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CHAPTER 9. ALTERNATIVES TO TAKE

9.1 INTRODUCTION

Pursuant to section 10 of the ESA, permit applicants must specify in HCPs what alternative actions to the taking of federally listed threatened and endangered species were considered and the reasons why those alternatives were not proposed to be used.¹ There is no similar requirement under the NCCPA although the authorization of an NCCP does require compliance with CEQA through preparation of an environmental impact report which includes an analysis of project alternatives (see the Yolo NHP EIR/EIS). This chapter describes alternative actions to take for each of the federally listed covered wildlife species in compliance with section 10 of the ESA. Take of listed plants is not prohibited by the ESA.²

Following the USFWS/NMFS HCP Handbook (USFWS/NMFS 1996), two types of alternatives are typically considered in HCPs: (1) alternatives that would result in take levels below those anticipated for the proposed project, and (2) alternatives that would cause no incidental take, thereby eliminating the need for an incidental take permit. Project alternatives are considered in more detail in the draft EIR/EIS that accompanies this draft Plan. Alternatives to take for each of the covered wildlife species were evaluated based on the following criteria:

1. Level of incidental take expected to result and conservation benefits likely to accrue to listed covered species;
2. Consistency with the purpose of the covered activities (General Plans for Yolo County and the cities of Davis, West Sacramento, Winters and Woodland, infrastructure projects, and agriculture) and with the NHP Conservation Strategy (e.g., restoration and management of protected habitats); and
3. Practicability relative to cost, logistics and technology.

The evaluation describes the reasons that each of the component variations and alternatives to take were not adopted in the NHP Conservation Strategy.

9.2 ALTERNATIVES TO TAKE EVALUATED AT A REGIONAL SCALE

This section provides a description of planning processes within the NHP Plan Area that evaluated alternatives with greater and lesser amounts of impacts on and take of federally listed wildlife. Alternatives with different levels of impacts on and take of federally listed wildlife species were evaluated at the regional scale through the county and city local General Plan update planning process. These General Plans were developed with full public input to address local growth and development goals, including consideration of effects on wildlife species and

¹ 50 CFR 17.22(b)(1)(iii)(C).

² However, projects that adversely affect federally listed plant species that are subject to ESA section 7 consultations will be evaluated through that process.

other sensitive biological resources. The development of the NHP also incorporated alternative approaches to covered activities and conservation actions that further avoid and minimize impacts on and take of federally listed covered wildlife species (and also covered plant species) that could have resulted from the adopted General Plans.

The NHP was developed in the context of jurisdictional General Plans that are in varying degrees of maturity or preparation. The General Plan for Yolo County was adopted by the Board of Supervisors in November of 2009. The City of Davis General Plan was adopted in 2001 and updated in 2007. The city of West Sacramento General Plan was adopted in 1990, updated in 1992 and 2008, and is now undergoing a major update estimated for completion in 2013. The City of Winters General Plan was adopted in 1991, with no significant updates since that time. In 2009, Winters extended the General Plan time-frame horizon from 2010 to 2018, to assure legal consistency with a year 2008 state-mandated update to its General Plan housing element. The City of Woodland General Plan was adopted in 1996, updated in 2002, and is currently undergoing a major update that will not be completed until summer 2014.

Figure 3-1 in Chapter 3, *Covered Activities*, depicts condensed General Plan land use designations for unincorporated Yolo County and the cities of Davis, West Sacramento, Winters, and Woodland in the Plan Area as they relate to trends in future growth and development.

