

Yolo Habitat Conservancy

*County of Yolo • City of Davis • City of Winters • City of West Sacramento
City of Woodland • University of California, Davis*

NOTICE OF PUBLIC MEETING

YOLO HABITAT CONSERVANCY

ADVISORY COMMITTEE

TIME: 4:00 – 5:45 p.m. on Monday, September 11, 2017

PLACE: Cache Creek Meeting Room
Yolo County Dept. of Community Services
292 W. Beamer St. (between Cottonwood St. and Ashley Ave.)
Woodland, CA 95695

INFORMATION: Contact Susan Garbini at 530-723-5909 or susan@yolohabitatconservancy.org

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AGENDA

1. **Call meeting to order and introductions**
2. **Approve agenda order**
3. **Approve August 14, 2017, draft meeting summary**
4. **Update on Local Conservation Plan/Regional Conservation Investment Strategy– Chris Alford/Ellen Berryman**
 - Report from Steering Committee [Chad Roberts]
 - Chapters 2 discussion and comments
 - Chapter 3 goals and objectives

- RCIS/LCP Public meeting: September 14, 2017, 5:30-7:00 pm, Cache Creek Meeting Room, Yolo County Dept. of Community Services, 292 W. Beamer St., Woodland, CA 95695

5. **HCP/NCCP Update; Public comments; Outreach Activities –**
Petrea Marchand

6. **Neighboring Landowner Program–** Chris Alford

7. **Announcements and updates: Advisory Committee members**

8. **Adjournment to next meeting date: Monday, October 9, 2017**

Location: *Cache Creek Meeting Room*
292 W. Beamer St.
Woodland, CA

3.1 Overview

3.2 Methods and Approach

3.2.1 Structure of the Conservation Strategy

3.2.1.1 Conservation Goals and Objectives

The *conservation goals* of this RCIS/LCP reflect the broad, desired outcome for the focal and conservation species and other conservation elements in the Strategy Area. These conservation goals address the unique pressures on focal and conservation species and important conservation elements identified in Chapter 2 and the species accounts (Appendix A). Several conservation objectives support each conservation goal. Conservation objectives are set such that, if implemented, they would accomplish the conservation goals. *Conservation objectives* are intended to be concise, measurable statements of the target outcome for each focal species and other conservation elements. The conservation objectives focus on conserving landscape elements, protecting or restoring natural communities and focal/conservation species' habitats, managing and enhancing landscape connectivity in the RCIS/LCP Strategy Area, and managing and enhancing land in the Strategy Area that is either already protected or expected to be protected in the Strategy Area by a conservation easement or other instrument providing for perpetual protection of land. Where possible conservation objectives are All conservation goals and objectives are intended to be achieved through the implementation of the conservation actions.¹

The conservation goals and objectives are organized hierarchically on the basis of the following ecological levels of organization:

- **Landscape.** The landscape-level conservation goals and objectives form the overarching framework for the conservation strategy and focus on the extent, distribution, and connectivity among natural communities and improvements to the overall condition of hydrological, physical, chemical, and biological processes (including connectivity and climate change adaptation) in the Strategy Area;
- **Natural community.** The natural community conservation goals and objectives focus on maintaining or enhancing ecological functions and values of specific natural communities. Achieving natural community goals and objectives will also provide for the conservation of habitat of associated focal and conservation species and other native species; and

¹ The RCIS Program Guidelines recommend that conservation objectives be achievable within the 10-year lifespan of the initial approval of the RCIS. The conservation objectives in this RCIS/LCP, however, do not have a deadline because of the uncertainty in the pace of implementation and the desire to align with the longer timeframe of the overlapping HCP/NCCP (50 years). Instead, RCIS/LCP conservation priorities are designed to be implemented within an approximately 10-year timeframe.

- **Species.** The species-specific conservation goals and objectives address stressors and habitat needs specific to individual focal species (or, in some cases, groups of species with similar needs) that are not addressed under the landscape and natural community goals and objectives. As described in Section 3.4.4, *Conservation Species Strategy*, the conservation strategies for conservation species rely primarily on the landscape-level and natural community-level goals and objectives, and prioritization of conserving lands that support these species.

Commented [BE1]: To be provided at a later date.

In addition, the Yolo RCIS/LCP provides rationale for the conservation objectives. For each focal species (Group 1), the Yolo RCIS/LCP lists the landscape-level and natural community-level goals and objectives that would benefit the species, followed by the objectives developed for that species or group of species, and their associated rationale. For the most part, the Yolo RCIS/LCP addresses the conservation species (Groups 2 and 3) through goals and objectives at the landscape and natural community levels. Species-specific goals and objectives were developed only when additional factors, such as specific habitat requirements or population factors, needed to be addressed to provide for the conservation of the species in the Strategy Area.

Most of the conservation goals and objectives are designed to maintain current populations of focal species and retain the other conservation elements. The conservation goals and objectives also provide for the long-term persistence of focal and conservation species and other conservation elements through habitat protection and enhancement. In some cases, populations of focal/conservation species are expected to increase as a result of land preservation, management, habitat enhancement, and habitat restoration. Where there is overlap between the RCIS/LCP and the Yolo HCP/NCCP, the conservation objective includes the required habitat protection, restoration, or enhancement of the HCP/NCCP for context. The conservation provided by the HCP/NCCP is assumed to occur because it will be an obligation of the state and federal endangered species permits expected in 2018.

All conservation goals and objectives are given unique codes so that they can be easily identified and tracked by those implementing conservation actions.

3.2.1.2 Conservation Actions

Conservation actions are defined by the RCIS Program Guidelines as “actions that would preserve or restore ecological resources, including habitat, natural communities, ecological processes, and wildlife corridors, to protect those resources permanently, and would provide for their perpetual management.” For each conservation objective or set of objectives, the RCIS/LCP lists a number of conservation actions that may be implemented to achieve the objective(s). These include actions that directly address threats and stressors. For example, if habitat loss is a threat, then protection and restoration of habitat would be the action that addresses that threat. If invasive vegetation is the threat, then managing invasive plants would be the action.

The conservation actions are not limited to those identified in this chapter. Additional actions and new priorities will likely become apparent as additional information becomes available about the changing future environment in the Strategy Area. Those implementing conservation in the Strategy Area should consider any opportunity to contribute to the conservation goals and objectives of this RCIS/LCP if the expected outcome will benefit the long-term viability of the native species in the Strategy Area.

3.3 Results of Conservation Gaps Analysis

3.4 Conservation Strategy

The following conservation goals and objectives provide a voluntary roadmap for conservation organizations and project proponents with mitigation needs to inform future land acquisition and land use decisions that assist in implementing the RCIS/LCP in Yolo County. Section 3.2.3, *Structure of the Conservation Strategy*, describes the tiered approach for the conservation goals and objectives (landscape, natural community, and species levels) and how the conservation strategy is composed of goals, objectives, conservation actions, and conservation priorities. Table 3-x provides a master table of all the conservation goals and objectives, and associated conservation actions.

Table 3-X. Conservation Goals and Objectives and Applicable Conservation Actions

Biological Goals and Objectives	Applicable Conservation Actions (see Section 6.4, Conservation Measures, for full descriptions of conservation measures)
Landscape-level Goals and Objectives	
Goal L1: XX	
Objective L1-1: XXX	XX
Objective L1-2: XXX	XX
Natural Community-level Goals and Objectives	
Goal G1	
Objective G1-1: XX	XX
Objective G1-2: XX	XX
Species-level Goals and Objectives	
Objective P1-1: XX.	XX
Objective P1-2: XX	XX

Commented [BE2]: This will be completed once the CGOs and conservation actions are agreed upon

3.4.1 Landscape-Level Strategy

RCIS/LCP Goal L1: Large interconnected landscapes

Maintain interconnected landscapes in Yolo County with the range of physical and biological attributes (e.g., slope, soils, hydrology, climate, and plant associations) that support the distribution and abundance of focal and conservation species and their habitats, provide for the movement and genetic interchange among populations of focal and conservation species, support adaptive adjustments in species distributions in response to climate change, and sustain native biodiversity.

RCIS/LCP Objective L1.1: Landscape Connectivity

Establish landscape connections within and between natural communities where connectivity is currently poorly developed or lacking. Maintain connectivity where it currently exists and/or is well developed, and avoid fragmentation.

Landscape connectivity conservation actions:

Conservation actions to achieve landscape connectivity may include, but are not limited to, the following.

- Evaluate key landscape connections in the Strategy Area (including ECAs, creek corridors, and other ecologically important connections based on the best available data), and determine whether they are intact or highly constrained connections.
- Prioritize protection of intact connections and restoration or enhancement of constrained connections.
- Prioritize actions that increase habitat connectivity between transitional habitats along the Sacramento River, Putah Creek, and Cache Creek. (Also see RCIS/LCP Objective L1.5, *Ecotone conservation*, below.)
- Prioritize actions to increase habitat connectivity among transitional habitats along secondary riparian corridors involving perennial and intermittent streams in Yolo County. These streams with secondary riparian corridors include, but may not be limited to, Tule Canal, Enos Creek/Dry Creek, Dry Slough, Salt Creek/Chickahominy Slough, Cottonwood Creek, Willow Slough, Thompson Canyon/Salt Creek, Oat Creek, Bird Creek, and Buckeye Creek. (Also see RCIS/LCP Objective L1.5, *Ecotone conservation*, below.)
- Maintain connectivity among landscape elements within the Strategy Area and avoid fragmentation of the landscape (the opposite of connectivity) in seeking to include environmental gradients. (Also see RCIS/LCP Objective L1.3, *Environmental gradients*, below.)
- Provide connectivity among landscape elements within the Strategy Area and ecologically significant landscape elements outside the Strategy Area.
- Incorporate existing protected areas within the system of conserved lands, and to the extent possible, prioritize additions to the system that maintain connectivity within the protected landscape.

RCIS/LCP Objective L1.2: Areas to support sustainable populations

Maintain sufficient natural community or habitat areas to support sustainable populations of naturally occurring species in Yolo County.

Areas to support sustainable populations, conservation actions:

Conservation actions to identify conservation priority areas that support sustainable populations may include, but are not limited to, the following.

- Prioritize land acquisitions adjacent to protected lands.
- Prioritize maintenance of habitat connectivity among valley floor habitats, upland habitats, and habitats in higher elevations in the western mountains.
- Protect habitat for area-limited planning species (American badger, black-tailed deer) based on the minimum habitat patch sizes and design guidelines provided in Table 3-4. Protect habitat to facilitate seasonal migration for black-tailed deer.

Commented [DZ3]: Other RCISs have added alpha-numeric codes to each conservation action (see AV RCIS for best example). Consider doing this to facilitate tracking and more easily linking conservation actions with conservation objectives (with have codes).

Commented [BE4R3]: Next iteration, when conservation actions are more settled.

Commented [PM5]: See, here we use Yolo County. So it would be good to replace Strategy Area with Yolo County.

Table 3-1. Patch Size, Configuration, and Habitat Connectivity Considerations for Planning Species

Planning Species	Natural Communities	Minimum Size/Configuration Considerations	Habitat Connectivity Considerations
American badger	Grasslands in the Hill and Ridge Landscape Unit.	Variable home range of between 395 and 2,100 acres (Messick and Hornocker 1981) Minimum patch size is 400 acres, to correspond with the lower home range estimate.	Connectivity is essential for home range and dispersal movements, and to facilitate protection of badger populations. Set connectivity goals to create multiple intact contiguous reserves of 1,200 acres to meet the average home range estimate (Messick and Hornocker 1981).
Black-tailed deer (migratory herds – mid-elevation foothills and higher elevations)	Woodlands and forest, shrublands, and scrub	Since black-tailed deer migrate through the Strategy Area, large patch size would be required to manage habitat for it. Black-tailed deer home ranges are relatively large and variable in size (168 to 1,581 acres, with a mean home range size of 370 acres [McCoy and Gallie 2005]). Minimum patch size for purposes of managing this landscape should be correspondingly large and generally correspond to the mean home range size. Preserved patches should be at least 300 acres and contiguous with other protected habitat areas to allow for unobstructed movement through the Strategy Area. The location and configuration should be based on proximity to high resident-deer use areas or known migratory routes.	Connectivity of suitable deer habitat through the Strategy Area is essential for migratory herds. Prioritize preservation of habitat areas that provide connectivity with other habitat areas to provide movement corridors for resident and migratory herds.

RCIS/LCP Objective L1.3: Environmental Gradients

Include a variety of environmental gradients (e.g., hydrology, elevation, soils, slope, and aspect) within and across a diversity of protected and restored natural communities within the Strategy Area. Establish these gradients within the framework of reserve system connectivity.

Environmental gradients, conservation actions:

Conservation actions to protect environmental gradients include, but are not limited to, the following.

- Prioritize land acquisitions that add to the range of environmental gradients on protected lands in the Strategy Area.

RCIS/LCP Objective L1.4: Natural community restoration

Restore natural communities in a manner that maximizes the likelihood of their long-term functioning, taking into consideration both historic conditions and potential future conditions with climate change.

