission of an application for coverage under the HCP/NCCP, planning surveys will identify active breeding habitat or denning sites for kit fox. Preconstruction surveys are required in areas with burrows or dens. Destruction of occupied dens is prohibited. Protocols are in place for avoiding injury to individuals (Chapter 6, Section 6.3.3). Road undercrossings required on rural covered roads will minimize impacts to this species from habitat fragmentation (Conservation Measure 1.14).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Tricolored blackbird *Agelaius tricolor* MBTA/CSC-1	Initial UDA: 14% (126 acres) of core habitat outside parks and open space 27% (16,747acres) of primary foraging habitat outside parks and open space 84 acres of perennial wetland complexes restored 21acres of ponds created Maximum UDA: 19% (164 acres) of core habitat outside parks and open space 33% (20,138 acres) of primary foraging habitat outside parks and open space 85 acres of perennial wetland complexes restored 22 acres of ponds created	Initial UDA: 23% (199 acres) of core habitat outside parks and open space 13% (8,086 acres) of primary foraging habitat outside parks and open space Maximum UDA: 23% (204 acres) of core habitat outside parks and open space 16% (9,621 acres) of primary foraging habitat outside parks and open space	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Monitor predation on nesting colonies by black-crowned night heron. Determine species response to wetland and pond restoration and creation. Map all nest locations to determine likely foraging habitat.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 14-19% of core habitat and 27-33% of primary foraging habitat outside parks and open space will be conserved and breeding habitat will be created or restored The Preserve System will protect an estimated 126-164 acres of modeled core habitat, 16,747-20,138 acres of primary foraging habitat, and 242-365 acres of secondary foraging habitat within the initial or maximum urban development areas, respectively (Table 5-13 and Conservation Measure 1.1). The Preserve System will also protect at least seven of the 13 ponds in Subzone 2c, all of which provide potential breeding habitat for tricolored blackbird. Wetland and pond creation and restoration will provide additional habitat for tricolored blackbird. An estimated 84-85 acres of perennial wetland complexes will be created or restored as well as an estimated 21-22 acres of pond habitat (Tables 5-16 and 5-17). Conservation easements will be acquired on 250-400 acres of cropland or pasture in Acquisition Analysis Zone 6 under each development area. Conservation easements will require landowners to enhance the value of agricultural lands for tricolored blackbird and other covered species (Conservation Measures 1.3 and 2.11).

Conditions on Covered Activities: Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.9, and 1.10). Project approvals must require avoidance of occupied nests during the breeding season.

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Golden eagle *Aquila chrysaetos* MBTA, BGEPA/FP	Initial UDA: 28% (24,321 acres) of foraging habitat outside parks and open space Maximum UDA: 34% (29,267 acres) of foraging habitat outside parks and open space	Initial UDA: 11% (9,619 acres) of foraging habitat outside parks and open space Maximum UDA: 16% (13,491 acres) of foraging habitat outside parks and open space	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Test methods to increase prey base. Subsequently, monitor small-mammal populations to determine abundance of prey for golden eagle. Map active nests to determine likely foraging habitat.	YES

Details of Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 28-34% of foraging habitat outside parks and open space will be conserved. The Preserve System will protect 24,32-29,267 acres of foraging habitat within the initial-maximum urban development area (Table 5-13 and Conservation Measure 1.1). Nearly the entire Preserve System will provide suitable foraging habitat for golden eagles. New preserves will be linked to existing protected land, which will result in large areas of contiguous foraging habitat for golden eagles. Acquisition of occupied or suitable nest sites will be a priority when assembling the Preserve System (Conservation Measure 3.3).

Conditions on Covered Activities: Project approvals must require avoidance of occupied nests during the breeding season. Development guidelines will ensure that impacts on this species from covered activities are minimized (see Conservation Measures 1.6, 1.9, and 1.10). Conservation Measure 1.11 prohibits the take of individual golden eagles due to their status as Fully Protected. Wind turbine leases acquired within the Preserve System will be retired to reduce injury and mortality of golden eagles and other raptors.

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Western burrowing owl	Initial UDA: 38% (16,675 acres) of breeding and foraging habitat outside parks and open space Maximum, UDA: 45% (19,844 acres) of breeding and foraging habitat outside parks and open space	Initial UDA: 9% (3,805 acres) of breeding and foraging habitat outside parks and open space Maximum UDA: 13% (5,755 acres) of breeding and foraging habitat outside parks and open space	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Test methods to increase prey base. Subsequently, monitor small-mammal populations to determine abundance of prey for WBO. Estimate relevant demographic parameters, if appropriate. Determine the most effective artificial-burrow designs and placement strategies. Determine effectiveness of artificial perch sites in attracting WBO.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 38-45% of breeding and foraging habitat outside of parks and open space will be conserved, and habitat will be enhanced (Conservation Measures 3.4 and 3.5). The Preserve System will protect 16,675-19,844 acres of breeding and foraging habitat and 345-703 acres of low-use habitat under the initial and maximum urban development areas, respectively (Table 5-13). A network of preserves will protect large blocks of grassland habitat. New linkages will be created suitable for dispersal and colonization throughout the Preserve System and to existing parks and open space (Conservation Measure 1.1). To attract and retain western burrowing owl, artificial burrows and perches will be installed, where appropriate (Conservation Measures 3.4 and 3.5).

Conditions on Covered Activities: Project approvals must require avoidance of occupied burrows during the breeding season. Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.9, and 1.10). Planning and preconstruction surveys are required in areas with active western burrowing owl burrows. Destruction of occupied burrows is prohibited (Chapter 6, Section 6.3.3).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Swainson's hawk *Buteo swainsoni* MBTA/ST	Initial UDA: 9% (12 acres) of breeding habitat conserved outside parks and open space + up to 50 acres of riparian woodland/scrub created or restored 12% (3,614 acres) of foraging habitat outside parks and open space Maximum UDA: 12% (16 acres) of breeding habitat conserved outside parks and open space + up to 55 acres of riparian woodland/scrub created or restored 15% (4,451 acres) of foraging habitat outside parks and open space	Initial UDA: Up to 27% (16 acres) of breeding habitat outside parks and open space 13% (3,782 acres) of foraging habitat outside parks and open space Maximum UDA: Up to 27% (16 acres) of breeding of habitat outside parks and open space 16% (4,743 acres) of foraging habitat outside parks and open space	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.5 (summarized below). Suggested Tasks: Test methods to increase prey base. Subsequently, monitor small-mammal populations to determine abundance of prey for Swainson's hawk. Monitor low-elevation grassland to refine mapping of foraging range. Monitor active nests to determine use patterns and specific habitat needs for breeding sites. Monitor species response to riparian restoration.	YES