9.2.1 No Take Alternative

An alternative that would restrict NHP covered activities to avoid all take of federally listed wildlife species would obviate the need for issuance of incidental take permits by USFWS. This alternative that would avoid all incidental take was rejected because it would (1) not be practicable and not meet local growth and development goals by severely constraining the implementation of the General Plans and thus precluding achieving the objectives for planned growth and development, including accommodating state-mandated Regional Housing Need Allocations (RHNA) in the county and cities; (2) not be practicable and not meet local growth and development goals by precluding improvements and maintenance of infrastructure supporting the health, safety and economy of the Plan Area (e.g., road construction, improvements, and maintenance; water and wastewater systems improvements and maintenance; solid waste capacity expansion; and agricultural water conveyance facilities improvement and maintenance); and (3) eliminate the need for the NHP Conservation Strategy and thus preclude implementing actions that exceed mitigation of impacts and would contribute to the recovery of covered wildlife species.

9.2.2 County's and Cities' General Plan Processes and Alternatives

As noted above, the County and city General Plans in the NHP Plan Area have developed along disparate time frames, with two presently under review and major update. A discussion of the alternatives evaluated in the adopted General Plans and being considered in the pending updates is provided below with a summary of how biological resources were or are being addressed in

the member agency General Plans and the EIRs associated with the member agency General Plans.

9.2.2.1 Yolo County

The *Yolo County 2030 Countywide General Plan EIR* analyzed three distinct alternatives to the adopted plan - the No Project alternative, a Rural Sustainability alternative and a Market Demand alternative.

The No Project alternative assumed development would continue in accordance with the 1983 General Plan. The existing policy framework would be retained and accommodate up to 11,277 new dwelling units and 1,962 acres of non-residential development. This alternative was deemed less desirable because it lacked the progressive policy structure of the preferred alternative adopted by the County, which encourages compact urban development in existing cities and communities to protect against urban sprawl and conversion of agricultural land, much of which supports habitat for federally listed wildlife species, to urban use. Although total growth is higher in the adopted 2030 General Plan, a continuation of the 1998 General Plan “business as usual” development policies with fewer restrictions on urban expansion in the unincorporated area could result in higher pressure on agricultural land conversion, higher vehicle miles travelled and per capita carbon emissions, and fragmentation of biological habitats due to rural residential sprawl (e.g., “ranchette” development) on cultivated land that supports wildlife habitat.

The Rural Sustainability alternative assumed moderate growth (14,241 dwellings and 2,345 acres of non-residential development) centered around several of the unincorporated communities. The Rural Sustainability alternative would result in less development (35 percent less residential, 86 percent less non-residential) than the adopted 2030 General Plan. Although this alternative would result in lesser impacts on biological resources, it was deemed less desirable and not meet local planning goals because there would not be sufficient development to achieve sustainability within the communities in terms of supporting a jobs/housing balance within the community areas, lowering the vehicle miles traveled and thereby reducing greenhouse gas emissions, and providing basic levels of community-serving water, wastewater, and storm drainage, and public services.

The Market Demand alternative assumed the County’s historical constraints on growth would be removed, resulting in 24,200 new dwellings and 3,245 acres of non-residential development. This represents 10 percent more residential dwellings and 31 percent more non-residential development than the approved 2030 General Plan. The Market Demand alternative would allow growth to occur throughout the County based on market demand. New development would likely be located on the periphery of existing cities instead of within the city limits. Growth would also occur along corridors in proximity to existing freeways, services, and amenities. This alternative was deemed inferior because it directed development to the periphery of cities, which is inconsistent with the goal of small, compact, distinct cities and towns envisioned by the

County and as expressed by specific land use policies adopted by Davis in 2000 (Measure J) and 2010 (Measure R), and by Woodland in 2005 (Resolution 4636) and 2006 (Measure A). In particular, the area between Woodland and Davis would likely experience development pressures to grow in order to meet demand from UC Davis and Davis. In addition, the Market Demand alternative would adversely skew the market for infill development within cities by allowing competing greenfield development opportunities at the borders, and greater amounts of agricultural acreage could be converted to non-agricultural uses. Where this added development occurs, additional impacts would result from the absence of buffers between developments and biological resources. This alternative would result in greater impacts on federally listed wildlife species habitat and greater habitat fragmentation than the approved 2030 General Plan.