Natural community restoration conservation actions:

Conservation actions contributing to RCIS/LCP Objective L1.4 may include, but are not limited to, the following.

- Restore species composition and ecological processes in natural communities in areas with the appropriate soils, hydrology, and other physical conditions that support the community.
- Implement initial restoration actions according to recommendations in a restoration handbook that is widely accepted among restoration scientists, such as Griggs (2009).
- Consider the historic conditions of a site when developing restoration plans. A site is typically more likely to support a vegetation community that it supported historically, unless key physical components have been irreversibly altered by factors such as climate change or extreme human disturbance.
- Consider potential future conditions resulting from climate change when developing restoration plans.
- Adaptively adjust restoration approaches on the basis of additional knowledge gained from monitoring or observing previously implemented restoration actions. Incorporate knowledge gained from restoration science generally to the extent that it addresses conditions in the Strategy Area.
- Use locally native plant material.
- Use native local soils.
- Do not import fill.
- Do not compact soil.
- Protect restored areas against degradation that may result from undesirable practices in or management of adjoining land uses or other disturbances.

RCIS/LCP Objective L1.5: Ecotone conservation

Protect, restore and enhance ecotones between natural communities.

Ecotone conservation actions:

Conservation actions contributing to RCIS/LCP Objective L1.5 may include, but are not limited to, the following.

- Protect transitional areas between riparian and oak woodland or savanna laterally along rivers, streams, sloughs, canals, and drainages.
- Protect ecotones that provide connectivity between natural communities.
- Protect ecotones that have high biodiversity as a result of the overlap of two natural community types.

- Remove invasive species from degraded ecotones, where feasible and where desirable to accomplish ecological goals.
- Protect or restore natural soil structure within ecotones.

RCIS/LCP Goal L2: Ecological processes and conditions

Maintain or restore ecological processes and conditions in Strategy Area landscapes that sustain natural communities, native species, and landscape connectivity.

RCIS/LCP Objective L2.1: Improve hydrologic and geomorphic processes

Improve dynamic hydrologic and geomorphic processes in floodplains through a process that minimizing impacts on terrestrial species habitat (including the HCP/NCCP) and agricultural land. Allow floods to promote fluvial processes, such that bare mineral soils are available for natural recolonization of vegetation, desirable natural community vegetation is regenerated, and structural diversity is promoted; or implement management actions that mimic those natural disturbances.

Improve hydrologic and geomorphic processes, conservation actions:

Conservation actions contributing to RCIS/LCP Objective 2.1 may include, but are not limited to, the following.

- Floodplain inundation
 - Protect entire floodplains around watercourses where possible.
 - Setback levees to widen floodplains and expand available in-stream, secondary channel, or floodplain habitat.
 - Modify floodplain topography and inundation.
- Along the Sacramento River and in the Yolo Bypass, activities may include the following, consistent with the CVFPP Conservation Strategy.
 - Sustain inundation for 14 days or longer between late November and early March to benefit anadromous fish.
 - Modify floodplain topography to minimize fish stranding potential.
 - Eliminate or modify ditches potentially trapping fish.
- Modify floodplains in locations where higher ground impedes flow connectivity or capacity, to increase the hydrologic connectivity and capacity of the active floodplain, improve fish migration, reduce stranding potential, and allow additional riparian vegetation to establish without causing significant hydraulic impacts.
- Removed sediment, if suitable, may be used in nearby levee construction or repair projects.
- Modify floodplains to provide greater topographic and hydrologic diversity, and to eliminate depressional features (such as isolated gravel pits or deep borrow pits) that strand fish when water recedes.
- Create higher ground in floodplains that can serve as refugia from floodwaters for wildlife species, including giant garter snake and California black rail.

Commented [BE6]: This objective is being revised to reflect more of a multi-benefit need, and to differentiate between riverine and floodplain needs.

Commented [BE7]: Specific actions for Yolo Bypass will be added here.

Commented [BE8]: At least early March where it affects agricultural land. Late April where it doesn't. Footnote will be added to reflect this.

- Create or improve secondary channels and overflow swales that add riverine and floodplain habitat values (e.g., resting or rearing areas for fish migrating downstream) and provide escape routes for fish during receding flows.
- Minimize new bank protection actions, or potentially remove non-critical bank protection features, to allow channels to meander naturally within the floodplain.
- Reduce conflicts with geomorphic processes during operations and maintenance activities, including levee repair, by relocating facilities to reduce the physical forces acting on them, which would reduce maintenance needs. Such relocated facilities would often be much shorter in length than those they replace, further reducing maintenance needs (from CVFPP Conservation Strategy).

RCIS/LCP Objective L2.2: Fire

Allow or mimic natural fire regimes in areas where fires naturally occur and are a key component of the ecosystem.

Fire Conservation Actions:

- Incorporate prescribed fire and managed wildfire into management programs in areas where fires naturally occur, where feasible.

RCIS/LCP Goal L3: Landscape-level stressors

Reduce landscape-level stressors that cause widespread effects on native species and ecosystems and on natural processes.

RCIS/LCP Objective L3.1: Invasive species

Control or eradicate invasive species that may cause reduced habitat quality for desired native species, reductions in biological diversity, or degraded ecosystem processes.

Invasive species conservation actions:

Conservation actions that contribute to RCIS/LCP Objective L3.1 include, but are not limited to, the following.

- Implement applicable elements of the *Invasive Plant Management Plan* (Appendix E of the CVFPP Conservation Strategy within the CVFPP CPAs.
- Prioritize invasive species for control, based on level of threat to native species, biodiversity, or ecosystem processes.
- Find and eliminate seed/propagule sources of invasive plant species in restoration projects in the Strategy Area.
- Identify and implement suitable control programs, including appropriate use of herbicides, grazing, flooding, and fire, as well as other proven methods, for invasive plant species (including, but not limited to, barbed goat grass, yellow starthistle, perennial pepperweed, tamarisk, and giant reed).
- Identify and implement suitable control programs, including the appropriate use of chemical agents, trapping, and controlled hunting, as well as other proven methods, for invasive animals

Commented [BE9]: Next version will refer to specific actions from the management plan, and reference that plan.

(e.g., feral or free-roaming dogs, cats, rats, wild pig, bass, sunfish, European starling, and bullfrog).

RCIS/LCP Objective L3.2: Pollutants and toxins

Reduce the effects of known pollutants and toxins that threaten native species.

Pollutants and Toxins Conservation Actions:

- Identify and implement actions to reduce the effects of known pollutants and toxins, such as mercury toxicity in Cache and Putah Creeks.
- Support the use of least-toxic approaches to pest management.
- Discourage the use of herbicides, fungicides, insecticides, rodenticides, and other chemical poisons near ecologically sensitive areas generally and to the extent practicable in flood control areas in accordance with state and federal operation and maintenance laws and requirements.
- Establish buffer zones around established habitat reserve areas at sufficient distance to avoid or limit over-spray or wind drift from agricultural operations adjacent to or near habitat reserve areas.
- Incorporate best management practices (BMPs) into riverine, riparian, and wetland restoration projects to minimize mercury methylation, consistent with the Cache Creek Total Maximum Daily Load (TMDL) and the Delta TMDL.

RCIS/LCP Objective L3.3: Hazardous human land uses

Reduce impacts from hazardous human land uses, such as roads, that negatively affect the sustainability of natural communities and RCIS/LCP focal and conservation species.

Hazardous human land uses, conservation actions:

Conservation actions may include, but are not limited to, the following.

- Prepare and implement guidance for buffers between natural lands and adjacent human activities.
- Identify key road conflict areas and implement practices such as "funnel fencing" to reduce road mortality (road kill); design culverts and bridges to allow safe animal passage through or under them.
- Implement BMPs for operations and maintenance programs and for flood-control activities that minimize adverse effects on natural communities, biological diversity and ecosystem processes, and focal and conservation species to the extent such BMPs do not violate state and federal operation and maintenance laws and requirements for flood control projects.

RCIS/LCP Goal L4: Biodiversity, ecosystem function, and resilience

Maintain and improve biodiversity, ecosystem function, and resilience across landscapes, including agricultural and grazed lands. Maintain landscape elements and processes that are resilient to climate change which will continue to support a full range of biological diversity in the Strategy Area.

RCIS/LCP Objective L4.1: Heterogeneity within agricultural matrix

Maintain a heterogeneous landscape of agricultural and natural lands throughout the Valley Landscape Unit, including on- and off-the-reserve system, with large and structurally complex patches of native vegetation connected by corridors and stepping stone habitat patches, situated within a matrix of agricultural lands that, where possible, provides structural characteristics similar to those of native vegetation.

Heterogeneity within agricultural matrix, conservation actions:

- Protect and maintain “stepping-stone” patches (small areas of natural vegetation distributed throughout the landscape) and corridors (elongated strips of vegetation that link patches of native vegetation) of natural lands within the agricultural matrix. Natural habitat patches should be large, with round or square shapes that protect as much “interior” habitat condition as possible. Landscape linkages should be wide, incorporating as much natural habitat as possible.
- Restore, enhance, and/or protect existing natural (riparian) habitat values associated with interconnected aquatic areas (including major water-supply and drainage infrastructure elements) throughout the landscape matrix, creating a regional conservation lattice.
- Incorporate and maintain structural complexity, including trees, snags, and other structural elements in the landscape of agricultural and grazed lands to provide cover, shade, and nesting, perching, and roosting opportunities for native wildlife.
- Create or maintain buffers around sensitive areas.
- Maintain buffers along waterways and adjacent to natural vegetation to diminish the adverse effects of agricultural practices on those habitats and to provide complementary habitat features (e.g., upland refugia and hibernacula for giant garter snake). (From CVFPP Conservation Strategy: DWR 2016)
- Retain selected trees and snags and plant trees to provide habitat features for raptors (including Swainson’s hawk) and other wildlife. (From CVFPP Conservation Strategy: DWR 2016)

RCIS/LCP Objective L4.2: Landscape resilience to climate change

Promote the continued capability of the landscape elements in the Strategy Area to provide conservation benefits under conditions resulting from climate change.

Landscape resilience to climate change, conservation actions:

- The RCIS/LCP establishes a framework for landscape-based conservation throughout the Strategy Area based on existing conditions and climate change projections. Implement this framework, initially, by identifying and mapping species-rich locations in the RCIS/LCP area without respect to current level of rarity or legal status. Amend the LCP over time to incorporate new biologically significant locations not already in the RCIS/LCP’s conservation framework.
- Potential elements in a climate-adaptation strategy may include, but are not limited to, the following:
 - Gaps in managed lands that block landscape connectivity may be closed; seek collaborative management with landowners or acquire lands to bridge/close gaps.
 - Restore desired habitat conditions to degraded areas in the landscape.

- Develop adaptive elements for RCIS/LCP management that address invasive species control or eradication for invasive species that may become more predominant with climate change.
- Increase landscape resilience by providing multiple reserves within the landscape framework. Redundancy in reserve elements will help the landscape system provide for conservation needs in the face of increased fire and other stressors resulting from climate change.
- Incorporate resilience into RCIS/LCP management by adapting to landscape changes likely to result from climate change, based on best available science. An adaptive strategy to offset landscape changes resulting from climate effects may include, but is not limited to, the following:
 - Address the effects of increased temperatures, altered precipitation patterns, and drought on natural communities and habitats within all landscape elements in the Strategy Area where possible, based on the best available scientific and technical information.
 - Address the effects of increased disturbance (e.g., fire, wind) frequency and severity where possible, based on the best available scientific and technical information.
 - Identify practices to offset the climate-related changes, possibly including introducing selected plant species not currently present (i.e., identify functional roles and select species to fill them should natural habitat be significantly altered), provided there is a high degree of certainty the ecological benefits will outweigh ecological risks.
- Incorporate resilience to the effects of climate change into the landscape by actively managing the landscape matrix to increase habitat values within it. With additional habitat functions provided by the matrix, the integrity of the designated reserve system elements will be augmented by a matrix that is permeable (i.e., not hostile) to mobile species, and also provides additional habitat values. The following actions (among others) increase the value of the matrix as habitat:
 - Restore or establish desired ecological conditions in damaged/degraded/burned areas.
 - Restore fluvial processes, adequate streamflows and wetland hydrology, and riparian functions to aquatic features, while planning for possible future increases in peak flows and flood events.
 - Increase riparian zones to offset climate impacts on aquatic features (see Section 3.4.2.6 for additional considerations for riparian zones).
 - Incorporate oaks throughout the matrix, as well as establishing multi-hectare oak woodland habitat areas. (see Section 3.4.2.4 for additional considerations for oak woodland areas).
- Incorporate principles of *Climate Smart Conservation* (Stein et al 2014) into the management of the Strategy Area, including the following:
 - *Assess climate impacts and vulnerabilities*, identifying specific components of vulnerability (exposure, sensitivity, and adaptive capacity) to provide a useful framework for linking actions to impacts.
 - *Review/revise conservation goals and objectives*, which should be climate-informed as needed to address new information about climate change and changing conditions.