Rationale for Identifying Species as Covered

Conservation: The inventory area is at the western edge of this species' range. This species will be covered by the HCP/NCCP because at least 9-12% of breeding habitat and 12-15% of foraging habitat outside parks and open space will be conserved. The Preserve System will protect at least 12-16 acres of riparian breeding habitat and 3,614-4,451 acres of foraging habitat under the initial/maximum urban development area, or an approximately 1:1 mitigation ratio (Table 5-13). The loss of riparian woodland/scrub, some of which is considered suitable nesting habitat for Swainson's hawk, will be mitigated through in-kind protection of riparian woodland (Conservation Measure 1.1 and Tables 5-5a and 5-5b) and enhancement and restoration of riparian woodland/scrub within preserves (Conservation Measures 2.9 and 2.10 and Tables 5-16 and 5-17). An estimated 50-55 acres of riparian woodland/scrub will be restored within the Preserve System (Table 5-17), much of which will be suitable breeding habitat for Swainson's hawk. 250-400 acres of cropland or pasture for Swainson's hawk foraging along Kellogg Creek, Marsh Creek, or adjacent to Dutch Slough that is suitable for riparian restoration will be acquired. Additionally, acquired conservation easements will require landowners to enhance the value of agricultural lands for Swainson's hawk and other covered species (Conservation Measures 1.3 and 2.11). Extensive areas of cultivated agriculture in the inventory area that provides suitable foraging habitat for Swainson's hawk will continue to be protected through strict zoning within Contra Costa County's Agricultural Core.

Conditions on Covered Activities:. Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.9, and 1.10). Prior to submission of an application for coverage under the HCP/NCCP, planning surveys will identify potentially active Swainson's hawk nest sites, following established Swainson's hawk survey protocols. Preconstruction surveys are required in areas with active nests. Destruction of occupied nests is prohibited, and buffer zones during the nesting season are required (Chapter 6, Section 6.3.3). Non-riparian nest trees lost must be replaced at a ratio of 5:1 per mature tree (saplings will be planted at ratio of 15:1 to ensure this final ratio) on-site or on HCP/NCCP preserves.

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Silvery legless lizard *Annietta pulchra pulchra* -/SSC	Initial UDA: At least 11% (153 acres) of modeled habitat outside parks and open space Maximum UDA: At least 12% (166 acres) of modeled habitat outside parks and open space	Initial UDA: 22% (298 acres) of modeled habitat outside parks and open space Maximum UDA: 22% (298 acres) of modeled habitat outside parks and open space	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Verify suitability of modeled habitat with field data.	YES

Rationale for Identifying Species as Covered

Conservation: An estimated 2,196 acres (62%) of modeled suitable habitat for silvery legless lizard are currently protected in the inventory area, mostly in the Los Vaqueros Watershed, Round Valley Regional Preserve, and Morgan Territory Regional Preserve. This species will be covered by the HCP/NCCP because at least 11-12% of modeled habitat outside parks and open space will be conserved. The Preserve System will protect an estimated 153-166 acres of modeled habitat under the initial and maximum urban development area, respectively (Table 5-13). Habitat for silvery legless lizard in Subzone 2h will be preserved if pre-acquisition surveys confirm the suitability predicted by models (Conservation Measure 1.1). Little is known about the species, its distribution in the inventory area, and its microhabitat requirements. Development and refinement of management-oriented conceptual models and species-habitat models will guide future efforts at conservation and management.

Conditions on Covered Activities: Restrictions on recreation in protected habitat will minimize disturbance to the species (Conservation Measure 1.5). Also, pesticide use, which threatens this species by affecting its insect prey base, will be controlled in preserves (Conservation Measure 1.2). Buffers between protected habitat and the urban edge will benefit silvery legless lizard by discouraging intrusion by domestic predators (Conservation Measures 1.8 and 1.9).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Alameda whipsnake *Masticophis lateralis euryxanthus* T/T	Initial UDA: 53% (1,690 acres) of core and perimeter habitat outside parks and open space 51% (10,564 acres) of movement habitat outside parks and open space Maximum UDA: 57% (1,817 acres) of core and perimeter habitat outside parks and open space 59% (12,166 acres) of movement habitat outside parks and open space	Initial UDA: 0% (2 acres) of core and perimeter habitat outside parks and open space 1% (117 acres) of movement habitat outside parks and open space Maximum UDA: 1% (29 acres) of core and perimeter habitat outside parks and open space 2% (341 acres) of movement habitat outside parks and open space	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.3 (summarized below). Suggested Tasks: Determine AWS use of grassland for foraging/breeding. Determine habitat function of chaparral for AWS and the need for active management. Monitor response of AWS to fire. Consider new research on the effects of prescribed burning on AWS.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 53-57% of core and perimeter habitat outside parks and open space will be conserved, and chaparral will be studied and managed to benefit the species. The Preserve System will protect 1,690-1,817 acres of core and perimeter habitat, 10,564-12,166 upland movement habitat, and 46-51 miles of stream movement habitat under the initial/maximum urban development area (Table 5-13). An average of 70% of currently unprotected core and perimeter whipsnake habitat in Subzones 2a, 2b, 2c, 3a, and Zone 4 will be preserved (Conservation reply to:on Measure 1.1). Important habitat linkages between chaparral patches will be protected including the linkage in Zone 2 and Subzone 3a between Black Diamond Mines Regional Preserve and Mount Diablo State Park. The importance of disturbance (e.g., fire) in maintaining habitat for this species will be investigated and implemented to benefit the species, and diverse canopy-cover stages will be maintained (Conservation Measure 2.8). Movement habitat for Alameda whipsnake will be enhanced through improved management of oak woodland, oak savanna, and annual grassland (Conservation Measures 1.2, 2.4, and 2.6). Wildfire management measures such as vegetation management, fuel breaks, or prescribed burns will be designed to minimize impacts on and enhance habitat for Alameda whipsnake (Conservation Measure 1.2).

Conditions on Covered Activities: Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.9, and 1.10). Control of exotic plants (Conservation Measure 1.4) and recreational uses (Conservation Measure 1.5) may also benefit or minimize impacts to Alameda whipsnake. Recreational controls include prohibiting bicycles in core whipsnake habitat and prohibiting construction of new trails in suitable core habitat.