The conclusion of the *Yolo County 2030 Countywide General Plan EIR* alternatives analysis found the Project (the “Preferred Alternative”), while not the least environmentally damaging alternative, represented the appropriate balance of planned growth (22,061 new dwellings and 2,947 acre of non-residential development), conservation, and land use and transportation practices that promote sustainable, compact infill development within the existing cities and communities of the planning area. The adopted 2030 Countywide General Plan was found to result in fewer impacts on wildlife species than all alternatives evaluated except the Rural Sustainability alternative, but this alternative did not meet local goals for growth and development.

9.2.2.2 City of Davis

The City of Davis General Plan was adopted in 2001 and updated in 2007. The 2007 update consistently incorporates the land use vision originally adopted by the city in 1987 (*1987 Davis General Plan*) that promotes a cohesive, compact, university-oriented city surrounded by agricultural lands, greenbelts and habitats. The City of Davis places 1 percent annual growth cap³ on new housing development (which equates to approximately 260 units per year), of which no more than 60 percent (156) may be built on land at the urban limits. A referendum (Measure J) adopted in 2001 and extended in 2010 requires a public vote for any change in land use from open space and agricultural lands, which has minimized development pressures to expand the urban sphere. Based on these trends and policies (adopted by the city council and by public referendum), no substantial deviations from the above growth rates are anticipated in the 20-year time-frame horizon for implementation of the 2007 General Plan update. Alternatives that would significantly expand the urban sphere and associated impacts on open space, agriculture and natural habitats were not analyzed in the General Plan update.

The restrictive nature of the Davis General Plan on the spread of development and the rejection of even considering alternatives that would expand development into surrounding agricultural lands that support wildlife habitat result in a General Plan that has minimized impacts on wildlife

³ City Council Resolution No. 05-27.

habitat and rejected “alternatives” that would have greater impact on wildlife, including federally listed species.

9.2.2.3 City of West Sacramento

The City of West Sacramento adopted its first General Plan in 1990, and has approved a number of revisions from 1992 through 2008. The city’s sphere of influence (a demarcation of planning area for land uses and urban development) has remained unchanged since incorporation in 1987. The latest General Plan update in 2008 (to update the housing element and land use element for consistency with State law) estimated a year 2007 population of 44,928 that would increase by 4.9 percent annually to a year 2020 population of 66,940. The year 2020 population estimate was reduced to 59,353 based on revised growth projections prepared in 2008 by the Sacramento Area Council of Governments (SACOG) and the California Department of Finance.

The city is currently updating its General Plan, and is considering three alternative growth scenarios that will inform selection of a preferred alternative (the “project”) for the General Plan update.

Alternative A, Riverfront Focus alternative is a modified version of the base conditions (existing General Plan land use diagram). Areas along the Sacramento River waterfront would develop at slightly higher densities, creating more residential and employment capacity in these areas; however, some areas in the southern extent of planned urban development would be less dense than the base conditions. The overall character of development would be similar to what has occurred under the existing 1990 General Plan. Alternative A does not expand development beyond the current city limits and, therefore, promotes the preservation of open space and productive farmland surrounding West Sacramento.

Alternative B, Riverfront, District, and Corridor Intensification alternative provides for the highest density and intensity development of the three alternatives. Development would be concentrated primarily in mixed-use districts and along mixed-use corridors. Nearly all of the higher-density and intense non-residential development would be concentrated in the northern part of the city. The densities, location of development, and mix of uses would support pedestrian and bicycle mobility, and create the potential for increased transit use. Alternative B assumes the greatest amount of redevelopment in the northern area of the city, creating new residential and employment opportunities than what has occurred under the existing General Plan. Alternative B is the highest of the three alternatives in terms of land use efficiency. It accommodates the most population on the least amount of land, with no expansion of the current city limits.