Commented [BE10]: Need to define "landscape elements"

- *Identify possible adaptation options* for reducing key climate-related vulnerabilities or taking advantage of newly emerging opportunities, with particular attention given to crafting possible management actions.
- *Evaluate and select adaptation actions* to determine which are likely to be most effective from an ecological perspective, and most feasible from social, technical, and financial viewpoints.
- *Implement priority adaptation actions*, engaging diverse partners and emphasizing benefits to multiple sectors of society.
- *Track action effectiveness and ecological responses*, using monitoring approaches designed to ensure that they are capable of guiding needed adjustments in strategies and actions, in order to inform adaptive management.

RCIS/LCP Objective L4.3: Natural community and habitat resilience with climate change

Promote resilience in natural communities and habitat values (i.e., maintenance of habitat values) under conditions resulting from climate change.

Natural community and habitat resilience with climate change, conservation actions:

- Site natural community and habitat restoration in areas that take into account sea level rise and other anticipated effects of climate change.
- Conduct field assessments to validate and refine land cover mapping in the Strategy Area.
- Develop a monitoring/assessment program that, over time, samples habitats to verify use by wildlife, as compared to predicted use through information sources such as CWHR. Identify important habitat functional elements, such as acorns/oaks, nesting cliffs, very large trees, “old growth” conditions, significance for Neotropical migrant nesting, etc.
- Develop a management program, based on best available science, to address the dynamics of habitat changes, by area and by habitat value, resulting from climate change. Consider the effects of changes in habitat area and habitat value on species distribution and population stability. Specifically consider habitat types of highest known value (e.g., riparian areas, oak-containing habitats, and uncommon substrates).
- Considering the dynamics of important habitat elements (e.g., blue oak, valley oak), develop strategies to address long-term changes in habitat conditions resulting from climate change, potentially including assisted migration or active transplanting programs if, based on the best available science, ecological benefits outweigh the risks.
- Identify species known to be important in maintaining habitat values for other species (e.g., “keystone species”) and develop plans for maintaining the resilience of the habitats by backing up the functions provided by the keystone species (e.g., maintaining acorn production by assuring that additional native oak species are present in addition to keystone oak species). This could potentially involve introducing selected native species not currently present.
- Develop elements for LCP management that address invasive species control or eradication.

RCIS/LCP Objective L4.4: Population viability and biodiversity resilience with climate change

Maintain viable populations of native species, and maintain biodiversity within the Strategy Area, under conditions resulting from climate change.

Population viability and biodiversity resilience with climate change, conservation actions:

- Initially, evaluate baseline distributions and densities of focal species in and adjacent to the Strategy Area, documenting previously unrecorded occurrences of these species. Validate data on special habitat elements, including serpentine substrates, wetlands, and other habitat elements associated with focal species in and near the Strategy Area, and identify and document previously unrecorded occurrences of these elements.
- Among focal and conservation species in the Strategy Area, assess species according to genetic importance for conservation purposes, including degree of relatedness among serpentine taxa, degree of differentiation of range-margin taxa from central populations, unique or very different adaptation complexes (e.g., insect-plant associations that differ from those elsewhere), and other genetically related conservation criteria.
- Develop a planning/management/monitoring strategy for focal and conservation species under climate change, based on best available science, including elements required by federal or state laws and regulations.
- Monitor population status of focal and conservation species as they respond to climate change. Species with reduced but stable population sizes may not require direct intervention. For species appearing to be substantially affected by climate change, develop and implement action plans to stabilize or recover populations. Plans could include assisted migration to suitable habitat at other locations if, based on the best available information, such action is determined to be ecologically desirable with little or no risk of unintended detrimental effects that would outweigh the benefits.

3.4.2 Natural Community-Level Strategy

3.4.2.1 Cultivated Land

RCIS/LCP Goal CL1: Cultivated land habitat conservation

Conservation of cultivated land habitat values for focal and conservation species and natural communities.

RCIS/LCP Objective CL1.1: Mixed agricultural uses with habitat values

Encourage a mix of agricultural uses that provide for the needs of species that use farmland as habitat.

Mixed agricultural uses with habitat values, conservation actions:

Conservation actions may include, but are not limited to, the following:

- Identify and describe the agricultural uses that benefit wildlife and estimate the habitat values of individual crops.
- Increase the quality of existing cropland as habitat for Swainson's hawk foraging by increasing the extent of alfalfa, irrigated pasture, and low-height row crops, particularly as alternatives to orchards and vineyards. (From CVFPP Conservation Strategy [DWR 2016])
- Cultivate grain crops near greater sandhill crane roosting sites and defer tillage of crops to increase foraging opportunities for cranes. (From CVFPP Conservation Strategy [DWR 2016])

Commented [BE11]: We will add "multi-benefit" language here to account for multiple land uses.

Commented [BE12]: This will be revised so that the first objective focuses on crop choices and the next objective focuses on management practices.

- Assess trends in cropping patterns countywide, so that any desired intervention (such as incentives to grow particular crops types, or purchasing conservation easements) can be based on sound information.
- Enter into contracts to pay farmers to grow crop types that benefit covered species.
- Purchase easements from willing sellers to prevent conversion to crops that do not provide suitable habitat benefits.
- Identify solutions to potential conflicts between conservation efforts and ongoing agricultural operations, including mechanisms (e.g., safe harbor agreements, compensation) to mitigate or avoid conflicts or impacts.
- Work with Yolo RCD, NRCS, and UC Cooperative Extension to provide incentives for wildlife-friendly management practices, such as fencing, hedgerows, tailwater ponds, timing of operations, and weed control.

RCIS/LCP Objective CL1.2: Incorporation of habitat elements

Encourage farming practices that increase habitat values in areas of contact between working agricultural lands and wildlands throughout the Strategy Area, including habitat elements such as hedgerows and patches of natural habitat (e.g., riparian patches) within the agricultural matrix.

Incorporation of habitat elements, conservation actions:

This involves incorporating habitat enhancements such as hedgerows along field edges, broadened areas of natural vegetation (for example, widened riparian vegetation areas along rivers, creeks, and irrigation canals and drainages), and other natural habitat elements into areas where connections have been weakened. The LCP may achieve this through landowner incentives provided through grant programs or mitigation funds. Actions that increase the value of the matrix as habitat may include:

- Adding hedgerows to farm edges to provide cover and feeding habitat for focal and conservation species.
- Flooding harvested fields during fall and winter to provide habitat for wading birds (including greater sandhill crane). (From CVFPP Conservation Strategy [DWR 2016])
- Managing grazing of floodways in a manner that sustains habitat for targeted species (e.g., Swainson's hawk). (From CVFPP Conservation Strategy [DWR 2016])
- Flooding harvested fields during winter and spring to provide rearing habitat for juvenile salmonids.
- Restore, enhance, and/or protect habitat values associated with interconnected aquatic areas in the agricultural landscape, including major canals and other water-supply infrastructure elements, throughout the landscape matrix, creating a regional conservation lattice supporting local habitat while also providing corridors for wildlife movement.
- Developing and maintaining dynamic channel zones for watercourses that allow streamflow access to floodplains and movement of eroded materials through the floodplain area.
- Maintaining buffers and hedgerows along waterways and adjacent to natural vegetation to diminish the adverse effects of agricultural practices on those habitats and to provide

complementary habitat features (e.g., upland refugia and hibernacula for giant garter snake) (From CVFPP Conservation Strategy [DWR 2016])

- Retaining selected trees and snags and planting trees to provide habitat features for raptors (including Swainson’s hawk). (From CVFPP Conservation Strategy [DWR 2016])
- Maintaining water in canals and ditches during the active periods of sensitive species (e.g., giant garter snake). (From CVFPP Conservation Strategy [DWR 2016])
- Managing canal and ditch vegetation to facilitate dispersal and other movements of giant garter snakes. (From CVFPP Conservation Strategy [DWR 2016])
- Acquiring easements to widen riparian corridors on and adjacent to agricultural properties.
- Enhancing riparian areas on agricultural properties.

LCP Objective CL1.3: Cultivated land pollinators

Maintain pollinators within the agricultural landscape.

Cultivated land pollinators, conservation actions:

Prioritize the following conservation actions consistent with the pollinator strategy (Appendix X) to maintain pollinators within agricultural landscapes.

- Protect existing natural habitat (e.g., prairies, oak woodlands, chaparral, and riparian areas associated with major streams) that occurs in the vicinity of agricultural areas near wildlands. Avoid pesticide drift from agricultural areas into wildland pollinator habitats.
- Identify and protect existing pollinator habitat within agricultural landscapes:
 - Areas of natural or seminatural habitat such as riparian areas, wetlands, species-rich grasslands, and vegetated road verges
 - Areas supporting flowers, such as buffer areas, forest edges, hedgerows, roadsides, ditchsides, and fallowed fields.
 - Potential bee nesting sites such as areas of untilled bare soil, snags, and pithy-stemmed shrubs.
- Create or restore habitat:
 - Such habitat can take the form of hedgerows, pollinator meadows (“bee pastures”), orchard understory plantings, riparian and rangeland revegetation, and flowering cover crops.
 - Have at least three plants blooming each season (spring, summer, and fall).
 - Use native plants wherever possible.
 - Nonnative plants may be suitable on disturbed sites and for specialty uses such as cover cropping.
 - Include bee nest sites in habitat patches.
 - Restored patches should be 0.5 acre or more in size.
 - If crop pollination is the focus, habitat patches should be no more than 600 meters from the crop (or from each other); shorter distances—250 to 300 meters—would be optimal.

- Create linear habitats along roads and tracks, ditches, and field margins to increase connectivity across the landscape.
- Minimize pesticide use, especially adjacent to natural areas or known pollinator habitat:
 - Pesticides should not be applied when bees are actively foraging on flowers.
 - Integrated Pest Management principles should be followed when planning pest management.
 - If possible, apply pesticides in fall or winter, or at night.
 - Select the formulation and application method that will minimize overspray or drift into pollinator habitat.
 - Reduce spraying near field margins.
- Carefully plan grazing, mowing, or the use of fire in any pollinator habitat.
- Fit imported bumblebee colonies with queen excluders and use only in glasshouses.
- Do not use commercially reared bumblebees for open-field pollination.

3.4.2.2 California Prairie

RCIS/LCP Goal CP1: Large contiguous patches of California prairie to support native species

Maintain or restore large contiguous patches of California prairie to sustain and enhance the distribution and abundance of associated focal and other native species in the Strategy Area.

RCIS/LCP Objective CP1.1: California prairie protection

Prioritize protection of California prairie where large, contiguous patches are present and where native species are abundant in the Hill and Ridge Landscape Unit and PU 5.

California prairie protection, conservation actions:

- Identify priority areas for protection based on patch size and abundance of native species.
- Focus protection in priority areas.

RCIS/LCP Objective CP1.2: Burrowing rodents

Maintain and enhance the functions of protected California prairie as habitat for focal, conservation, and other native species by maintaining areas with burrowing rodents such as ground squirrels and gophers.

Burrowing rodents, conservation actions:

Conservation actions may include, but are not limited to, the following.

- Identify priority areas with an abundance of burrows.
- Identify and implement management practices that promote or maintain burrowing rodents on lands (including ground squirrels) on protected for conservation purposes pursuant to a

conservation easement or similar other instrument providing for perpetual protection of land, where feasible.

RCIS/LCP Objective CP1.3: Grazing regimes.

Maintain and enhance the functions of protected California prairie in the reserve system as habitat for focal, conservation, and other native species by implementing appropriate grazing regimes.

Grazing regimes, conservation actions:

Conservation actions may include, but are not limited to, the following.

- Integrate grazing management into management plans for protected lands.
- Apply monitoring and adaptive management to grazing regimes, adjusting grazing as needed to minimize invasive species, maximize native biodiversity, and provide the necessary habitat for focal and conservation species.

RCIS/LCP Objective CP1.4: California prairie pollinators

Maintain pollinators within the California prairie landscape.

California prairie pollinators, conservation actions:

The LCP prioritizes the following actions to meet this objective:

- Identify and protect existing pollinator habitat:
 - Areas of natural California prairie or seminatural grassland that support a diverse native flora.
 - Potential bee nesting sites such as areas of bare soil, snags, and pithy-stemmed shrubs.
- Restore degraded California prairie and create new California prairie.
 - Control and remove invasive weeds.
 - Use native forbs to enhance diversity of California prairie.
- Use grazing, mowing, or fire carefully to avoid harming pollinators.
 - Treat only part of the area in one year.
 - Leave areas untreated as refugia for pollinators.
 - Time grazing to avoid periods of major bloom.
 - Do not mow while flowers are in bloom, except as required pursuant to flood infrastructure maintenance laws and requirements.
 - Use burning to suppress shrubs and trees, where safe and ecologically appropriate, except as required pursuant to flood maintenance laws and requirements.
 - Allow habitat to recover fully between burns.
- Reduce spraying and protect California prairie from drift from adjacent fields.

RCIS/LCP Objective CP1.4: Restore and enhance California prairie.

Restore and enhance native prairie.