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Giant garter snake *Thamnophis gigas* T/T	Initial UDA: <1% (1 mile) of core habitat) outside parks and open space + 72 acres of slough/channel habitat will be created or restored Maximum UDA: 2% (3 miles) of core habitat outside parks and open space + 72 acres of slough/channel habitat will be created or restored	Initial UDA: 0% (0.3 miles) of core habitat outside parks and open space Maximum UDA: 0% (0.4 miles) of core habitat outside parks and open space	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Develop specific monitoring protocols.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 1-3 miles of core habitat outside of parks and open space will be conserved, and 72 acres of slough/channel habitat will be restored. No records of giant garter snake have been documented within the inventory area and little to no impacts are anticipated. Any impacts require additional preservation of habitat according to accepted USFWS procedures (Conservation Measure 3.6). Additional preservation ratios range from 1:1 to 3:1. The restoration of slough/channel habitats on Dutch Slough and in other areas will also benefit giant garter snake. The amount of restoration in these areas is undetermined, but up to 72 acres of slough/channel restoration could occur in the inventory area if suitable restoration sites can be found.

Conditions on Covered Activities: Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.9, and 1.10). Planning and preconstruction surveys are required in areas with giant garter snake habitat. Seasonal restrictions or buffer zones are required (Chapter 6, Section 6.3.3).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Western pond turtle	Initial UDA: 21% (675 acres) of non-stream core habitat outside parks and open space + 21 acres of ponds created 18% (6 miles) of stream core habitat outside parks and open space + 0.6 miles of stream habitat restored Maximum UDA: 27% (873 acres) of non-stream core habitat outside parks and open space + 22 acres of pond created 21% (7 miles) of stream core habitat outside parks and open space + 0.8 miles of stream habitat restored	Initial UDA: 15% (467 acres) of non-stream core habitat outside parks and open space 0% (0.1 miles) of stream core habitat outside parks and open space Maximum UDA: 16% (498 acres) of non-stream core habitat outside parks and open space 0% (0.1 mile) of stream core habitat outside parks and open space	Landscape	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 21-27% of core non-stream habitat and 18-21% of core stream habitat outside parks and open space will be conserved, breeding habitat will be created or restored, and basking habitat will be enhanced. The Preserve System will protect 675-873 acres of core non-stream habitat and 6-7 miles of core stream habitat under the initial and maximum urban development areas, respectively (Table 5-13). A network of core preserves will protect 1,715-1,956 acres of upland breeding and movement habitat for western pond turtle. New preserves will be established adjacent to existing protected land to maintain contiguous wetland-upland complexes (Conservation Measure 1.1). Also, an estimated 21-22 acres of pond habitat will be created (Tables 5-16 and 5-17). Approximately 0.6-0.8 miles of stream habitat will be restored. Pond creation and stream restoration will incorporate habitat requirements for western pond turtles, where appropriate. Additionally, artificial basking substrate and woody debris will be installed in some ponds to increase basking sites for pond turtles (Conservation Measure 3.7).

Conditions on Covered Activities: Development guidelines, including stream setbacks, will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.7, 1.9, and 1.10). Road undercrossings required on rural covered roads will minimize impacts to this species from habitat fragmentation (Conservation Measure 1.14).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
California tiger salamander *Ambystoma californiensis* T/SSC	Initial UDA: 37% (96 acres) of breeding habitat outside parks and open space 40% (24,047 acres) of migration/aestivation habitat outside parks and open space 21 acres of ponds created 84 acres of perennial wetland complex restored Maximum UDA: 43% (111 acres) of breeding habitat outside parks and open space 51% (28,751 acres) of migration/aestivation habitat outside parks and open space 22 acres of ponds created 85 acres of perennial wetland complex restored	Initial UDA: 19% (50 acres) of breeding habitat outside parks and open space 7% (4,002 acres) of migration/aestivation habitat outside parks and open space Maximum UDA: 26% (68 acres) of breeding habitat outside parks and open space 9% (5,571 acres) of migration/aestivation habitat outside parks and open space	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Determine species response to wetland and pond restoration and creation. Conduct pilot project to determine the relative benefit of different pond management treatments. Assess movement to and use of breeding sites. Test management methods to increase burrow availability in grasslands. Subsequently, monitor burrow availability and California tiger salamander use of burrows.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 37-43% of breeding habitat and 40-51% of migration/aestivation habitat outside parks and open space will be conserved, breeding habitat will be created and restored, and migration/aestivation habitat will be enhanced. The Preserve System will protect 96-111 acres of breeding habitat and 24,047-28,751 acres of migration/aestivation habitat (Table 5-13 and Conservation Measure 1.1). A network of core preserves will protect large blocks of aestivation/migration habitat. New linkages will be created in blocks of suitable habitat to facilitate dispersal and colonization throughout the inventory area and movement between breeding sites. Because California tiger salamanders (CTS) require habitat complexes that include both suitable breeding and upland habitat, areas preserved to achieve the biological goals and objectives for CTS will include both habitat elements. In addition, to compensate for loss of aquatic habitats (much of which is likely suitable habitat for CTS), aquatic habitats will be acquired in kind (ratios in Table 5-5). An estimated 21-22 acres of pond habitat will be created to both mitigate for impacts and to contribute to recovery as well as 84-85 acres of perennial wetland complex (Tables 5-16 and 5-17). Ponds will be designed to support the life-history requirements CTS, where appropriate (Conservation Measures 2.2 and 2.3).

Conditions on Covered Activities: Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.9, and 1.10). Surveys for suitable breeding habitat will be conducted prior to submission of application for coverage under the HCP/NCCP. CDFG and USFWS will be notified of any suitable breeding habitat to be filled prior to construction to allow salvage of juveniles (see Chapter 6, Section 3.6.6). Road undercrossings required on rural covered roads will minimize impacts to this species from habitat fragmentation (Conservation Measure 1.14).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
California red-legged frog *Rana aurora draytonii* T/SSC	Initial UDA: 29% (28 acres) of non-stream breeding habitat outside parks and open space 39% (85 miles) of stream breeding habitat outside parks and open space + 0.6 miles of stream habitat created or restored 35% (24,455 acres) of upland movement habitat outside parks and open space 21 acres of ponds created 84 acres of perennial wetland complex restored	Initial UDA: 2% (2 acres) of non-stream breeding habitat outside parks and open space 6% (0.5 miles) of stream breeding habitat outside parks and open space 9% (6,199 acres) of upland movement habitat outside parks and open space	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Determine species response to wetland and pond restoration and creation. Conduct pilot project to determine the relative benefit of different pond management treatments. Assess movement to and use of breeding sites. Test management methods to increase burrow availability and use in grasslands. Subsequently, monitor burrow availability and use by California red-legged frog.	YES
	Maximum UDA: 38% (36 acres) of non-stream breeding habitat outside parks and open space 45% (98 miles) of stream breeding habitat outside parks and open space + 0.8 miles of stream habitat created or restored 42% (29,467 acres) of upland movement habitat outside parks and open space 22 acres of ponds created 85 acres of perennial wetland complex restored	Maximum UDA: 3% (3 acres) of non-stream breeding habitat outside parks and open space <1% (0.6 miles) of stream breeding habitat outside parks and open space 11% (7,785 acres) of upland movement habitat outside parks and open space			