Alternative C, City Limits Expansion alternative would expand the city limits to the north and south, annexing over 2,000 acres to the city for new development. The northern and southern expansion areas would develop as master planned residential communities, and the centrally-located area would develop as an industrial job center. The land use designations within the existing city limits would remain the same as in the base conditions. Alternative C would

convert the greatest amount of agricultural and open space land to urban use. The north and south expansion areas of this alternative are not shown as part of the development impact footprints on Figure 3-1.

While West Sacramento has not completed its General Plan update, the city has coordinated with the JPA during the development of the NHP and in particular has addressed wildlife species of riparian habitats through the setting of limits on riparian habitat impacts within the City's sphere of influence. In doing so, the City has minimized impacts on covered wildlife species dependent on riparian habitats while meeting the growth and development goals in a practical growth plan process.

9.2.2.4 City of Winters

The City of Winters General Plan was adopted in 1992. The General Plan EIR examined growth estimates that ranged from a build-out population of between 11,000 to 15,000 residents. An updated General Plan housing element prepared in 2008 estimated significantly less growth—7,052 residents in year 2007 and 9,527 residents in 2018. In 2009 the City Council extended the General Plan horizon year from 2010 to 2018. At that time the city council determined that the existing city general plan planning area was adequate to accommodate all projected growth through 2018. Figure 3-1 depicts all lands within the urban line of the 2018 growth scenario that is under development.

By not expanding the urban limit line from its 1991 location, the City has ensured that impacts on wildlife habitat will be minimized regardless of the General Plan alternative adopted.

9.2.2.5 City of Woodland

The General Plan was adopted in 1996, with a modest "technical" update in 2002. The 1996 General Plan and EIR examined a variety of land use alternatives. The east and west expansion alternatives were rejected for consideration due to concerns with encroachment on prime agricultural lands outside the city's urban limit line, and because of the prohibitively expensive cost of extending infrastructure and essential services to these areas. The southern expansion alternative was viewed as the most desirable because it would facilitate a compact and contiguous land use pattern that logically continues the development patterns and provision of infrastructure set out by the City's previous planning efforts.

A 2005 amendment to the General Plan replaced a pre-existing 2015 population cap of 60,000 with a cap of 5,000 new single family homes through 2020. A 2006 amendment by the voters established a permanent urban limit line (ULL) around the existing city limits. This ULL adds 3,150 acres to the current size of the City (9624 acres) which increases it by about one third. A General Plan update is underway that will address the type and pace of growth throughout the entire ULL.

The maintenance of a compact shape and limiting the extent of development expansion into agricultural lands that support wildlife habitat, the City's General Plan will minimize direct

1 impacts on wildlife habitat and minimize fragmentation of wildlife habitat. The City also
2 established Spring Lake Alkali Sink and Woodland Park preserves that protect grassland and
3 alkali sink that support wildlife species habitat at the eastern edge of the General Plan area.

4 **9.2.3 Additional NHP Reduction in Take**

5 The NHP evaluated the effects of implementing the combined build-out of the preferred
6 alternatives of the General Plans for the County and the cities of Davis, West Sacramento,
7 Winters, and Woodland as part of the NHP covered activities. Following completion of an initial
8 geographic information system (GIS) overlay-based assessment of impacts of NHP covered
9 activities on natural communities that assumed removal of all habitat not in existing protected
10 lands within city Planning Units (Planning Units 19–22) and all area in the County General Plan
11 land use designated for development (see Chapter 4, *Impact Assessment and Estimated Level of*
12 *Take*), the acreage of alkali sink, riparian, and open water land cover types that could be removed
13 by the covered activities was reduced from the acreage of GIS-generated impacts to avoid and
14 minimize impacts on federally listed covered wildlife species habitats supported by those land
15 cover types (e.g., Conservancy fairy shrimp, valley elderberry longhorn beetle, least Bell's
16 vireo). These reduced impacts are reflected in the impact limits provided for natural
17 communities in Tables 4-3a–4-3c. Corresponding reductions in the allowable impacts on
18 modeled covered species habitat are presented in Tables 4-5a–4-5c.