Commented [BE13]: This is from the pollinator strategy, but may be moved to enhancement and restoration

Commented [BE14]: Will make this the first CA prairie objective

Restore and enhance native prairie, conservation actions:

- Create California prairie habitat by planting and establishing large areas of native grasses and forbs.
- Vegetate flood management features (i.e., levees, seepage berms, O&M areas) with native grasses and forbs.
- Adjust grazing regimes to enhance native species.
- Avoid disturbing the soil profile.
- Enhance habitat for native herbivores like ground squirrels and ungulates.

Commented [HV15]: The idea of creating new California prairie could be expanded to include planting native species as component of any project the has temporary ground disturbance or creates features on the landscape (e.g., levees) that require vegetation.

I'll give this more thought as others review and come up with a more comprehensive list of potential conservation actions.

3.4.2.3 Chaparral**RCIS/LCP Goal CH1: Chaparral conservation**

Maintain conserved chaparral that supports viable populations of native wildlife and plant species, supports connectivity in the landscape, and assists in maintaining diverse pollinator species.

RCIS/LCP Objective CH1.1: Protect chamise chaparral for connectivity.

Protect chamise chaparral as needed to achieve landscape connectivity.

Protect chamise chaparral for connectivity, conservation actions:

- Protect stands of chamise chaparral that aid in maintaining landscape connectivity within the Strategy Area.

RCIS/LCP Objective CH1.2: Protect mixed chaparral

Prioritize protection of mixed chaparral where it supports focal or conservation species or contributes to key connectivity.

Protect mixed chaparral, conservation actions:

- Protect stands of mixed chaparral that aid in maintaining landscape connectivity within the Strategy Area.
- Prioritize protection of mixed chaparral that supports focal species.

RCIS/LCP Objective CH1.3: Manage chaparral

Manage chaparral to promote native plant and wildlife diversity.

Manage chaparral, conservation actions:

- Encourage research by collaborating agencies (e.g., Bureau of Land Management, U.S. Forest Service, the University of California and other academic institutions, and nonprofit conservation organizations) investigating ecological relationships in chaparral in the region, including the roles of fire and other disturbances and the effects of climate change on chaparral in the region. Amend the LCP to reflect the results of this research.
- Allow natural post-fire regeneration.
- Avoid post-fire seeding with nonnatives.

- Minimize soil disturbance, including during firefighting.

LCP Objective CH1.3: Chaparral pollinators

Maintain pollinator (especially native bee) populations within chaparral.

Chaparral pollinators, conservation actions:

Prioritize the following actions to meet this objective.

- Identify and protect existing pollinator habitat.
 - Areas of natural or seminatural chaparral that support a diverse native flora.
 - Potential bee nesting sites such as areas of bare soil, snags, and pithy-stemmed shrubs.
- Enhance degraded chaparral.
 - Control and remove invasive plant species.
 - Use native shrubs and forbs to enhance diversity of chaparral.
- Use grazing, mowing, or fire carefully to avoid harming pollinators.
 - Treat only part of the area in one year.
 - Leave areas untreated as refugia for pollinators.
 - Time grazing and other management actions to avoid periods of major bloom.
 - Do not mow while flowers are in bloom except as required pursuant to flood infrastructure maintenance laws and requirements. .
 - Use burning to suppress shrubs and trees, where safe and ecologically appropriate.
 - Allow habitat to recover fully between burns, except as required pursuant to flood infrastructure maintenance laws and requirements. .
- Reduce spraying on chaparral and protect chaparral from drift from adjacent fields.

3.4.2.4 Woodlands and Forests

RCIS/LCP Goal WF1. Valley oak protection and restoration

Implement protect and restore valley oak woodland, forest, savanna, and individual trees in the Strategy Area, with an emphasis on restoration over protection.

RCIS/LCP Objective WF1.1: Increase valley oaks

Increase the extent of valley oaks in the Strategy Area through restoration and enhancement.

Increase valley oaks, conservation actions:

- Find existing patches and stringers of oaks and add to them through restoration. Increase size of existing stands.
- Limit plantings to local source valley oaks/material (valley oaks in Yolo County are genetically significant, an island of unique genetic make-up).

- Prioritize riparian areas for valley oak restoration and enhancement (see Goal WF3 regarding oak woodland in riparian areas).
- Plant on sites with suitable soils and hydrology (this is particularly important for valley oaks but is a factor for all restoration). See conservation actions under LCP Objective L1.4 for additional actions related to restoration of natural communities.

RCIS/LCP Objective WF1.2: Protect valley oaks

Protect existing stands, individual trees, patches, and stringers of valley oaks.

Protect valley oaks, conservation actions:

- Consider the prioritization criteria in Section VI of the Yolo County Oak Woodland Conservation and Enhancement Plan (January 2007), with respect to the following resource values, when prioritizing areas for valley oak protection.
 - Stand composition, integrity, and functionality
 - Habitat for plant and wildlife species
 - Landscape function
- Provide landowner incentives for protecting valley oaks on agricultural lands and other private lands.
- Reduce or eliminate impacts of cattle grazing and other land uses on protected, enhanced, and restored areas.

RCIS/LCP Goal WF2. Upland oak protection and restoration/enhancement

Implement protection and restoration or enhancement of upland oaks in the Hill and Ridge Landscape Unit, with an emphasis on protection over restoration.

RCIS/LCP Objective WF2.1: Protect upland oaks

Protect upland oaks in the Hill and Ridge Landscape Unit, including contiguous forests, woodland and savannas, and patches and stringers of upland oak woodland, prioritizing protection of oak woodland surrounded by natural lands rather than developed lands, and those on lands contributing to connectivity.

Protect upland oaks, conservation actions:

- Consider the prioritization criteria in Section VI of the Yolo County Oak Woodland Conservation and Enhancement Plan (January 2007: Appendix X), with respect to the following resource values, when prioritizing protection of upland oaks in the Hill and Ridge Landscape Unit.
 - Stand composition, integrity, and functionality
 - Habitat for plant and wildlife species
 - Landscape function.
- Reduce or eliminate impacts of cattle grazing and other land uses on protected, enhanced, and restored areas.

RCIS/LCP Objective WF2.2: Restore upland oaks

Restore upland oak woodland, forest, or savanna to increase connectivity and stand size (reduce fragmentation).

Restore upland oaks, conservation actions:

- Restore areas to include high native plant biodiversity, primarily in the understory.
- Restore/protect natural soil structure at restoration sites. Changing soil profiles can render areas less suitable for native plants. See conservation actions under RCIS/LCP Objective L1.4 for additional actions related to restoration of natural communities.

RCIS/LCP Goal WF3. Riparian oak protection and restoration

Protect, restore, or enhance oak woodland and forest in riparian areas, with a focus on the Hill and Ridge Landscape Unit.

RCIS/LCP Objective WF3.1: Protect riparian oaks

Protect oak woodland and forest in riparian areas in the Hill and Ridge Landscape Unit.

Protect riparian oaks, conservation actions:

- Consider the prioritization criteria in Section VI of the Yolo County Oak Woodland Conservation and Enhancement Plan (January 2007), with respect to the following resource values, when prioritizing protection of upland oaks in the Hill and Ridge Landscape Unit.
 - Stand composition, integrity, and functionality
 - Habitat for plant and wildlife species
 - Landscape function
- Work with willing landowners to reduce or eliminate impacts of livestock grazing and other land uses on protected, enhanced, and restored areas. It may be particularly important to fence riparian areas, for example to prevent erosion and water quality degradation because of the tendency for cattle to concentrate in riparian areas.

RCIS/LCP Objective WF3.2: Restore and enhance riparian oaks.

Restore and enhance oak woodland and forest in riparian areas in the Hill and Ridge Landscape Unit.

Rationale. Oak woodland and forest in riparian areas have diminished in extent since historical times as a result of land conversion, overgrazing, and other factors. These oaks support a diversity of riparian wildlife species, contribute to structural diversity and cover along habitat corridors, and provide shade and structure to adjacent aquatic areas

Restore and enhance riparian oaks, conservation actions:

- Plant in areas with suitable hydrology (or restore/enhance hydrology if not present).
- Focus on riparian oak woodland and forest in the Hill and Ridge Landscape Unit.
- Increase the widths and habitat quality in existing stringers (to enhance landscape linkage functions (i.e., widen corridors)).
- Use locally sourced material.

Commented [BE16]: Oaks or oak woodlands? For LCP it was "oaks"

- Restore/enhance native biodiversity and remove invasive exotics.
- Prioritize valley oaks for riparian restoration and enhancement where ecologically appropriate.

RCIS/LCP Goal WF4. Oak woodland management

Manage oak woodland and forest natural communities outside of riparian areas to enhance habitat quality supporting native biodiversity, and to provide enhanced ecosystem functions and services.

RCIS/LCP Objective WF4.1. Manage and enhance oak woodlands

Manage and enhance oak woodlands to maintain or increase native biodiversity.

Manage and enhance oak woodlands, conservation actions:

- Increase native plant biodiversity through plantings, primarily in the understory.
- Protect oak woodlands from disturbances that inhibit oak regeneration, such as overgrazing.
- Protect the natural soil profile.
- Maintain or enhance native biodiversity by controlling/removing invasive exotics.

RCIS/LCP Objective WF4.2. Oak woodland pollinators

Maintain pollinator (especially native bee) populations within oak woodlands and forests.

Oak woodland pollinators, conservation actions:

- Reduce or prevent fragmentation of woodland and forest areas.
- Adjust grazing to reduce the impact on flowering plants.
 - The best time to graze varies by site, but grazing should be limited to periods of low pollinator activity.
 - Establish exclosures and rotate grazing to allow the vegetation community to recover.
- Control invasive species.
- Use prescribed fire, where safe and ecologically appropriate except as otherwise required by state or federal law, as a natural disturbance to manage the habitat.
 - Burn only small areas at one time.
 - Do not burn the same area more frequently than every 5 years, to the extent practicable.
 - During burns, skip areas to leave as refugia from which pollinators can recolonize.
- If pesticides are required for pest management:
 - Do not apply to significant patches of foraging flowers.
 - Do not apply while pollinators are active.
 - Choose least-toxic options, such as pheromone traps.
- Restore habitat with native species only.

RCIS/LCP Objective WF4.3: Burrowing rodents

Maintain and enhance the functions of protected oak woodlands in the reserve system as habitat for focal and other native species by maintaining areas with burrowing rodents such as ground squirrels and gophers.

Burrowing rodents, conservation actions:

Conservation actions include, but are not limited to, the following.

- Identify priority areas with an abundance of burrows.
- Focus protection in priority areas.
- Identify and implement management practices that promote or maintain burrowing rodents on lands protected by a conservation easement or other instrument providing for perpetual protection of land, such as targeted grazing regimes.

RCIS/LCP Objective WF4-4: Grazing regimes

Maintain and enhance the functions of oak woodlands in the reserve system as habitat for focal and other native species by implementing appropriate grazing regimes.

Grazing regimes, conservation actions:

- Integrate grazing management into management plans for protected lands.
- Apply monitoring and adaptive management to grazing regimes, adjusting grazing as needed to minimize invasive species, maximize native biodiversity, and provide the necessary habitat for focal species.

3.4.2.5 Fresh Emergent Wetlands

RCIS/LCP Goal FW1: Fresh emergent wetland conservation

Conserve fresh emergent wetlands in the Strategy Area.

RCIS/LCP Objective FW1.1: Protect fresh emergent wetlands.

Prioritize protection of fresh emergent wetlands that support focal or conservation species.

Protect fresh emergent wetlands, conservation actions:

- Identify fresh emergent wetlands supporting focal species.
- Prioritize protection in identified areas.

RCIS/LCP Objective FW1.2: Increase fresh emergent wetland areas

Increase the acres of fresh emergent wetlands in the Strategy Area, for focal species.

Restore fresh emergent wetlands, conservation actions:

- Restore fresh emergent wetlands in areas that are likely to support RCIS/LCP focal species, with restoration design features that contribute to habitat value for focal species.

- See conservation actions under LCP Objective L1.4, *Natural community restoration*, for additional actions related to restoration of natural communities.

Marsh restoration will generally consist of intensive actions involving grading (e.g., creating depressions, berms, and drainage features) to create topography that supports marsh plants, provides habitat elements for focal and conservation species, and allows fish to exit as floodwaters recede. Marsh restoration also involves planting vegetation and constructing water management facilities. Within the Lower Sacramento River and Upper Sacramento River CPAS, fresh emergent wetland restoration will generally occur in the bypass system and will be implemented in conjunction with bypass expansion and construction. (from CVFPP Conservation Strategy [DWR 2016])

RCIS/LCP Objective FW1.3: Minimize submerged aquatic vegetation

Minimize submerged aquatic vegetation in fresh emergent wetland areas except where open-water areas in the wetland provide foraging habitat for waterfowl.

Minimize submerged aquatic vegetation, conservation actions:

- XTBDX

3.4.2.6 Riparian

RCIS/LCP Goal R1: Riparian conservation

Establish, maintain, and protect functional riparian habitat that is well distributed throughout the Strategy Area, including protection of existing, and restoration and enhancement of diminished, riparian habitat values.