Rationale for Identifying Species as Covered

Conservation: California red-legged frog (CRLF) will be covered by the HCP/NCCP because 29-38% of non-stream breeding habitat, 39-45% of stream breeding habitat, and 35-42% of upland movement habitat outside parks and open space will be conserved. Additionally, breeding habitat will be created and restored and upland movement/aestivation habitat will be enhanced. The Preserve System will protect 21-22 acres of pond habitat, 85-98 miles of stream habitat 24,455-29,467 acres of upland movement habitat (Table 5-13 and Conservation Measure 1.1). Because CRLF require habitat complexes that include both suitable breeding and upland habitat, areas preserved to achieve the biological goals and objectives for CRLF will include both habitat elements. In addition, to compensate for loss of habitat for CRLF, aquatic habitats will be acquired in kind (ratios in Table 5-5). Ponds will be created to both mitigate for impacts and to contribute to recovery (Tables 5-16 and 5-17). Ponds will be designed to support the life-history requirements of CRLF, where appropriate (Conservation Measures 2.2 and 2.3). Stream restoration will also

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enhance habitat for CRLF, where appropriate. **Conditions on Covered Activities:** Development guidelines, including stream setbacks, will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.7, 1.9, and 1.10). Planning surveys for suitable breeding habitat will be conducted prior to submission of application packages for coverage under the HCP/NCCP. CDFG and USFWS will be notified of any suitable breeding habitat to be filled prior to construction to allow salvage of juveniles (see Chapter 6, Section 3.6.6). Road undercrossings required on rural covered roads will minimize impacts to this species from habitat fragmentation (Conservation Measure 1.14).					
Foothill yellow-legged frog *Rana boylii* -/SSC	Initial UDA: 2% (5.2 miles) of streams outside parks and open space + 0.6 miles of stream habitat restored 50 acres of riparian woodland/scrub will be restored Maximum UDA: 2% (5.6 miles) of streams outside parks and open space + 0.8 miles of stream habitat restored 55 acres of riparian woodland/scrub will be restored	Initial UDA: <1% (0.1 miles) of stream breeding habitat outside parks and open space <1% (0.5 miles) of stream movement habitat outside parks and open space Maximum UDA: <1% (0.1 miles) of stream breeding habitat outside parks and open space <1% (0.6 miles) of stream movement habitat outside parks and open space	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Precisely map stream reaches with perennial water to improve the species-habitat models. Monitor species response to riparian woodland/scrub and stream enhancement and restoration.	YES
Rationale for Identifying Species as Covered **Conservation:** This species will be covered by the HCP/NCCP because 5.2-5.6 miles of streams outside parks and open space will be protected, and restoration will create or enhance breeding and foraging habitat for the species. Preserved streams will include both perennial and ephemeral streams; perennial streams provide breeding habitat for foothill yellow-legged frog. Impacts to species habitat are likely to be very small (<1% of available habitat). Impacts on perennial streams, including suitable foothill yellow-legged frog (FYLF) habitat, will be mitigated at a preservation ratio of 2:1 (Tables 5-5a and 5-5b). Stream restoration is also required as mitigation (Tables 5-16 and 5-17). Stream restoration will be attempted on up to 0.8 miles of existing streams (see Conservation Measures 2.3 and 2.10). Up to 55 acres of riparian woodland/scrub will be created or restored. This habitat will be designed to support the life-history requirements of FYLF, where feasible, and will also mitigate impacts to stream habitat. Land acquisition in Zone 4 will be focused along Marsh Creek, especially in the upper reaches, where modeled suitable breeding and dispersal habitat for yellow-legged frog is most extensive and under threat. **Conditions on Covered Activities:** Development guidelines, including stream setback requirements, will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.7, 1.9, and 1.10).					

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Longhorn fairy shrimp *Brachinecta longiantenna* FE/-	Initial UDA: See below Maximum UDA: See below	Initial UDA: See below Maximum UDA: See below	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Determine species response to wetland restoration. Evaluate restored seasonal wetlands to determine if shrimp are present at frequencies similar to those in natural complexes. If not, assess feasibility of transplanting species.	YES

Rationale for Identifying Species as Covered

Conservation: Within the inventory area, longhorn fairy shrimp is known only from the Vasco Caves Regional Preserve. Accordingly, no direct impacts on longhorn fairy shrimp habitat are expected unless additional occupied areas are discovered within the permit area outside the Vasco Caves Regional Preserve. Approximately 129-172 acres of seasonal wetland complexes outside of parks and open space will be conserved, and 104-163 acres of seasonal wetland complexes will be created or restored (Tables 5-5a and 5-5b, 5-16 and 5-17, and Conservation Measures 1.1 and 2.3). Because longhorn fairy shrimp are associated only with rock outcrops in this area, it is unknown whether protection and restoration of wetland complexes will be of any benefit to the species. Similarly, while some impacts to seasonal wetland complexes are anticipated, there are no predicted impacts on the rock outcrops specifically known to support the species.

Conditions on Covered Activities: Prior to submission of an application package, planning surveys will identify suitable habitat for covered shrimp species. Preconstruction surveys are required in areas with suitable habitat. If occupied sites are identified, buffer zones or seasonal restrictions are required (Chapter 6, Section 6.3.3). If seasonal wetlands are occupied by longhorn fairy shrimp, applicants must compensate for impacts to these wetlands according to Conservation Measure 3.8 if sufficient preservation or restoration has not already occurred within the Preserve System. Applicants have the option of assuming presence of covered shrimp in lieu of conducting presence/absence surveys and compensating accordingly.