19 In addition, the NHP includes avoidance and minimization measures (see Section 5.4.4,
20 *Avoidance and Minimization Measures*) that are required to be implemented at the time each of
21 the covered activities is proposed and implemented. These measures are designed to avoid or
22 further minimize direct and indirect impacts on covered wildlife species and their habitat that
23 would otherwise be incurred under the covered activities.

24 **9.2.4 Conclusions for Regional Alternatives**

25 Each of the cities and the County developed and evaluated alternatives to their General Plans that
26 collectively encompass land use planning for the preponderance of the NHP Plan Area⁴. In
27 identifying their preferred alternatives, the local governments selected the alternative that met
28 their community's goals, was practicable, and avoided and minimized impacts on covered
29 species. The NHP provides additional limits on impacts and specific impact avoidance and
30 minimization measures that further reduce impacts on covered species from activities identified
31 in the various General Plans.

⁴ Federal lands within the Plan Area, for example, are not under the jurisdiction of the County and cities.

9.3 EVALUATION OF ALTERNATIVES TO TAKE BY SPECIES

9.3.1 Evaluation Criteria

Alternative approaches to covered activities that would avoid or minimize take for each of the federally listed threatened and endangered covered wildlife species were evaluated and are described in this section.⁵ Alternative approaches were assessed based on the following criteria.

1. Level of incidental take expected to result and conservation benefits to the species;
2. Consistency with the overall goals and objectives of the County and city General Plans, planned infrastructure improvements, and the NHP; and
3. Practicability in light of cost, logistics and technology.

The evaluation describes potential alternatives to take considered for each of the species during development of the NHP and the reasons that each of the alternatives to take was not adopted in the NHP.

9.3.2 Vernal Pool Shrimp Species

Modeled habitat for vernal pool shrimp species (vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp) occurs in small remnant patches of vernal pool complex and alkali sink in the Valley Landscape Unit (see Appendix A, *Covered Species Accounts*).

Implementation of the covered activities could result in the removal of up to 1 acre of modeled vernal pool shrimp species habitat, representing 0.2 percent of the modeled habitat in the Plan Area (Table 4-5a). The Conservation Strategy precludes removal of vernal pools supporting Conservancy fairy shrimp. Implementation of the avoidance and minimization measures described in Section 5.4.4, *Avoidance and Minimization Measures*, will minimize disturbances to vernal pool complex and alkali sink land cover types that support vernal pool shrimp habitat.

A proposed bridge replacement project in Planning Unit 13 could have resulted in the removal of 3 acres of modeled vernal pool shrimp species habitat, but the NHP sets a limit on allowable impacts to such habitat at 1 acre and therefore results in the avoidance of impacts on 2 acres of modeled vernal shrimp species habitat. Vernal pool shrimp species may also occur in small patches of unmapped habitat (e.g., small inclusions of suitable soils that seasonally pond water in cultivated fields). Any such occurrence found is likely under a land use regime of frequent disturbance from normal on-going farming practices. The NHP prohibits the take of vernal pool shrimp species in such currently unknown occurrences unless the USFWS and DFW determine that the occurrence is not necessary to maintain the genetic diversity or regional distribution of the species. The NHP strictly precludes take of Conservancy fairy shrimp. NHP alternatives

⁵ Western yellow-billed cuckoo is a candidate for listing is not listed as threatened or endangered under the ESA (77 FR 225: 69994). A discussion of the alternatives to take considered for this species is included here, as this species could become listed prior to permitting.

considered to completely avoid take of vernal shrimp species (other than the rarest Conservancy fairy shrimp) were not considered practicable and would not meet local planning goals as the potential for occurrences to be found in disturbed habitat in working landscapes could preclude covered activities important to the local economy and achieving local growth and development goals. Avoiding such occurrences would in many cases not be practicable considering the long history of ground disturbing land use at sites where they may be found. As described in Section 5.6, *Conservation Provided for Covered Species*, the NHP will protect an additional 53 acres of modeled vernal pool shrimp species habitat, resulting in protection of over 80 percent of modeled habitat in the Plan Area (see Table 5-25).