See Goal WF3, above, for objectives related to oaks in riparian areas.

RCIS/LCP Objective R1.1: Protect riparian areas

Protect existing riparian areas associated with watercourses within the Strategy Area, prioritizing drainages that provide key landscape linkages.

Protect riparian areas, conservation actions:

Actions to protect existing riparian habitat may include, but are not limited to, the following.

- Protect existing riparian areas through conservation easements, prioritizing the drainages shown on Figure 6-3, *Ecological Corridors*.
- Restore, enhance, and protect riparian habitat associated with interconnected aquatic areas in the agricultural landscape, including irrigation canals and other water-supply infrastructure and drainage elements, throughout the landscape matrix, creating a regional conservation lattice supporting local habitat while also providing corridors for wildlife movement.
- Provide financial incentives to private landowners to maintain existing riparian areas on private lands, or to allow riparian habitat to naturally establish and be retained on sites with suitable soils and hydrology, particularly sites associated with the drainages shown on Figure 8-3, *Ecological Corridors*.

RCIS/LCP Objective R1.2: Increase riparian habitat areas

Increase riparian habitat area and distribution in the Strategy Area through restoration, prioritizing drainages that provide key linkages, particularly where restoration closes gaps in vegetation along the length of drainages, widens riparian zones or provides wide riparian nodes adjacent to drainages, or provides lateral linkage between drainages and adjacent natural communities.

Increase riparian habitat areas, conservation actions

Actions to increase riparian habitat areas in the Strategy Area may include but are not limited to the following.

- Restore riparian areas to provide continuous lengths of vegetation along drainages. Riparian areas should be the width of at least two dominant tree heights, and optimal riparian areas are 30 meters wide on each side of the channel.
- If it is infeasible to provide wide areas of riparian habitat along the entire channel, restore areas to provide wide nodes of riparian habitat along the channel.
- See conservation actions under LCP Objective L1.4 for additional actions related to restoration of natural communities.

Riparian restoration actions can be either intensive (such as actions that involve grading) or less intensive. Less intensive efforts, which may still require considerable resources, involve facilitating the dispersal and establishment of native plants through maintenance practices, such as removing competing invasive plants. (from CVFPP Conservation Strategy [DWR 2016])

RCIS/LCP Objective R1.3: Maintain or enhance riparian habitat areas

Maintain or enhance the functional habitat value of existing riparian habitat areas by maintaining or increasing the complexity of the riparian vegetation.

Maintain or enhance riparian habitat areas, conservation actions

Actions to increase functional valley foothill riparian habitat values, with an emphasis on enhancing values where they have been degraded, may include but are not limited to the following.

- Introduce tall, broad-canopied tree species like valley oak and shorter species such as toyon, which increase the structural complexity of the riparian habitat and the complexity of food webs in the habitat.
- Manage existing riparian habitats to maintain key food resources for breeding and wintering birds. Incorporate plant species that provide food resources for summer and winter migratory species into riparian enhancement and restoration plans.
- Control or eliminate invasive riparian plant species such as arundo that would otherwise create large monotypic stands lacking in structural diversity.
- Create conditions that provide fluvial processes that periodically disturb riparian areas, thereby promoting various successional stages and increased structural diversity. An example of an action that would provide fluvial processes would be to set back levees to widen the floodplain.

Commented [HV17]: I am curious where this number comes from. It would be better to correlate the size of the riparian area to the width of the channel, floodplain size and inundation frequency, and the seasonality of the waterway—in other words the width a waterway can support will vary. Probably best to not include a statement about an optimal width.

Commented [BE18R17]: To discuss with Advisory Committee

3.4.2.7 Lacustrine/Riverine

Commented [BE19]: See landscape level for more floodplain-related items.

RCIS/LCP Goal LR1: Stream conservation

Conserve and enhance stream systems in the Strategy Area.

See also RCIS/LCP Objective L2.1, *Hydrologic and geomorphic processes in floodplains*, regarding landscape level ecological needs within floodplains, with a focus on the Sacramento River and Yolo Bypass, consistent with the CVFPP Conservation Strategy.

RCIS/LCP Objective LR1.1. Fluvial equilibrium

Maintain and/or restore fluvial equilibrium between erosion and deposition in Strategy Area streams.

An equilibrium exists when channels are neither aggrading nor degrading and maintain stable channel cross-sectional and longitudinal profiles through time, where “equilibrium” reflects a dynamic balance between erosion and deposition through time, rather than a static, unchanging condition.

Fluvial equilibrium conservation actions:

Actions to achieve fluvial equilibrium in the Strategy Area may include, but are not limited to, the following.

- Avoid stream channelization.
- Avoid unnecessary vegetation removal.
- Minimize erosion in uplands that contributes to excessive sedimentation in Strategy Area streams. Maintain vegetative cover, using native species, to stabilize slopes and reduce effects of precipitation in generating erosion.
- Maintain vegetation cover in uplands as an approach to increase infiltration of precipitation and reduce excessive runoff into Strategy Area streams.
- Maintain and/or restore riparian and floodplain vegetation to stabilize and maintain equilibrium between sediment and streamflow in Strategy Area stream channels.
- Maintain a sediment supply in channels below dams and other channel obstruction that can contribute sediments to downstream reaches in order to maintain a dynamic equilibrium between channel erosion and aggradation.

Commented [BE20]: To elaborate

RCIS/LCP Objective LR1.2. American beavers

Protect lacustrine/riverine systems supporting American beavers.

American beavers, conservation actions:

Actions to protect American beavers in the Strategy Area may include but are not limited to the following.

- Target portions of streams that support American beavers for protection.
- Incorporate beaver management practices into management plans for lands protected by a conservation easement or other instrument providing for perpetual protection of land supporting or potentially supporting this species. Such management may include protection of

existing beaver dams where possible, and installation of deceiver or bypass devices where necessary, rather than dam removal. Management may also include wrapping trees identified for retention with wire cylinder tree wraps or cages.

RCIS/LCP Objective LR1.3: Native vegetation

Promote the establishment and maintenance of native vegetation along natural and constructed waterways.

Native vegetation, conservation actions:

Actions to protect, establish, and maintain native vegetation along drainages in the Strategy Area may include, but are not limited to, the following.

- Encourage ecologically sustainable water management practices, including continuous bank vegetation along ditches and other constructed features.
- Establish native plant species demonstrated to provide ecological and water-quality benefits along waterways.
- Where possible, conduct ditch/canal maintenance only on one side of each canal or ditch per year.

Also see conservation actions in Section 3.4.2.6, *Riparian*, related to establishing and maintaining riparian areas along waterways.

RCIS/LCP Objective LR1.4: Stream processes and conditions

Maintain and/or restore and protect stream processes and conditions in Strategy Area streams.

Stream processes and conditions, conservation actions:

- Encourage maintenance of appropriate minimum streamflows throughout the annual cycle to maintain aquatic life in Strategy Area streams. Flows may not be perennial in many streams, although subsurface (hyporheic) flows often continue to maintain riparian processes even when no surface flow occurs. Conservation of stream processes is related to maintaining subsurface flow and groundwater that are hydrologically part of the streamflow in each watershed (Winter et al 1998).
- Maintain or reestablish streamflow dynamics that resemble the natural runoff patterns that sustain instream and riparian/floodplain ecosystems in the Strategy Area, including flow dynamics that support the reproduction of desired native riparian plant species (e.g., Fremont cottonwood).
- Encourage maintenance of habitat conditions that favor native fish species in Strategy Area streams. Where feasible, eliminate invasive nonnative plant, fish, and invertebrate species from Strategy Area streams.
- Expand and protect riparian vegetation along Strategy Area streams where possible in accordance with flood management and operation laws and requires. Riparian vegetation shades and cools streams, maintains streambanks and channel forms, and provides organic material that maintains instream ecological dynamic processes (see Riparian natural community, above).

Commented [PM21]: Doesn't beaver protection sometimes impact fish habitat? There is an issue on PUTah Creek right now where the citizens don't want to give up the beaver ponds, but it's keeping the water from flowing and staying cool for fish. Seems like you should recognize this conflict somewhere. This also seems totally random here.

Commented [BE22R21]: To discuss with advisory committee

Commented [PM23]: Need to mention beaver conflict here.

- See conservation actions under LCP Objective L1.4 for additional actions related to restoration of natural communities.

3.4.2.8 Alkali Prairie

LCP Goal AP1: Alkali prairie conservation

Conserve alkali prairie in the Strategy Area.

All the known vernal pool complexes in the Strategy Area are already protected or held in fee title by a public agency.

3.4.2.9 Vernal Pool Complex

LCP Goal VP1: Vernal pool conservation

Conserve vernal pool complexes in the Strategy Area.

RCIS/LCP Objective VP1.1: Protect vernal pool complexes

Protect currently unprotected vernal pool complexes.

LCP Objective VP1.2. Vernal pool pollinators

Maintain pollinator (especially native bee) populations within vernal pools.

Vernal pool pollinators, conservation actions:

To achieve this objective, the RCIS/LCP prioritizes the following actions:

- Protect existing vernal pool complexes, including upland areas.
- Do not excavate new pools in upland areas within vernal pool complexes.
- Carefully manage grazing to help maintain native plant communities and retain longer flooding periods.
- Avoid pesticide drift or overspray from adjacent crops.
- Protect specialist bees with a buffer of 500 feet around the pools.
- Use a wider buffer (1 kilometer) for aerial spraying of insecticides, especially during the active flight period of the specialist bees (which coincides with blooms of the plants).

3.4.3 Focal Species Strategy

3.4.4 Conservation Species Strategy

The RCIS/LCP does not provide biological goals and objectives for the conservation species (see Table 1-1, *Focal and Conservation Species*). Instead, the conservation strategy relies on the landscape- and natural community-level biological objectives as an ecological framework in which the conservation species will be conserved. (The focal and conservation species typically associated with each natural community are provided in Section 2.4, *Natural Communities and Associated Focal and Conservation Species*.) All else being equal, conservation actions implemented to conserve focal

species should also prioritize protection and management of lands supporting conservation species. In the future, depending on the availability of funding, the Yolo Habitat Conservancy may recommend additional management or enhancement actions that are not provided at the landscape or natural community levels and that concentrate on the needs of particular conservation species. Section 3.5.3, *Conservation Species Priorities*, describes how the RCIS/LCP prioritizes conservation actions for focal species, which in most cases is expected to benefit conservation species as well.

3.5 Conservation Priorities (LCP)

3.6 Monitoring and Adaptive Management Framework

Column	Page in P	Language	Identification in Plan	RCIS/NCP equivalent
1	31	To manage watershed lands to minimize unnatural rates of erosion and sedimentation	Goal	
2	31	Reduce streambank instability and erosion in the foothills	Objective	
3	31	Conduct a detailed streambank assessment to identify issues and priority locations	Conservation Action	
4	31	Establish riparian buffers between creeks and adjacent land use	Conservation Action	
5	31	Vegetate creeks with deep-rooted native or non-invasive perennial vegetation to maintain bank stability	Conservation Action	
6	31	Design and implement well-built ponds/reservoirs in hills to help rainfall infiltrate into the ground and reduce surface runoff	Conservation Action	
7	31	Design and implement small, well-built ponds in the foothill creeks to slow stormwater flow and reduce erosion rates and sediment loads	Conservation Action	
8	31	Develop dispersed water supplies to better manage animal impact on water areas	Conservation Action	
9	31	Develop grazing planning to control access to streams and riparian areas and promote adequate soil cover to prevent erosion	Conservation Action	
10	31	Remove and/or control non-native invasive vegetation in riparian areas (covered in Objective 4.4)	Conservation Action	
11	31	Increase rainfall infiltration in upland areas and decrease peak flows by establishing deep rooted native or non-invasive perennial grasses on rangeland and open spaces	Conservation Action	
12	31	Use recommended streambank stabilization practices (such as those in the Capay Valley Conservation and Restoration Manual)	Conservation Action	
13	32	Reduce erosion resulting from agricultural activities	Objective	
14	32	Conduct a detailed watershed-wide streambank assessment to identify issues and priority locations	Conservation Action	
15	32	Use cover crops where possible between rows in permanent crops and over winter in annual cropping systems	Conservation Action	
16	32	Establish permanent vegetation on field edges, roadsides, and adjacent to irrigation canals and ditches (E.g. Hedgerows)	Conservation Action	
17	32	Establish vegetated filter strips at the tail end of irrigate cropland and orchards	Conservation Action	
18	32	Install tailwater return systems with cleanable sediment traps	Conservation Action	
19	32	Establish riparian buffer strips using native and non-invasive perennial vegetation between agricultural land and ditches, sloughs, and canals	Conservation Action	
20	32	Vegetate irrigation ditches and canals with appropriate native perennial grasses	Conservation Action	
21	32	Use recommended agricultural erosion reduction practices (such as those in the Capay Valley Conservation and Restoration Manual)	Conservation Action	
22	32	Practice minimum and no-till farming	Conservation Action	
23	32	Put land into CRP where appropriate	Conservation Action	