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Vernal pool fairy shrimp *Brachinecta lunchi* FT/-	Initial UDA: 129 acres of seasonal wetland complexes[2] 104 acres seasonal wetland complexes restored Maximum UDA: 168 acres of seasonal wetland complexes[2] 163 acres seasonal wetland complexes restored	Initial UDA: 43 acres of seasonal wetland complexes[2] (includes all seasonal wetlands + 25% undetermined wetlands) Maximum UDA: 56 acres of seasonal wetland complexes[2] (includes all seasonal wetlands + 25% undetermined wetlands)	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Determine species response to wetland restoration. Evaluate restored seasonal wetlands to determine if shrimp are present at frequencies similar to those in natural complexes. If not, assess feasibility of transplanting species.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 129-168 acres of seasonal wetland complexes outside of parks and open space will be conserved, and 104-163 acres of seasonal wetland complexes will be created or restored (Tables 5-5a and 5-5b, 5-16 and 5-17, and Conservation Measures 1.1 and 2.3), some of which is expected to be suitable for vernal pool fairy shrimp. Restored seasonal wetlands will be evaluated to determine if covered crustaceans are present at frequencies similar to those in natural seasonal wetland complexes. If not, the Implementing Entity will assess the feasibility of transplanting species from occupied wetlands to restored wetlands to establish new populations.

Conditions on Covered Activities: Prior to submission of an application package, planning surveys will identify suitable habitat for covered shrimp species. Preconstruction surveys are required in areas with suitable habitat. If occupied sites are identified, buffer zones or seasonal restrictions are required (Chapter 6, Section 6.3.3). If seasonal wetlands are occupied by covered shrimp, applicants must compensate for impacts to these wetlands according to Conservation Measure 3.8 if sufficient preservation or restoration has not already occurred within the Preserve System. Applicants have the option of assuming presence of covered shrimp in lieu of conducting presence/absence surveys and compensating accordingly.

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Midvalley fairy shrimp *Brachinecta mesovallensis* -/-	Initial UDA: 129 acres of seasonal wetland complexes[2] 104 acres of seasonal wetland complexes[2] restored Maximum UDA: 168 acres of seasonal wetland complexes [2] 163 acres of seasonal wetland complexes[2] restored	Initial UDA: 43 acres of seasonal wetland complexes[2] (includes all seasonal wetlands + 25% undetermined wetlands) Maximum UDA: 56 acres of seasonal wetland complexes[2] (includes all seasonal wetlands and 25% undetermined wetlands)	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Determine species response to wetland and pond restoration. Evaluate restored seasonal wetlands to determine if shrimp are present at frequencies similar to those in natural complexes. If not, assess feasibility of transplanting species.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 129-168 acres of seasonal wetland complexes outside of parks and open space will be conserved, and104-163 acres of seasonal wetland complexes will be created or restored (Table 5-5a and 5-5b, 5-16 and 5-17, and Conservation Measures 1.1 and 2.3), some of which is expected to be suitable for Midvalley fairy shrimp. Restored seasonal wetlands will be evaluated to determine if covered crustaceans are present at frequencies similar to those in natural seasonal wetland complexes. If not, the Implementing Entity will assess the feasibility of transplanting species from occupied wetlands to restored wetlands to establish new populations.

Conditions on Covered Activities: Prior to submission of an application package, planning surveys will identify suitable habitat for covered shrimp species. Preconstruction surveys are required in areas with suitable habitat. If occupied sites are identified, buffer zones or seasonal restrictions are required (Chapter 6, Section 6.3.3). If seasonal wetlands are occupied by covered shrimp, applicants must compensate for impacts to these wetlands according to Conservation Measure 3.8 if sufficient preservation or restoration has not already occurred within the Preserve System. Applicants have the option of assuming presence of covered shrimp in lieu of conducting presence/absence surveys and compensating accordingly.

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Vernal pool tadpole shrimp *Lepidurus packardi* FE/-	Initial UDA: 129 acres of seasonal wetland complexes[2] 104 acres of seasonal wetland complexes[2] restored Maximum UDA: 168 acres of seasonal wetland complexes[2] 163 acres of seasonal wetland complexes[2] restored	Initial UDA: 43 acres of seasonal wetland complexes[2] (includes all seasonal wetlands + 25% undetermined wetlands) Maximum UDA: 56 acres of seasonal wetland complexes[2] (includes all seasonal wetlands and 25% undetermined wetlands)	Landscape Natural Community Species	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.1 (summarized below). Suggested Tasks: Determine species response to wetland and pond restoration. Evaluate restored vernal pools to determine if shrimp are present at frequencies similar to those in natural complexes. If not, assess feasibility of transplanting species.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 129-168 acres of seasonal wetland complexes outside of parks and open space will be conserved, and 104-163 acres of seasonal wetland complexes will be created or restored (Table 5-5a and 5-5b, 5-16 and 5-17, and Conservation Measures 1.1 and 2.3), some of which is expected to be suitable for vernal pool tadpole shrimp. Restored seasonal wetlands will be evaluated to determine if covered crustaceans are present at frequencies similar to those in natural seasonal wetland complexes. If not, the Implementing Entity will assess the feasibility of transplanting species from occupied wetlands to restored wetlands to establish new populations.

Conditions on Covered Activities: Prior to submission of an application package, planning surveys will identify suitable habitat for covered shrimp species. Preconstruction surveys are required in areas with suitable habitat. If occupied sites are identified, buffer zones or seasonal restrictions are required (Chapter 6, Section 6.3.3). If seasonal wetlands are occupied by covered shrimp, applicants must compensate for impacts to these wetlands according to Conservation Measure 3.8 if sufficient preservation or restoration has not already occurred within the Preserve System. Applicants have the option of assuming presence of covered shrimp in lieu of conducting presence/absence surveys and compensating accordingly.

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Mount Diablo manzanita *Arctostaphylos auriculata* -/CNPS-1B	Initial UDA: 56% (414 acres) of modeled habitat outside parks and open space 2 out of 2 known occurrences outside public land will be preserved Maximum UDA: 61% (447 acres) of modeled habitat outside parks and open space 2 out of 2 known occurrences outside public land will be preserved	Initial UDA: 0% (0 acres) of modeled habitat 0 out of 2 known occurrences outside public land may be removed by covered activities Maximum UDA: <1% (2 acres) of modeled habitat outside parks and open space 0 out of 2 known occurrences outside public land may be removed by covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.3 (summarized below). Suggested Tasks: Map and monitor stands of Mount Diablo manzanita. Determine age structure of stands and assess ability to reproduce with and without fire.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 56-61% of modeled habitat outside parks and open space and 2 out of 2 known occurrences outside public land will be conserved. The Preserve System will protect 414-447 acres of modeled habitat (Table 5-12 and Conservation Measure 1.1). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit Mount Diablo manzanita (MDM). Vegetation management actions, including prescribed burning (Conservation Measures 1.2 and 2.8), will ensure that the condition of the chaparral vegetation community that supports MDM will be maintained or enhanced.