9.3.3 Valley Elderberry Longhorn Beetle

In the Plan Area there are numerous records of occupied and potential valley elderberry longhorn beetle habitat along the Sacramento River corridor, along Putah Creek between Monticello Dam and Davis, and along Cache Creek. Its host plant, elderberry, is a common shrub in valley foothill riparian throughout much of the Plan Area, and therefore the species may be more widespread (see Appendix A.14, *Valley Elderberry Longhorn Beetle*).

Implementation of covered activities could result in the removal of 908 acres of modeled valley elderberry longhorn beetle habitat, representing 2.1 percent of all modeled habitat in the Plan Area (Table 4-9). The potential effects of removing elderberry shrubs that support valley elderberry beetle habitat will be minimized with implementation of avoidance and minimization measures described in Section 5.4.4, *Avoidance and Minimization Measures*. As approved, the General Plans for the County and the cities of Davis, West Sacramento, and Winters could have resulted in the removal of 768 acres of modeled valley elderberry longhorn beetle habitat, but NHP impact limit requirements reduced the allowable impact to 405 acres (Table 4-5a). An NHP alternative to reduce such impacts to zero acres was considered impracticable because it would be too prohibitive to planned development in the urban Planning Units (19–22) and to development and infrastructure improvements in the remaining Planning Units such that local growth and development goals could not be met.

As described in Section 5.6, *Conservation Provided for Covered Species*, the NHP will protect 2,665 acres of currently unprotected modeled valley elderberry longhorn beetle riparian habitat that will, in combination with protected habitat on PEHL Category 1 lands, result in protection of 33.8 percent of its modeled riparian habitat and 26.3 percent of all its modeled habitat types in the Plan Area (Table 5-25). Though the NHP does not include an objective to protect its non-riparian modeled habitat type, acreage of this modeled habitat type is expected to be protected in the course of protecting annual grassland throughout the Plan Area, which constitutes its modeled non-riparian habitat type. Restoration of 576 acres of valley foothill riparian and valley oak woodland (Table 5-6) will increase connectivity between habitat patches and increase the amount of habitat available for valley elderberry longhorn beetle, as restored habitat will be designed to incorporate plantings of elderberry shrubs. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to

a greater degree than any alternatives that may reduce take (see Section 5.6, *Conservation Provided for Covered Species*).

9.3.4 California Tiger Salamander

California tiger salamanders require an aquatic habitat for breeding and a terrestrial habitat for feeding and aestivation. California tiger salamanders are mostly terrestrial, using upland habitats to feed and burrow in for their long dry season dormancy. Recent observations of California tiger salamander in the Plan Area are limited to Planning Units 4 and 5 (see Appendix A.15, *California tiger salamander*).

Implementation of the covered activities would result in the removal of up to 2,034 acres of modeled California tiger salamander habitat (primarily upland habitat), representing 3.3 percent of the total modeled California tiger salamander habitat in the Plan Area (Table 4-9). There are no recent records of California tiger salamander from the Valley Landscape Unit and it is likely that most or the entire affected modeled habitat in the Valley Landscape Unit is unoccupied because it occurs in disconnected patches within a matrix of cultivated lands. (e.g., 696 acres of the 1,205 acres of modeled habitat that could be impacted in the Valley Landscape Unit is located within the urban Planning Units (19–22). The impact acreage includes removal of up to 33 ponds that could support California tiger salamander breeding habitat. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Section 5.4.4, *Avoidance and Minimization Measures*.

Implementation of the Dunnigan Specific Plan could have resulted in the removal of one acre of designated critical habitat in Planning Unit 5, but the NHP precludes removal of any California tiger salamander habitat that is present within the critical habitat boundary. The NHP also precludes the removal of breeding pools that support occurrences of breeding salamanders until specified species conservation objectives are achieved (Table 5-19). Alternatives to avoid removal of California tiger salamander habitat would require not implementing covered activities that affect modeled habitat and this NHP alternative to take was not considered practicable because it would be too prohibitive to planned development and infrastructure projects such that local growth and development goals could not be met.