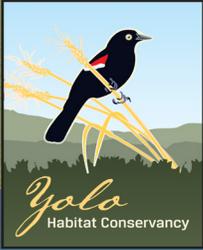
Column	Page in P	Language	Identification in Plan	RCIS/NCP equivalent
24	32	Increase the use of erosion control techniques and practices for existing land use	Objective	
25	32	Conduct a detailed streambank assessment to identify area where erosion efforts will be most effective	Conservation Action	
26	32	Include erosion control and sediment control plans as priorities when planning soil disturbing activities and projects	Conservation Action	
27	32	Revegetate disturbed soil and cover with straw mulch or erosion control fabric as appropriate	Conservation Action	
28	32	Use recommended general erosion reduction practices (such as those in the Capay Valley Conservation and Restoration Manual)	Conservation Action	
29	32	Make the Hungry Hollow community aware of the causes of erosion	Objective	
30	32	Conduct periodic tours of problem sites and successful erosion control projects	Conservation Action	
31	32	Provide periodic trainings to demonstrate the practices used to reduce erosion	Conservation Action	
32	32	Provide Hungry Hollow residents with current information about erosion control techniques through community workshops, the RCD newsletter and website	Conservation Action	
33	33	Update 'Bring Farm Edges Back to Life!' landowner conservation handbook	Conservation Action	
34	33	Make available the 'Welcome to the Watershed' reference guide to new residents of Hungry Hollow	Conservation Action	
35	33	To use and manage surface, groundwater, and stormwater wisely to meet current and future needs	Goal	
36	33	Use a watershed approach for analyzing flooding issues	Objective	
37	33	Conduct a detailed watershed assessment to identify issues and priority locations	Conservation Action	
38	33	Support creative and collaborative solutions to surface and stormwater conveyance needs	Objective	
39	33	Assess interest and feasibility of restarting the Hungry Hollow Drainage Association	Conservation Action	
40	33	Encourage conjunctive planning of surface water flow management in the watershed	Conservation Action	
41	33	Use the Hungry Hollow Stakeholders Group and other potential groups (like the HH Drainage Association) as forums for discussing surface and stormwater conveyance issues	Conservation Action	
42	33	Encourage participation in the Hungry Hollow Stakeholders Group	Conservation Action	
43	33	Use the Hungry Hollow Stakeholders Group as a planning forum for developing a flood management plan for the watershed	Conservation Action	
44	33	Inform and discuss with other members of the drainage area any plans to alter the direction or amount of runoff in the system	Conservation Action	
45	33	Make the Hungry Hollow community aware of surface and stormwater conveyance needs	Objective	
46	33	Provide residents of Hungry Hollow with ongoing information about water management techniques through community workshops, and the RCD newsletter and website.	Conservation Action	
47	33	Create a land management library which is accessible to Hungry Hollow landowners	Conservation Action	
48	33	Encourage participation in the Hungry Hollow Stakeholders Group for foothill and valley land managers	Conservation Action	

Column	Page in P	Language	Identification in Plan	RCIS/NCP equivalent
49	33	Make the Hungry Hollow Watershed Stewardship Plan available to all Hungry Hollow residents and land managers	Conservation Action	
50	34	Increase water use efficiency	Objective	
51	34	Utilize irrigation water management practices on irrigated croplands	Conservation Action	
52	34	BMP for water conservation	Conservation Action	
53	34	Increase irrigation system efficiency on irrigated croplands	Conservation Action	
54	34	Install tailwater return systems on irrigated crop land	Conservation Action	
55	34	To maintain and improve water quality for all water users	Goal	
56	34	Prevent groundwater and surface water contamination from nutrients, chemicals and sediment	Objective	
57	34	Determine water quality issues	Conservation Action	
58	34	Direct surface water flows away from well heads to avoid contaminated surface water movement to wells	Conservation Action	
59	34	Store fuels, pesticides, fertilizers and other chemicals away from wells, streams and floodplains	Conservation Action	
60	34	Utilize nutrient management BMPs	Conservation Action	
61	34	Manage livestock to minimize access to streams and riparian areas	Conservation Action	
62	34	Implement erosion control practices (See Goal 1)	Conservation Action	
63	34	Incorporate Integrated Pest Management techniques	Conservation Action	
64	34	Install sediment traps	Conservation Action	
65	34	Vegetate irrigation ditches, sloughs, and canals with appropriate permanent plantings such as grasses, sedges, rushes, and forbs	Conservation Action	
66	35	Determine sources of water quality impairment	Objective	
67	35	Stay abreast of what is happening in the Yolo County Farm Bureau Water Quality Coalition in coordination with the Sacramento Valley Water Quality Coalition to address the guidelines of the Conditional Waiver	Conservation Action	
68	35	Provide landowner education for self-directed, simple and confidential water quality monitoring techniques	Conservation Action	
69	35	Make the community aware of causes (i.e. products and practices) of water quality impairment	Objective	
70	35	Provide residents of Hungry Hollow with current information about water quality improvement techniques through community workshops, and RCD publications and website	Conservation Action	
71	35	Encourage participation in the Hungry Hollow Stakeholders Group	Conservation Action	
72	35	Make the Hungry Hollow Watershed Stewardship Plan available to all Hungry Hollow residents	Conservation Action	
73	35	To maintain and improve watershed habitats to support a diversity of native plants and animals	Goal	
74	35	Protect existing native plant and animal communities, habitats, and wildlife corridors	Objective	
75	35	Identify critical wildlife habitat areas in Hungry Hollow, taking into account existing high quality habitat, gaps in high quality habitat, farming patterns and crops that may support certain species	Conservation Action	

Column	Page in P	Language	Identification in Plan	RCIS/NCP equivalent
76	35	Reestablish native plant communities in appropriate areas	Objective	
77	35	If necessary, coordinate Safe Harbor permits	Conservation Action	
78	35	Establish a Safe Harbor agreement and coordinate permits for restoration work in the watershed	Conservation Action	
79	35	Encourage habitat diversity by planting native vegetation on unfarmed or unproductive corners of agricultural land	Conservation Action	
80	36	Install hedgerows with native plant species along field edges, fence lines and roadsides for wildlife and pollinators	Conservation Action	
81	36	Expand existing riparian areas using native vegetation	Conservation Action	
82	36	Install native vegetation around ponds	Conservation Action	
83	36	Fence stockponds and install off-pond watering systems to control livestock access	Conservation Action	
84	36	Install native vegetation along irrigation canals and ditches as appropriate	Conservation Action	
85	36	Use recommended restoration practices (such as those in the Capay Valley Conservation and Restoration Manual)	Conservation Action	
86	36	Establish and maintain wildlife corridors between open spaces	Objective	
87	36	Identify and prioritize existing and potential wildlife corridors in the watershed	Conservation Action	
88	36	Establish a Safe Harbor agreement and coordinated permits for restoration work in the watershed	Conservation Action	
89	36	Provide coordination and planning support for coordinated wildlife corridor enhancement along Cache Creek, intermittent creeks, sloughs, and other identified wildlife corridors areas	Conservation Action	
90	36	Plant native vegetation for wildlife on unfarmed or unproductive corners of agricultural land	Conservation Action	
91	36	Install native vegetation hedgerows along field edges, fence lines and roadsides	Conservation Action	
92	36	Enhance and connect riparian areas that are contiguous across property lines to increase both wildlife habitat and property value	Conservation Action	
93	36	Install native vegetation alongside and within irrigation canals and ditches as appropriate	Conservation Action	
94	36	Install native vegetation along roadsides. Coordinate with County to maximize the mutual benefits of native roadside vegetation (lower maintenance costs and more stable roadside conditions)	Conservation Action	
95	36	Use recommended restoration practices (such as those in the Capay Valley Conservation and Restoration Manual)	Conservation Action	
96	36	Manage non-native invasive vegetation	Objective	
97	36	Develop invasive vegetation management strategies in cooperation with the Yolo County Weed Management Area (WMA) to coordinate regional invasive vegetation management efforts	Conservation Action	
98	36	Coordinate invasive non-native weed management in Hungry Hollow with similar efforts (County of Yolo, Cache Creek Conservancy) throughout the Upper and Lower Cache Creek watershed	Conservation Action	
99	37	Develop a programmatic permit coordination program for Hungry Hollow that allows landowners to take appropriate actions in a timely manner	Conservation Action	

Column	Page in P	Language	Identification in Plan	RCIS/NCP equivalent
100	37	Remove invasive non-native riparian vegetation from stream channels and riparian areas (i.e. Tamarisk, Arundo, Perennial Pepperweed)	Conservation Action	
101	37	Replace invasive non-native riparian vegetation with vegetation appropriate to the site	Conservation Action	
102	37	Plant native perennial grasses on roadsides, ditch banks, and on rangelands to compete with non-native species	Conservation Action	
103	37	Utilize a diverse set of practices (e.g. prescribed burning, herbicides, grazing, mowing, mulching) in developing invasive vegetation management strategies	Conservation Action	
104	37	Use recommended practices (such as those in the Capay Valley Conservation and Restoration Manual)	Conservation Action	
105	37	To promote land management practices that support a sustainable and productive agricultural economy.	Goal	
106	37	Use a watershed approach when making natural resource decisions	Objective	
107	37	Encourage participation in the Hungry Hollow Stakeholders Group	Conservation Action	
108	37	Encourage the development of stakeholder teams that focus on particular actions	Conservation Action	
109	37	Encourage whole farm and ranch planning	Conservation Action	
110	37	Make the Hungry Hollow Watershed Stewardship Plan available to all Hungry Hollow residents	Conservation Action	
111	37	Provide Hungry Hollow residents with accessible local watershed information and ongoing information about watershed management through community workshops the RCD publications and website	Conservation Action	
112	37	Increase the awareness and use of sustainable agricultural practices	Objective	
113	37	Promote agricultural education for children and young people	Conservation Action	
114	37	Facilitate funding for new conservation practices on farms and ranches	Conservation Action	
115	37	Provide residents of Hungry Hollow with ongoing information about sustainable agricultural practices through community workshops, the RCD publications and website	Conservation Action	
116	38	Support a marketing effort that promotes Hungry Hollow products	Objective	
117	38	Investigate branding like "Capay Valley Grown"	Conservation Action	
118	38	Recognize the region for marketing purposes	Conservation Action	
119	38	Encourage sustainable agricultural practices that demonstrate good stewardship as a component of marketing Hungry Hollow products	Conservation Action	
120	38	Encourage involvement in a marketing effort that promotes good stewardship	Conservation Action	
121	38	Encourage appropriate land protection measures to allow willing farmers to keep their land in agricultural production	Objective	
122	38	Encourage and support farmland preservation	Conservation Action	
123	38	Make available current information on land protections measures	Conservation Action	
124	38	Support conservation easements and agricultural easements as a means to improve the profitability of marginal agricultural land and to keep current agricultural land in agricultural production and affordable to future farmers	Conservation Action	

Column	Page in P	Language	Identification in Plan	RCIS/NCP equivalent
125	38	Cooperate with the Yolo Land Trust for assistance with easement planning and transactions	Conservation Action	
126	38	To promote a watershed approach for decisions involving Hungry Hollow by supporting communication and collaboration among all stakeholders.	Goal	
127	38	Support an open forum for meaningful discussion of issues concerning the watershed including public-private land management issues	Objective	
128	38	Hold regular stakeholder meetings	Conservation Action	
129	38	Use the Hungry Hollow Stakeholders Group as a forum for discussing important watershed issues in a manner consistent with the Mission and Operating Principles	Conservation Action	
130	38	Encourage public and private stakeholder participation in the Hungry Hollow Stakeholders Group	Conservation Action	
131	38	Investigate potential of a coordinated drainage system management group (such as the former Hungry Hollow Drainage Association)	Conservation Action	
132	38	Coordinate management solutions with County of Yolo	Conservation Action	
133	39	Coordinate watershed assessment and planning with the Integrated Regional Water Management Plan (IRWMP)	Conservation Action	
134	39	Identify resources within the watershed (like who has equipment, skills, and other resources)	Conservation Action	
135	39	Increase awareness of watershed issues	Objective	
136	39	Maintain an up-to-date webpage for Hungry Hollow stakeholders	Conservation Action	
137	39	Use the Hungry Hollow webpage on the Yolo RCD website to keep residents informed of important watershed issues	Conservation Action	
138	39	Host speakers and workshops on important watershed topics	Conservation Action	
139	39	Develop a multi-year, multi-disciplinary place based youth education program that involves the community and local schools in resource conservation and restoration projects	Conservation Action	
140	39	Incorporate Hungry Hollow specific resources into the reference collection at Esparto Library and other regional libraries	Conservation Action	



Agriculture and the Yolo HCP/NCCP



Yolo HCP/NCCP Background

The Yolo Habitat Conservancy is preparing the Yolo Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP). The Yolo HCP/NCCP is a countywide conservation plan to provide Endangered Species Act permits and associated mitigation for infrastructure (e.g. roads, bridges, and levees) and development activities (e.g. agricultural facilities, housing, and commercial buildings) identified for construction over the next 50 years in the area.