Conditions on Covered Activities: No impacts on known occurrences of MDM are expected to result from covered activities. However, if a new population is found that is expected to be removed by covered activities, a comparable population must be protected within HCP/NCCP preserves. Exotic plants and recreational use (e.g., over-collecting) will be controlled within preserves to benefit MDM (Conservation Measures 1.4 and 1.5).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Brittlescale *Atriplex depressa* -/CNPS-1B	Initial UDA: 49% (577 acres) of modeled habitat outside parks and open space 2 out of 5 known occurrences outside public land will be preserved Maximum UDA: 60% (697 acres) of modeled habitat outside parks and open space 4 out of 5 known occurrences outside public land will be preserved	Initial UDA: 7% (81 acres) of modeled habitat outside parks and open space 1 out of 5 known occurrences outside public land may be removed by covered activities Maximum UDA: 7% (81 acres) of modeled habitat outside parks and open space 1 out of 5 known occurrences outside public land may be removed by covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Conduct soil sampling to determine precise soil associations. Identify, map, and monitor any occurrences within preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 49-60% of modeled habitat outside parks and open space and 2-4 out of 5 occurrences outside public land will be conserved. The Preserve System will protect 577-697 acres of modeled habitat (Table 5-12 and Conservation Measure 1.1). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit brittlescale. Exotic plants will be controlled within preserves (Conservation Measure 1.4). Vegetation management and enhancement within alkali grassland and alkali wetlands (Conservation Measures 2.1, 2.2, 2.4, and 2.12) will benefit brittlescale by maintaining or enhancing habitat for this species. Approximately 61 to 67 acres of alkali wetlands will be restored within preserves (Tables 5-16 and 17). One objective of alkali wetland restoration is to restore suitable habitat for brittlescale.

Conditions on Covered Activities: Development guidelines will ensure that impacts on this species from covered activities are avoided or minimized (see Conservation Measures 1.6, 1.9, and 1.10). One population of brittlescale will likely be removed by covered activities. If two populations as healthy or healthier (as defined in Conservation Measure 1.1) cannot be identified and preserved, impacts to brittlescale are not allowed under the terms of the plan.

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
San Joaquin spearscale *Atriplex joaquiniana* -/CNPS-1B	Initial UDA: 60% (900 acres) of alkali grassland outside parks and open space 44% (87 acres) of alkali wetland outside parks and open space + 61 acres of alkali wetland restored 0 out of 1 known occurrences outside public land will be preserved Maximum UDA: 83% (1,250 acres) of alkali grassland outside parks and open space 49% (96 acres) of alkali wetland outside parks and open space + 67 acres of alkali wetland restored 0 out of 1 known occurrences outside public land will be preserved	Initial UDA: 7% (115 acres) of alkali grassland outside parks and open space 15% (29 acres) of alkali wetland outside parks and open space 0 out of 1 known occurrences outside public land may be removed for covered activities Maximum UDA: 7% (115 acres) of alkali grassland outside parks and open space 16% (31 acres) of alkali wetland outside parks and open space 0 out of 1 known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Conduct soil sampling to determine precise soil associations. Identify, map, and monitor any occurrences within preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 60-83% of alkali grassland and 44-49% of alkali wetland outside parks and open space will be conserved. Additionally, approximately 61 to 67 acres of alkali wetlands will be restored within preserves (Tables 5-16 and 5-17), some of which may benefit San Joaquin spearscale. Of the 32 known occurrences in the inventory area, 31 are already protected within the Los Vaqueros Watershed. It is expected that other populations will be found within the inventory area, particularly on alkali soils in Zone 5. The Preserve System will protect 900-1,250 acres of alkali grassland (Tables 5-7 and 5-8) and 87-96 acres alkali wetland (Tables 5-5a and 5-5b, Conservation Measure 1.1), much of which is expected to be suitable for San Joaquin spearscale. The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit San Joaquin spearscale. Vegetation management and enhancement within alkali grassland and alkali wetlands (Conservation Measures 2.1, 2.2, 2.4, and 2.12) will benefit San Joaquin spearscale by maintaining or enhancing suitable habitat for this species.

Conditions on Covered Activities: Exotic plants will be controlled within preserves (Conservation Measure 1.4).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Big tarplant *Blepharizonia plumosa* -/CNPS-1B	Initial UDA: 48% (9,300 acres) of modeled habitat outside parks and open space 3 out of 5 known occurrences outside public land will be preserved Maximum UDA: 59% (11,395 acres) of modeled habitat outside parks and open space 3 out of 5 known occurrences outside public land will be preserved	Initial UDA: 8% (1,593 acres modeled habitat) outside parks and open space 1 out of 5 known occurrences outside public land may be removed for covered activities Max UDA: 12% (2,248 acres) of modeled habitat outside parks and open space 1 out of 5known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Conduct soil sampling to determine precise soil associations. Identify, map, and monitor any occurrences within preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 48-59% of modeled habitat outside of parks and open space and 3 out of 5 known occurrences outside public land will be conserved. The Preserve System will protect 9,300-11,395 acres of modeled habitat and 5,859-6,645 acres of suitable low-potential habitat (Table 5-12 and Conservation Measure 1.1). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit big tarplant.