As described in Section 5.6, *Conservation Provided for Covered Species*, the NHP will protect 26,733 acres of modeled California tiger salamander aquatic breeding (alkali sink) and upland habitat and 200 seasonal ponds supporting its aquatic breeding habitat that will, in combination with protected habitat on PEHL Category 1 lands, result in protection of over 40 percent of its modeled habitat and over 46 percent of seasonal ponds in the Plan Area (see Table 5-25). Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take (see Section 5.6, *Conservation Provided for Covered Species*).

9.3.5 Giant Garter Snake

The giant garter snake occurs in the Plan Area predominantly in lowland aquatic habitats, such as fresh emergent wetlands, agricultural ditches and rice fields, and adjacent uplands. Two concentrations of giant garter snakes are present in the Plan Area, the Colusa Basin subpopulation centered in Planning Units 12 and 13 and the Willow Slough/Yolo Bypass subpopulation centered in Planning Units 11, 17–19 (see Appendix A.19).

Implementation of covered activities could result in the removal of 2,034 acres of modeled giant garter snake habitat types, representing 3.3 percent of the modeled habitat in the Plan Area (Table 4-9) primarily in Planning Units 15, 19, and 20 (Table 4-5c). The NHP, however, confines planned development by the City of Woodland to Planning Unit 19, which encompasses the city's urban limit line, thus precluding the potential for impacts of the City's development activities on habitat occupied by the Willow Slough/Yolo Bypass subpopulation between Woodland and the Yolo Bypass (see Appendix Figure A-19, *Giant Garter Snake*). An NHP alternative to reduce impacts to zero acres was considered not to be practicable because it would be too prohibitive to planned development and infrastructure improvements such that local growth and development goals could not be met.

Some covered activities are likely to directly kill or injure individual giant garter snakes. The potential mortality or injury to individual snakes associated with ground disturbing activities (e.g., operation of construction equipment, activities to maintain canals and drains) and effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Section 5.4.4, *Avoidance and Minimization Measures*.

As described in Section 5.6, *Conservation Provided for Covered Species*, the NHP will protect at least 6,880 acres of currently unprotected modeled giant garter snake habitat types and will restore 340 acres of its active season aquatic habitat (Table 5-25). An additional 203 acres of fresh emergent wetland will be restored to mitigate impacts on this natural community and will be designed as giant garter snake habitat in or connected to occupied habitat. Maintaining and restoring connectivity across occupied habitat in Planning Units 11-13 is expected to increase food abundance, contribute to higher reproduction and survival rates, and provide for dispersal and genetic exchange of giant garter snakes in the two subpopulations. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take (see Section 5.6, *Conservation Provided for Covered Species*).

9.3.6 Least Bell's Vireo

Least Bell's vireo is an obligate riparian breeder that typically inhabits structurally diverse woodlands, including cottonwood-willow woodlands/forests, oak woodlands, and mule fat scrub. Least Bell's vireo is not known to nest in the Plan Area, however, singing males have been

recently observed in the eastern Plan Area in the vicinity of the Yolo Bypass. The San Joaquin Valley population is believed to be expanding northwards and least Bell's vireo could become established in the Plan Area in future years as a nesting species.

Implementation of covered activities could result in the removal of 149 acres of modeled least Bell's vireo habitat (1.8 percent of all modeled habitat in the Plan Area), predominantly in the Valley Landscape Unit (Table 4-9). Direct mortality of individuals, eggs, and removal of occupied nest sites will be avoided as a requirement of the NHP. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Section 5.4.4, *Avoidance and Minimization Measures*.