The Yolo HCP/NCCP strikes a sensible balance between natural resource conservation and economic growth in the region. It will coordinate mitigation to maximize benefits to species, as well as conserve habitat above and beyond required mitigation for 12 identified species.

Emphasis on Agriculture

Yolo County's long history of responsible land use planning has directed growth to cities, thus resulting in contained urban areas and the preservation of extensive agricultural and open space lands. Many of the working farms and rangelands within the county provide important habitat for the Yolo HCP/NCCP's covered species by providing foraging, cover, and nesting habitat. Given the significant role agriculture plays in the provision of covered species habitat in Yolo County, the Yolo HCP/NCCP conservation strategy places a strong emphasis on the purchase of habitat conservation easements on agricultural lands from willing sellers.



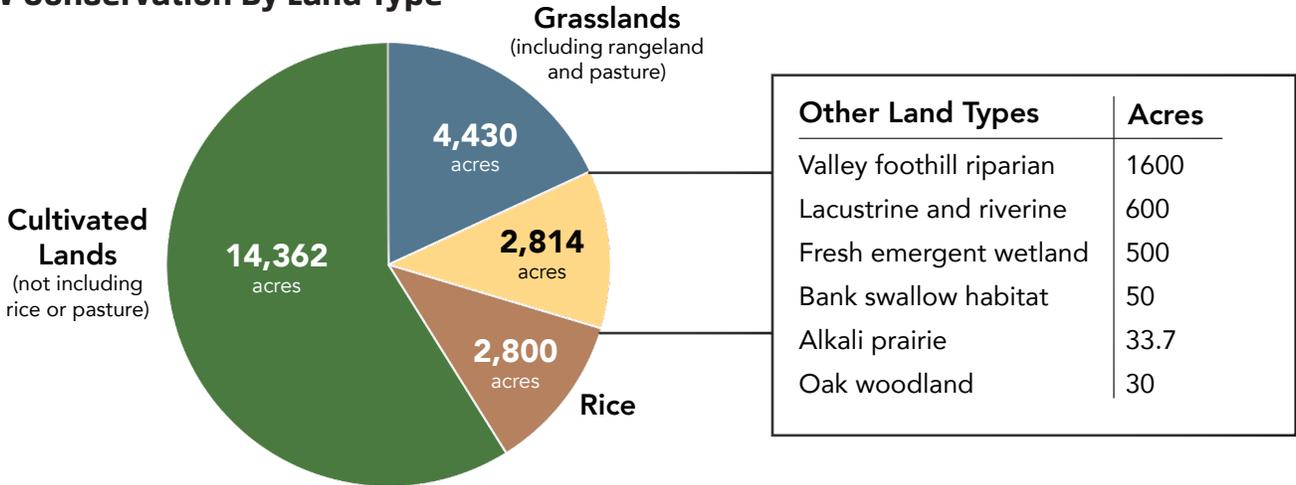
Conservation Easements

The Yolo HCP/NCCP relies on the voluntary establishment of conservation easements on lands that provide habitat value for HCP/NCCP covered species and their habitats. The primary types of land that comprise the conservation commitments of the Yolo HCP/NCCP include: cultivated lands (non-rice row crops), rice, grasslands, valley foothill riparian, fresh emergent wetland, lacustrine and riverine, oak woodland, and alkali prairie.

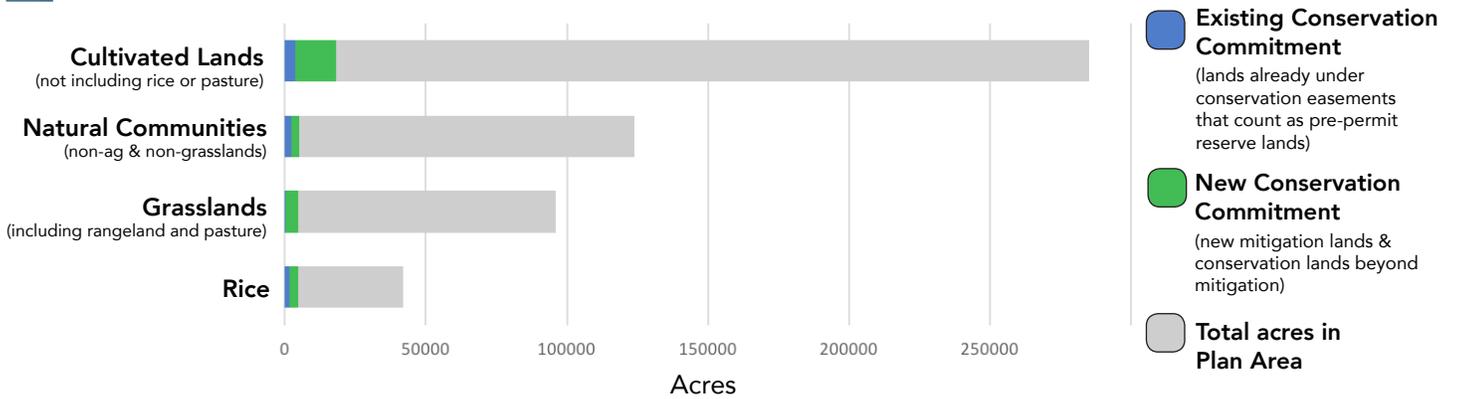
The Conservancy recognizes that most the lands identified for conservation are actively managed agricultural lands that provide habitat value due to existing management practices. While all conservation easements associated with the Yolo HCP/NCCP will prohibit the planting of orchards and vineyards, conservation easements placed on existing agricultural lands are intended to encourage ongoing operations that provide habitat value to the 12 HCP/NCCP covered species with minimum disruption to routine agricultural practices. The Conservancy will work with willing landowners to jointly agree to wildlife-friendly agricultural practices in a management plan that accompanies each individual easement. Conservation easements typically sell for 30%-60% of the fair market price of the property, depending on the ecological value of the property as covered species habitat.

Visit yolohabitatconservancy.org/landowners for the Conservation Easement Application, and see Section 7.5.5, Conservation Easements for additional information about conservation easements.

New Conservation By Land Type



New Conservation Compared to Plan Area



While the Yolo HCP/NCCP conservation strategy will help provide a more comprehensive network of lands to protect covered species relative to standard project-by-project mitigation that would occur in the absence of the HCP/NCCP, the total acres committed to new conservation is still only a fraction of the total acreage of each land type identified for conservation.

In addition, 8,000 of the total acres identified as Yolo HCP/NCCP conservation commitments are lands with established conservation easements. These lands are identified in the Yolo HCP/NCCP as pre-permit reserve lands and are included in the Yolo HCP/NCCP in part to acknowledge existing conservation commitments in Yolo County. By including these pre-permit reserve lands as part of the overall Yolo HCP/NCCP conservation commitment, the properties also are eligible to participate in any grant programs and/or incentive programs for which other HCP/NCCP conservation lands are eligible if the landowner decides to enroll their property in the HCP/NCCP reserve system. This may include programs that provide funding for hedgerow establishment, payments for farmers that plant specific crop types, or other incentives for conducting specific wildlife enhancement practices. Landowners are not obligated to enroll their property in the HCP/NCCP reserve system.

Mitigation Receiving Sites

Establishing a mitigation receiving site is a means of preserving habitat, conserving agricultural land, and potentially bringing income to landowners through the sale of mitigation credits. Developers of projects in Yolo County that decrease or impair habitat may purchase mitigation credits provided by a local receiving site to offset the impacts of development.

The application to become a Mitigation Receiving site is the same as the Conservation Easement Application and can be accessed at www.yolohabitatconservancy.org/landowners.

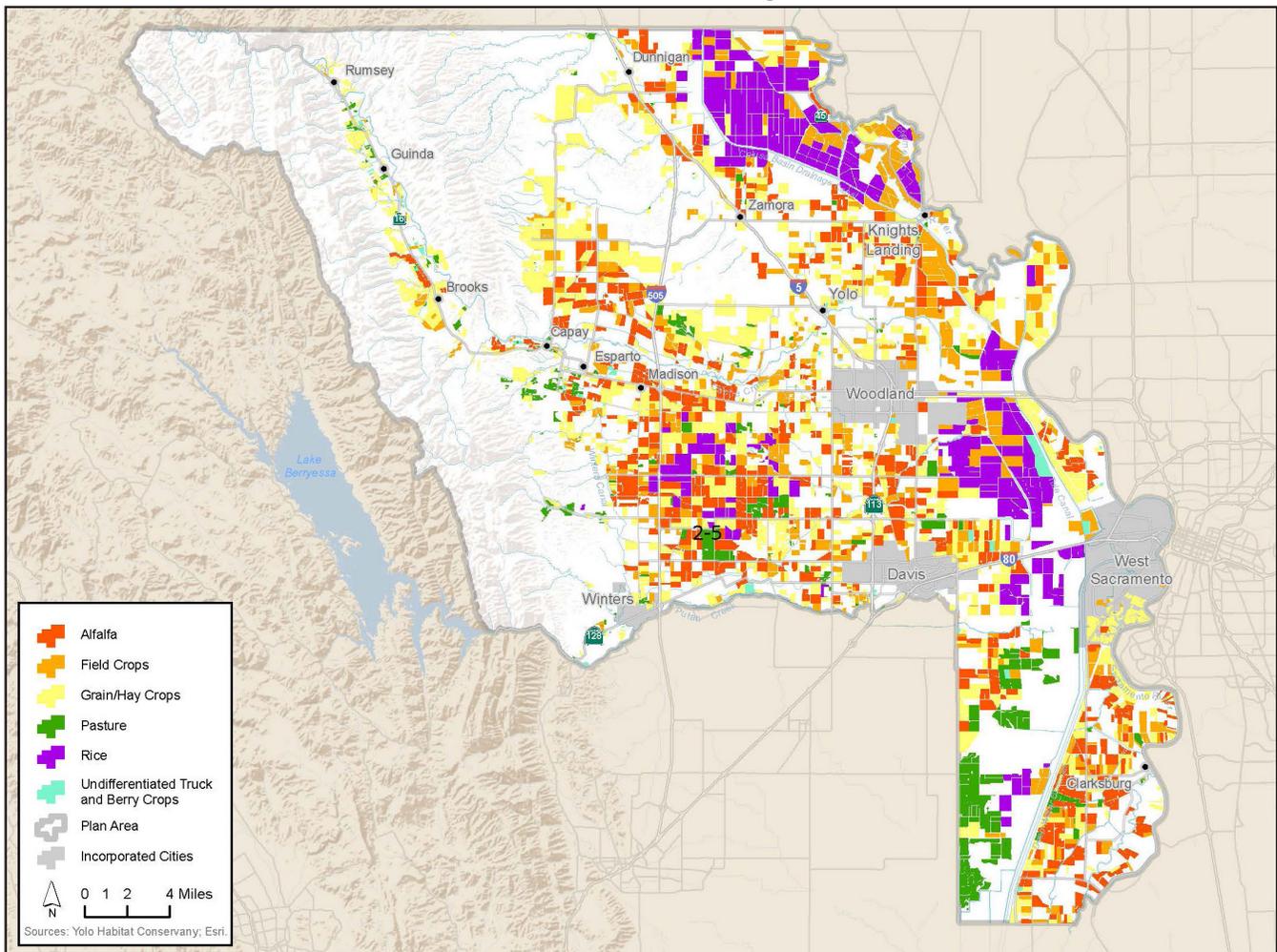
Covered Activities on Conservation Easement Lands

Normal and routine agricultural practices on conservation easement lands in the Yolo HCP/NCCP reserve system are covered activities under this HCP/NCCP, provided they are consistent with the associated conservation easement and follow avoidance and minimization measures described in *Section 4.3.6, Avoidance and Minimization Measures for Agricultural Practices within the Reserve System* that are applicable to the covered species whose habitat is identified for conservation in the easement area. Covered activities also include habitat management activities to maintain suitable habitat conditions, restoration, enhancement, and creation of habitat; construction and maintenance of facilities necessary for the management, maintenance, and access control of conservation easement lands (e.g., fences, stock ponds, access roads); control of invasive nonnative species by mechanical means or other means; and all other management and monitoring activities described in Chapter 6 of the Yolo HCP/NCCP.

Covered Activities Associated with Agricultural Economic Development

The Yolo HCP/NCCP recognizes there are future agricultural commercial and agricultural industrial development activities within Yolo County that will require take coverage. The Yolo HCP/NCCP provides coverage for 332 acres of activities associated with agricultural commercial and agricultural industrial development that is consistent with the Yolo County General Plan and under the discretionary authority of Yolo County. Agricultural industrial uses include agricultural research, processing, and storage; supply; service; crop dusting; agricultural chemical and equipment sales; and surface mining. Agricultural commercial uses include roadside stands, wineries, farm-based tourism (e.g., u-pick, dude ranches, lodging), horseshows, rodeos, crop-based seasonal events, and ancillary restaurants and/or stores.