Conditions on Covered Activities: Exotic plants will be controlled within preserves (Conservation Measure 1.4).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Mount Diablo fairy lantern *Calochortus pulchellus* -/CNPS-1B	Initial UDA: 43% (11,178 acres) of modeled habitat outside parks and open space 42 acres of oak savanna restored 1 out of 1 known occurrences outside public land will be preserved Maximum UDA: 54% (13,360 acres) of modeled habitat outside parks and open space 165 acres of oak savanna restored 1 out of 1 known occurrences outside public land will be preserved	Initial UDA: 2% (488 acres) of modeled habitat outside parks and open space 0 out of 1 known occurrences outside public land may be removed for covered activities Maximum UDA: 3% (788 acres) of modeled habitat outside parks and open space 0 out of 1 known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.3 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Develop pilot projects to determine species response to management actions such as burning. Identify, map, and monitor any occurrences within preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 43-54% of modeled habitat outside parks and open space and 1 out of 1 known occurrence outside public land will be conserved. Additionally, approximately 42-165 acres of oak savanna will be restored within preserves (Tables 5-16 and 5-17 and Conservation Measure 2.7). One objective of oak savanna restoration is to provide additional suitable habitat for Mount Diablo fairy lantern. The Preserve System will protect 11,178-13,360 acres of modeled habitat (Table 5-12 and Conservation Measure 1.1). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit Mount Diablo fairy lantern. Exotic plants will be controlled within preserves (Conservation Measure 1.4). Vegetation management and enhancement within native grassland (Conservation Measures 2.1 and 2.4), oak savanna/woodland (Conservation Measures 2.1 and 2.6), and chaparral (Conservation Measures 2.1 and 2.8) will benefit Mount Diablo fairy lantern by maintaining or enhancing suitable habitat for this species.

Conditions on Covered Activities: The status of the one occurrence of Mount Diablo fairy lantern outside public lands, in Subzone 4b, is uncertain. If this population is still extant, it will be protected under this HCP/NCCP. If not, no take of this species will be allowed under the HCP/NCCP until a new, high-quality population (as defined in Conservation Measure 1.1) is found within HCP/NCCP preserves. Public access will be controlled and monitored so that the species is not over-collected by visitors (Conservation Measure 1.5).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Recurved larkspur *Delphinium recurvatum* -/CNPS-1B	Initial UDA: 23% (389 acres) of modeled habitat outside parks and open space 1 out of 3 known occurrences outside public land will be preserved Maximum UDA: 62% (1,064 acres) of modeled habitat outside parks and open space 1 out of 3 known occurrences outside public land will be preserved	Initial UDA: 1% (25 acres) of modeled habitat outside parks and open space 2 out of 3 known occurrences outside public land may be removed for covered activities Maximum UDA: 1% (25 acres) of modeled habitat outside parks and open space 2 out of 3 known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Conduct soil sampling to determine soil associations. Identify, map, and monitor any occurrences within preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 23-62% of modeled habitat outside of parks and open space will be conserved. An estimated 389 or 1,064 acres of modeled habitat for this species will be protected within the Preserve System under the initial urban development area or the maximum urban development area, respectively (Table 5-12). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit recurved larkspur. Approximately 61-67 acres of alkali wetlands will be restored within preserves (Table 5-16 and 5-17 and Conservation Measure 2.7). One objective of alkali wetland restoration is to restore additional suitable habitat for recurved larkspur (e.g., in alkali meadows).

Conditions on Covered Activities: Exotic plants will be controlled within preserves (Conservation Measure 1.4).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Round-leaved filaree *Erodium marophyllum* -/CNPS-1B	Initial UDA: 50% (2,877 acres) of primary habitat outside parks and open space 2 out of 7 known occurrences outside public land will be preserved Maximum UDA: 52% (2,997 acres) of primary habitat outside parks and open space 2 out of 7 known occurrences outside public land will be preserved	Initial UDA: 9% (536 acres) of primary habitat outside parks and open space 2 out of 7 known occurrences outside public land may be removed for covered activities Maximum UDA: 15% (888 acres) of primary habitat outside parks and open space 2 out of 7 known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Conduct soil sampling to determine soil associations. Identify, map, and monitor any occurrences in preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 50-52% of primary habitat and 2 out of 7 known occurrences outside public land will be conserved. The Preserve System will protect 2,877-2,997 acres of primary habitat and 542-633 acres of secondary habitat (Table 5-12 and Conservation Measure 1.1). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit round-leaved filaree. Vegetation management and enhancement within grasslands (Conservation Measure 2.4) will benefit round-leaved filaree by maintaining or enhancing suitable habitat for this species

Conditions on Covered Activities: Exotic plants will be controlled within preserves (Conservation Measure 1.4).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Diablo helianthella *Helianthella castanea* -/CNPS-1B	Initial UDA: 46% 6,168 acres) of modeled habitat outside parks and open space 42 acres of oak savanna restored 2 out of 2 known occurrences outside public land will be preserved Maximum UDA: 54% (7,250 acres) of modeled habitat outside parks and open space 165 acres of oak savanna restored 2 out of 2 known occurrences outside public land will be preserved	Initial UDA: <1% (19 acres) of modeled habitat outside parks and open space 0 out of 2 known occurrences outside public land may be removed for covered activities Maximum UDA: 1% (85 acres) of modeled habitat outside parks and open space 0 out of 2 known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.3 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Map and monitor populations and develop pilot projects to determine species response to management actions such as burning. Identify, map, and monitor any occurrences within preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 46-54% of modeled habitat outside parks and open space and 2 out of 2 known occurrences outside public land will be conserved. In addition, approximately 42-165 acres of oak savanna will be created or restored in the preserve system (Tables 5-16 and 5-17 and Conservation Measure 2.7). One objective of oak savanna restoration is to provide additional suitable habitat for Diablo helianthella. The Preserve System will protect 6,168-7,250 acres of modeled habitat (Table 5-12 and Conservation Measure 1.1). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit Diablo helianthella. Vegetation management and enhancement within oak savanna/woodland (Conservation Measures 2.1 and 2.6) and chaparral (Conservation Measures 2.1 and 2.8) will benefit Diablo helianthella by maintaining or enhancing suitable habitat for this species.

Conditions on Covered Activities: Exotic plants will be controlled within preserves (Conservation Measure 1.4).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Brewer's dwarf flax *Hesperolinon breweri* -/CNPS-1B	Initial UDA: 48% (9,337 acres) of modeled habitat outside parks and open space 42 acres of oak savanna restored 3 out of 3 known occurrences outside public land will be preserved Maximum UDA: 55% (10,704 acres) of modeled habitat outside parks and open space 165 acres of oak savanna restored 3 out of 3 known occurrences outside public land will be preserved	Initial UDA: <1% (97 acres) of modeled habitat outside parks and open space 0 out of 3 known occurrences outside public land may be removed for covered activities Maximum UDA: 1% (255 acres) of modeled habitat outside parks and open space 0 out of 3 known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.3 (summarized below). Suggested Tasks: Experiment with different management techniques to benefit the species. Map and monitor populations and develop pilot projects to determine each species' response to management actions such as burning. Identify, map, and monitor any occurrences within preserves.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 48-55% of modeled habitat outside parks and opens space and 3 out of 3 known occurrences outside public land will be conserved. Additionally, approximately 42-165 acres of oak savanna will be created or restored in the preserve system (Tables 5-16 and 5-17 and Conservation Measure 2.7). One objective of oak savanna restoration is to provide additional suitable habitat for Brewer's dwarf flax. The Preserve System will protect 9,337-10,704 acres of modeled habitat (Table 5-12 and Conservation Measure 1.1). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit Brewer's dwarf flax. Vegetation management and enhancement within native grassland (Conservation Measures 2.1 and 2.4), oak savanna/woodland (Conservation Measures 2.1 and 2.6), and chaparral (Conservation Measures 2.1 and 2.8) will benefit Brewer's dwarf flax by maintaining or enhancing suitable habitat for this species.