Alternatives to avoid any removal of modeled least Bell's vireo habitat would require not implementing covered activities that affect modeled habitat. This NHP alternative was considered not practicable because it would be too prohibitive to planned development and infrastructure projects such that local growth and development goals could not be met. In alternative would not necessarily avoid take of least Bell's vireo as the species is not known to next in the Plan Area.

As approved, the General Plans for the County and the Cities of Davis, West Sacramento, and Winters could have resulted in the removal of 549 acres of modeled least Bell's vireo habitat, but NHP impact limitation requirements reduced the allowable impact to 149 acres (Table 4-5a).

As described in Section 5.6, *Conservation Provided for Covered Species*, the NHP will protect 2,420 acres of currently unprotected modeled least Bell's vireo habitat that will, in combination with protected habitat on PEHL Category 1 lands, result in protection of over 44 percent of habitat in the Plan Area (see Table 5-25). In addition, the NHP will result in protection of about 52 percent of the riparian habitat present in the Plan Area, thus maintaining patches of habitat suitable for supporting migration and dispersal of the species. Restoration of 476 acres of riparian habitat (see Table 5-6), at least 149 acres of which must support least Bell's vireo habitat (Table 5-10), will increase the extent of least Bell's vireo habitat in the Plan Area.

Implementation of these conservation actions and applicable avoidance and minimization measures are expected to benefit the species to a greater degree than any alternatives that may reduce take (see Section 5.6, *Conservation Provided for Covered Species*).

9.3.7 Western Yellow-Billed Cuckoo

Western yellow-billed cuckoo is not listed as threatened or endangered under the ESA, but is a candidate for listing. A discussion of the alternatives to take considered for this species is included as it could become listed prior to permitting.

The western yellow-billed cuckoo is a riparian obligate species typically found in willow-cottonwood riparian forest; however, alder and box elder can also be important habitat elements. Nests are found primarily in willow trees. Very little of its riparian habitat remains in the Plan

Area relative to historical conditions and there are no recent records of its nesting in the Plan Area although individuals occasionally appear in the Plan Area during migration

Implementation of covered activities could result in the removal of 77 acres of modeled western yellow-billed cuckoo habitat (1.6 percent of all modeled habitat in the Plan Area), predominantly in the Valley Landscape Unit (Tables 4-5c and 4-9). Direct mortality of individuals, eggs, and removal of occupied nest sites will be avoided as a requirement of the NHP. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Section 5.4.4, *Avoidance and Minimization Measures*.

Alternatives to avoid any removal of modeled western yellow-billed cuckoo habitat would require not implementing covered activities that affect modeled habitat. This NHP alternative was considered not practicable because it would be too prohibitive to planned development and infrastructure projects and would not necessarily avoid take of western yellow-billed cuckoo such that local growth and development goals could not be met. As approved, the General Plans for the County and the City of West Sacramento could have resulted in the removal of 160 acres of modeled western yellow-billed cuckoo habitat, but NHP avoidance and minimization measures impact limitation requirements reduced the allowable impact to 77 acres (Table 4-9).

As described in Section 5.6, *Conservation Provided for Covered Species*, the NHP will protect 790 acres of currently unprotected modeled western yellow-billed cuckoo habitat that will, in combination with protected habitat on PEHL Category 1 lands, result in protection of over 36 percent of habitat in the Plan Area (see Table 5-25). In addition, the NHP will result in protection of about 52 percent of the riparian habitat present in the Plan Area, thus maintaining patches of habitat suitable for supporting migration and dispersal of the species. Restoration of 476 acres of riparian habitat (see Table 5-6) in locations that establish patches of riparian habitat of at least 25 acres will increase the extent of western yellow-billed cuckoo habitat in the Plan Area (at least 77 acres of restored riparian habitat must support western yellow-billed cuckoo habitat, see Table 5-10). Implementation of these conservation actions and applicable avoidance and minimization measures are expected to benefit the species to a greater degree than any alternatives that may reduce take (see Section 5.6, *Conservation Provided for Covered Species*).

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