Distribution of Cultivated Land Seminatural Community in the Plan Area



Neighboring Landowner Protection Program

The Yolo HCP/NCCP provides the Neighboring Landowner Protection Program as an option for landowners with actively farmed properties located adjacent to Yolo HCP/NCCP reserve lands. Covered species populations may increase because of implementation of conservation activities under the plan, particularly in areas where habitat is restored and populations of these species may move to adjacent lands that are not part of the reserve system. In recognition of this potential, the Yolo HCP/NCCP includes a process by which neighboring landowners may receive assurances through certificates of inclusion under the Federal Endangered Species Act and the Natural Community Conservation Plan Act permits. Such landowners can opt in to a voluntary program from which they can receive permit coverage for incidental take of endangered species for routine agricultural activities that occur during the Yolo HCP/NCCP permit term. Coverage under the program is for four covered species: California tiger salamander, valley elderberry longhorn beetle, giant garter snake, and western pond turtle. The Neighboring Landowner Protection Program only covers take of endangered species above the baseline number of species that existed prior to the establishment of the neighboring Yolo HCP/NCCP conservation easement.

Benefits

- A voluntary program administered locally.
- Provides protection against enforcement actions related to the take of endangered species above baseline populations.
- Provides “no surprises” assurances to landowners, creating an “insurance policy” for the Endangered Species Act compliance.

Costs

- Landowner pays for baseline surveys and property enrollment costs.
- Conservancy uses a portion of its incidental take permit coverage from the Yolo HCP/NCCP for the neighboring landowner’s property.

Process

1. **Conduct Baseline Surveys.** The landowner will contract with a qualified biologist (or the Conservancy) to conduct surveys for the species for which they are seeking coverage, and identify all occurrences of the species and habitat on a property map.
2. **Identify covered practices.** The landowner will provide a written description of the ongoing and expected future agricultural practices on the property.
3. **Pay a fee.** The landowner will pay a fee to cover the Conservancy’s enrollment cost.

Details about eligibility and estimated acreage are described in Chapter 5, *Section 5.4.4, Neighboring Landowner Protection Program*. Details of the application process for coverage are described in Chapter 7, *Section 7.7.7.1, Neighboring Landowner Protection Program*.



5.4.3.4 Conservation Strategy Implementation

Some habitat enhancement activities could result in harassment of covered species. For example, planting emergent vegetation in aquatic California tiger salamander habitat could temporarily disturb amphibians occupying the pond. Tractors and other farming equipment could disturb or injure covered species on cultivated lands in the reserve system.

Monitoring and research activities required by the Yolo HCP/NCCP (Chapter 6, Section 5.5, *Monitoring and Adaptive Management*) could also disturb wildlife. For example, to determine the presence of some covered species (e.g., California tiger salamander larvae), individuals may need to be handled by a qualified biologist. Such handling constitutes harassment—a form of take—under FESA and requires authorization. Translocation activities, which must be coordinated with and approved by CDFW and USFWS, could also cause take through injury or loss of individuals due to capture, handling, transportation, release, and/or the inability of the individual to find new shelter.

5.4.4 Neighboring Landowner Protection Program

The conservation strategy aims to increase populations of covered species through habitat protection, restoration, and enhancement. Certain covered species may disperse from the reserve system, in response to this active management, onto neighboring private lands that are not part of the reserve system. The Yolo HCP/NCCP includes a neighboring landowner protection program to protect landowners in the Plan Area near reserves on agricultural lands from the regulatory consequences of covered species dispersal.

The neighboring landowner protection program only applies to normal agricultural practices described in Appendix M, *Yolo Agricultural Practices*. The neighboring landowner protection program also only provides coverage for species that disperse onto lands after the creation of the neighboring reserve (i.e., only for take authorization above baseline levels on the neighboring land as determined by surveys). Take granted through the neighboring landowner protection program could slightly reduce the beneficial effects of the conservation strategy due to take of individuals that disperse off the reserve lands. There would be no additional take of covered species habitat (or natural communities) as a result of the neighboring landowner protection program. The neighboring landowner protection program is described in detail in Chapter 7, Section 7.7.7.1, *Neighboring Landowner Protection Program*.

The effects associated with the dispersal of covered species from the reserve system onto neighboring lands are anticipated to be very limited and restricted to the species that meet the criteria listed below.

- Covered species that are expected to increase in numbers on the reserves.
- Covered species that are likely to spread from the reserve system onto neighboring lands as their populations increase.
- Covered species for which there is a reasonable likelihood of take from routine, ongoing agricultural activities that would occur on the neighboring lands.

Based on the criteria above, only four of the 12 covered species have the potential to disperse onto adjacent properties and result in take: valley elderberry longhorn beetle, giant garter snake, California tiger salamander, and western pond turtle. Take coverage is therefore only available through this program for these four covered species.

Participation in this program is voluntary. Interested landowners wanting coverage must sign an Opt-in Agreement with the Conservancy. Owners of private lands that are actively used for agricultural purposes (e.g., crop production) adjacent to reserve system lands will receive take coverage for one or more of these four species under the Yolo HCP/NCCP if they opt in to this program. Take coverage by species is based on the neighboring land's distance from the nearest reserve land. A radius was set for each species over which the program applies based on the species' typical dispersal distance. Although these species are capable of dispersing further than these distances, each radius accounts for the most likely area of effect.

- Valley elderberry longhorn beetle = 0.25 mile.
- Giant garter snake and western pond turtle = 0.5 mile.
- California tiger salamander = 1.0 mile.

Coverage will be provided to agricultural operations only for take beyond the baseline condition that existed prior to the establishment of the neighboring reserves. Furthermore, this coverage will be limited only to ongoing and routine agricultural activities on lands enrolled in the neighboring landowner protection program. Ongoing and routine activities would include normal farming practices. Coverage under the neighboring landowner protection program expires when the Permits expire. See Chapter 7, Section 7.7.1, *Neighboring Landowner Protection Program*, for additional details of this program, including the process for landowner notification, request for coverage, and extension of take coverage. The neighboring landowner protection program does not transfer if the property is sold (Section 7.7.7.1, *Neighboring Landowner Protection Program*).

Based on the landowner participation in other counties with approved HCPs and NCCPs (e.g., San Joaquin County, East Contra Costa County, Santa Clara Valley) that have similar programs, it is assumed that up to three percent of eligible lands will enter into neighboring land agreements, for a total of no more than 2,347 acres. Of this, it is assumed that most of the potential effects will occur on land cover types that support farming (agricultural and grassland land cover types), which are used by California tiger salamander and western pond turtle for non-breeding, secondary foraging, or dispersal habitat, and not as breeding or primary habitat. The habitat for the valley elderberry longhorn beetle and western pond turtle on cultivated lands is typically of low value (and non-breeding), so the magnitude of impacts is expected to be low or very low. Giant garter snakes may use wetlands, rice lands, and irrigation channels adjacent to reserves for foraging, cover, or dispersal. Although rice lands and irrigation ditches can provide high-value habitat for the giant garter snake, ongoing agricultural practices are not expected to adversely affect populations of this species, as giant garter snakes commonly persist in cultivated landscapes, particularly rice lands.

Adverse effects from allowable agricultural activities on giant garter snake, and western pond turtle could result from rodent control, active farming practices, vehicle and machinery travel, runoff from fields, or disturbance to adjacent streams or wetlands.

The amount of take to be authorized for giant garter snake, western pond turtle, California tiger salamander, and valley elderberry longhorn beetle through this program includes up to all individuals (or elderberry shrubs, in the case of valley elderberry longhorn beetle) that are above baseline conditions within up to 2,347 acres enrolled in the neighboring landowner protection program. The amount of take to be authorized for giant garter snake individuals are those above baseline up to the take total included for all covered activities as listed in Table 5-2(b).

recovery and help implement the conservation portion of the Yolo HCP/NCCP (see also the discussion of funding contingencies in Chapter 8).

7.7.6 Staff Contributions by State and Federal Agencies

Successful implementation of the Yolo HCP/NCCP relies on the continued participation and feedback of representatives of USFWS and CDFW. As described in Chapter 7, *Plan Implementation*, USFWS and CDFW staff members are expected to participate in Conservancy meetings and subcommittees as needed to evaluate and provide advice and applicable consent on HCP/NCCP implementation. In particular, USFWS and CDFW participation is critical to the success of the adaptive management and monitoring program. The Permittees request that USFWS and CDFW make every effort, given budget and workload constraints, to provide staff members to serve on all appropriate committees and participate in discussions and meetings to ensure that implementation of the Yolo HCP/NCCP is consistent with any findings upon which the Permits are based.

7.7.7 Assurances for Private Landowners

Third parties may receive take authorization pursuant to Section 4.2, *Receiving Take Authorization under the Yolo HCP/NCCP*. Once take authorization has been provided to a third party, it will remain in effect for that covered activity as long as the Permits issued by CDFW and USFWS to the Permittees remain in effect. If USFWS or CDFW suspends or revokes its Permit, take authorization provided under the jurisdiction of the Permittees would also be suspended or revoked. In addition, if a local jurisdiction determines that one of its project proponents is in violation of the take permit (i.e., in violation of the conditions in Chapter 4, *Application Process and Conditions on Covered Activities*), the local jurisdiction will suspend or revoke take coverage that had been extended to the project proponent and report the violation to the Conservancy, USFWS, and CDFW.

7.7.7.1 Neighboring Landowner Protection Program

The Yolo HCP/NCCP requires development of a reserve system that may eventually encompass approximately 33,362 acres of lands in the Plan Area for mitigation and provide for conservation of species and natural communities (Tables 6-1(a), *Reserve System Land Types*, and 6-1(b), *Pre-permit Reserve Lands*). The Conservancy will protect, restore, enhance, and manage natural communities on these reserve lands for the benefit of ecosystem functions, natural communities, and covered species. HCP/NCCP implementation is expected to result in the expansion of populations of covered species. Individuals or populations of these species may move to and colonize adjacent lands that are not within the reserve system as an inadvertent result of HCP/NCCP implementation. In recognition of this potential, the Yolo HCP/NCCP includes a process by which neighboring landowners may receive assurances through certificates of inclusion under FESA Section 10 and NCCPA Section 2835 permits. With respect to take, the process for neighboring landowner assurances provides for incremental increases in the number of individuals or populations of covered species, above baseline conditions, on neighboring lands. The assurances do not provide for take of existing populations or occupied habitat prior to the establishment of adjacent reserve lands and, therefore, will not result in impacts relative to baseline conditions.

The Conservancy will provide certificates of inclusion for incidental take by neighboring landowners who are engaged in agricultural and rangeland activities and agree to participate (i.e., “opt-in”). Landowners who do not wish to participate would not be required to participate.

Landowners who wish to voluntarily enroll their working lands into the Yolo HCP/NCCP and receive take authorization for the covered activities described in Chapter 3, *Covered Activities*, must follow the steps below to prepare an HCP/NCCP enrollment application package.

1. **Conduct Baseline Surveys.** The landowner will contract with a qualified biologist to conduct surveys for all covered species with neighboring landowner assurances and their habitat (i.e., natural habitat that may be present between agricultural fields and not the actively cropped fields themselves that may provide habitat) and identify all occurrences of species and habitat on the property on a map. The landowner is responsible for contracting with the qualified biologist but also may contract with, and fund, the Conservancy to conduct these surveys. A baseline survey report, including maps of locations, will be provided to the Conservancy. The report will describe the location and quality of occupied habitat, identify the locations of occurrences, and estimate the number of individuals within each occurrence for all covered species on the property;
2. **Identify Covered Practices.** The landowner will provide to the Conservancy a written description of the ongoing and expected future agricultural practices on the property; and
3. **Pay Fees.** Pay a fee to cover Conservancy's enrollment cost.

The Conservancy will review the enrollment application and determine if it meets all requirements of the Yolo HCP/NCCP, specifically, the covered activities and the required avoidance and minimization provisions regarding take of covered species, as described in Section 4.3, *Conditions on Covered Activities*.

If approved, the Conservancy will authorize take through a certificate of inclusion specifically for agricultural practices. Authorized take may not result in the property falling below the baseline conditions for covered species with respect to occurrences and habitat. The Conservancy may add conditions, as appropriate to the Yolo HCP/NCCP, to the certificate of inclusion to ensure that HCP/NCCP goals and objectives are met.

There is no requirement under the Yolo HCP/NCCP that farmers and ranchers enroll in the HCP/NCCP or request certificates of inclusion. It is a voluntary opt-in program. The Conservancy will maintain a record of all applications provided by and certificates of inclusion provided to farmers and ranchers who are under this program as well as any signed certificates of inclusion that are returned by landowners. The Conservancy will set the administrative fee for participation in this program during Plan implementation. The Conservancy will notify USFWS and CDFW annually of the number, location, and size of the lands that are covered under certificates of inclusion. The Conservancy will provide copies of the certificates of inclusion to USFWS and CDFW upon request. Certificates of inclusion do not transfer with the property.

7.8 Modifications to the Plan

The Yolo HCP/NCCP or incidental take permits can be modified in accordance with USFWS and CDFW regulations and the terms of the Implementing Agreement and the Permits. Plan modifications are not anticipated on a regular basis. A Permittee or the permitting agencies may request modifications. The categories of modification that are recognized, in order of significance, are administrative changes, minor modifications, and amendments, each of which is described below.