Conditions on Covered Activities: Exotic plants will be controlled within preserves (Conservation Measure 1.4).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Showy madia *Madia radiata* -/CNPS-1B	Initial UDA: 40% (13,000 acres) of annual grassland outside parks and open space 16% (500 acres) of oak savanna outside parks and open space + 42 acres of oak savanna restored 3% (400 acres) of oak woodland outside parks and open space 0 out of 0 known occurrences outside public land will be preserved Maximum UDA: 54% (16,500 acres) of annual grassland outside parks and open space 16% (500 acres) of oak savanna outside parks and open space + 165 acres of oak savanna restored 3% (400 acres) of oak woodland outside parks and open space 0 out of 0 known occurrences outside public land will be preserved	Initial UDA: 7% (2,533 acres) of annual grassland outside parks and open space 1% (42 acres) of oak savanna outside parks and open space <1% (21 acres) of oak woodland outside parks and open space 0 out of 0 known occurrences outside public land may be removed for covered activities Maximum UDA: 12% (4,152 acres) of annual grassland outside parks and open space 5% (165 acres) of oak savanna outside parks and open space 1% (73 acres) of oak woodland outside parks and open space 0 out of 0 known occurrences outside public land may be removed for covered activities	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.3 (summarized below). Suggested Tasks: Identify populations within the preserves. Experiment with different management techniques to benefit the species. Determine if populations are being sustained or enhanced. Develop species-habitat model, if feasible.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because 40-54% of grassland, 16% of oak savanna and 3% of oak woodland outside parks and open space will be conserved. In addition, approximately 42-165 acres of oak savanna will be created or restored in the preserve system (Tables 5-16 and 5-17 and Conservation Measure 2.7). Oak savanna restoration may provide additional suitable habitat for showy madia. The Preserve System will protect 13,000-16,500 acres of grassland, 500 acres of oak savanna and 400 acres of oak woodland (Tables 5-7 and 5-8, Conservation Measure 1.1). Actual preservation of oak savanna and oak woodland is expected exceed 5,000 acres due to the need to acquire extensive areas of grassland and the patchy distribution of oak savanna/woodland. The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit showy madia. Vegetation management and enhancement within native grassland (Conservation Measures 2.1 and 2.4) and oak savanna (Conservation Measures 2.1 and 2.6) may also benefit showy madia by maintaining or enhancing suitable habitat for this species.

Conditions on Covered Activities: Showy madia is not currently known to occur in the inventory area (Table 5-20), but suitable habitat exists. Until more populations are found and protected in HCP/NCCP preserves, no impacts on this species will be allowed. Exotic plants will be controlled within preserves (Conservation Measure 1.4).

Common Name *Scientific Name* Status (Federal/State)[1]	Habitat Conserved by HCP/NCCP	Maximum Estimated Impact to Habitat from HCP/NCCP Covered Activities	General Bases for Analysis of Coverage (Conservation Measure Level)	Monitoring Methods (Monitoring Plan and/or Management Plans/Directives)	Meets State & Federal Take Authorization Standards
Adobe navarretia *Navarettia nigelliformis* ssp. *nigelliformis* -/-	Initial UDA: 40% (13,000 acres) of annual grassland outside parks and open space 129 acres of seasonal wetland complexes +104 acres seasonal wetland complexes restored 1 of 3 known occurrences outside public lands will be preserved. Maximum UDA: 54% (16,500 acres) of annual grassland outside parks and open space 168 acres of seasonal wetland complexes + 163 acres of seasonal wetland complexes restored 1 of 3 known occurrences outside public lands will be preserved.	Initial UDA: 7% (2,471 acres) of annual grassland outside parks and open space 43 acres of seasonal wetland complexes (includes all seasonal wetlands + 25% undetermined wetlands) 1 of 3 known occurrences outside public lands may be removed for covered activities. Maximum UDA: 12% (4,103 acres) of annual grassland outside parks and open space 56 acres of seasonal wetland complexes (includes all seasonal wetlands + 25% undetermined wetlands) 1 of 3 known occurrences outside public lands may be removed for covered activities.	Landscape Natural Community	Develop and refine species-focused model(s). Develop monitoring approach, and identify critical uncertainties. Develop pilot projects as necessary. For suggested monitoring tasks, see Ch.7 Section 7.5.2 (summarized below). Suggested Tasks: Survey for and identify additional populations. Experiment with different management techniques to benefit the species. Survey populations to refine understanding of suitable microhabitats; determine attributes of habitat. Determine responses to management. Develop species-habitat models, if feasible.	YES

Rationale for Identifying Species as Covered

Conservation: This species will be covered by the HCP/NCCP because129-168 acres of seasonal wetland and 13,000-16,500 acres of grassland outside parks and open space will be conserved. An additional 104-163 acres of seasonal wetland will be created or restored (Tables 5-5a and 5-5b, Conservation Measure 1.1 and 2.3). The Implementing Entity will initiate a program within the Preserve System to experiment with different management techniques to benefit adobe navarretia. Vegetation management and enhancement within native grassland (Conservation Measures 2.1 and 2.4) may benefit the species.

Conditions on Covered Activities: Exotic plants will be controlled within preserves (Conservation Measure 1.4).

[1]Status:

Federal
- FE Federally Endangered
- FT Federally Threatened
- BGPA Bald and Golden Eagle Protection Act
- MBTA Migratory Bird Treaty Act

State
- ST State Listed as Threatened
- CSC California Special Concern Species
- CSC-1 Bird Species of Special Concern; First Priority
- FP Fully Protected
- CNPS-1B California Native Plant Society as Rare or Endangered in California and Elsewhere

[2]Amount of seasonal wetland complex suitable for fairy shrimp species is unknown.