4.4 BIOLOGICAL RESOURCES

This section discusses common and sensitive biological resources, including plants, wildlife, and fish, that occur or have the potential to occur in the project area. It also addresses potential impacts on these resources resulting from implementation of the proposed project.

4.4.1 ENVIRONMENTAL SETTING

SOURCES OF INFORMATION

The information presented in this section is based on review of existing documents and other relevant information, including aerial photography, habitat maps, and biological resource databases. The following documents were reviewed during preparation of the biological resources analyses:

- *Final environmental assessment for proposed restoration activities on the Sacramento River National Wildlife Refuge (Ryan, Ohm, Haleakala, Pine Creek, Kaiser, Phelan Island, Koehnen, Hartley Island, and Stone Units)*. Prepared by Jones & Stokes for USFWS in 2002.
- CALFED Final PEIS/EIR; Section 6.1, "Fisheries and Aquatic Ecosystems," and Section 6.2, "Vegetation and Wildlife," and the Multi-Species Conservation Strategy, Technical Appendix (CALFED 2000b).
- Final CCP and environmental assessment for the SRNWR, prepared by USFWS in 2005.
- Management and monitoring recommendations for the Chico Landing Subreach, prepared by TNC in 2003 (TNC 2003b).
- Site assessments on Sunset Ranch (Pine Creek), Capay, and Dead Man's Reach prepared by California State University, Chico staff for TNC in 1999 and 2003.
- Baseline assessment on the Kaiser (Capay) property prepared by TNC in 1999.
- Report on results of monitoring of riparian birds in the Sacramento Valley, prepared by Point Reyes Bird Observatory for the 2002 field season.

Documents that provided information relevant to this analysis are cited throughout this section, and corresponding references are included in Chapter 11, "References and Personal Communications."

REGIONAL CONTEXT

The proposed project lies within the SRNWR, which includes properties along the Sacramento River between Red Bluff and Princeton. The biological resources of the study area are shaped and supported by the physical and hydrological patterns of this river system. As is characteristic of the middle Sacramento River, major physiographic features of the study area include floodplains, basins, terraces, active and remnant channels, and oxbow sloughs. These features, together with the historic and current hydrology and dynamic meander pattern of the Sacramento River, provide for a diverse array of riparian plant communities along the river channel, intermixed in a broad arable floodplain. The majority of the historic riparian forest habitat in California was converted over the past 150 years to agricultural, urban and rangeland uses, and many river systems are now bounded by levees. This trend is echoed along the Sacramento River. As a result, most of the mature valley oak woodland and savannah and other mature riparian forest community types further from the river's edge are now absent from much of the Sacramento River corridor.

The historical dynamic Sacramento River riparian corridor was characterized by a heterogeneous mix of vegetation types with varying composition and age structures. Early seral stage (i.e., pioneer) riparian habitat communities are characterized by willows, young cottonwoods, and other small trees and shrubs that typically form on recently deposited sand bars and along channel edges. Under natural conditions, these communities can be scoured away by fast moving water or may transition over time into a mature mixed riparian forest growing on low to middle floodplain terraces with valley oak woodland occurring on higher floodplain terraces. Mature forest and woodlands often persist until removed by an active meander bend progressively moving downstream, or by an avulsion cut-off event in which a new channel is carved through existing woodland and an oxbow lake or slough is created out of a newly abandoned meander bend. The study area occurs along a stretch of the Sacramento River, classified as a meandering river, where "relatively stable, straight subreaches alternate with more sinuous, dynamic subreaches" (SRCA Forum 2003). The erosion and cut-off events result in the recommencement of seral development and community maturation. The natural dynamics of intermittent flooding, meander migration and sediment deposition present in the historic Sacramento River riparian corridor helped to maintain a healthy riparian ecosystem supporting numerous plant and wildlife species. This "natural dynamic" however, has been altered by flow regulations at Shasta and Keswick dams and the disconnection of a large portion of the historic floodplain by private and government built levees. See Section 4.3, "Hydrology, Water Quality, and River Geomorphology," for a discussion of the current hydrological and geomorphological conditions of the river.

HABITAT TYPES

The project area and adjacent lands support a variety of habitat types, including cropland, orchards, annual grassland, blackberry scrub, Great Valley willow scrub, Great Valley cottonwood forest, Great Valley mixed riparian forest, Great Valley valley oak woodland, and freshwater marsh. The location and extent of each habitat type present on and adjacent to the project area are depicted in Exhibits 4.4-1 through 4.4-3. Descriptions of natural habitat types occurring in the project area are based on those contained in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). These natural habitat types are represented in the project area:

- Blackberry scrub is a dense shrubby thicket dominated by California blackberry (*Rubus ursinus*). This habitat type generally has very little understory vegetation. It is not included in the Holland classification code.

- Great Valley willow scrub is a dense to open, winter-deciduous, shrubby streamside thicket dominated by any of several willow species, including Goodding's black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*) narrow-leaved willow (*Salix exigua*), and shining willow (*Salix lucida*). The understory vegetation is generally very sparse in dense stands but more open stands have an understory of nonnative grasses. This habitat type is referred to as Great Valley riparian scrub in the SRNWR CCP (USFWS 2005).

- Great Valley cottonwood riparian forest is a tall, dense, winter deciduous riparian forest dominated by Fremont cottonwood (*Populus fremontii*) and one or more species of willow (typically Goodding's black willow in the study area). The understory vegetation is dense and typically includes seedlings and saplings of shade tolerant species such as California box elder (*Acer negundo* var. *californicum*) and Oregon ash (*Fraxinus latifolia*), as well as cottonwood and willow seedlings and saplings. Vines such as California wild grape (*Vitis californica*) are also common.

- Freshwater marsh is characterized by dense cover of perennial, emergent plant species. This habitat is found on sites that are permanently flooded by fresh water, where only species adapted to anaerobic (oxygen depleted) soil conditions can survive. Typical freshwater marsh plant species include cattail (*Typha* spp.), tule (*Scirpus acutus*), common spikerush (*Eleocharis macrostchya*), rushes (*Juncus* spp.), and sedges (*Carex* spp.).

LEGEND

- SRNWR Unit Boundary
- Annual Grassland
- Fallow (Walnut Orchard removed in 2003)
- Restored Riparian Habitat
- Great Valley Willow Scrub
- Great Valley Cottonwood Forest
- Great Valley Mixed Riparian
- Freshwater Marsh
- Open Water

Source: TNC 2004, date of photographs May 24, 1999

Pine Creek Habitat Types

EXHIBIT 4.4-1

Sacramento River–Chico Landing Subreach Habitat Restoration DEIR

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LEGEND

- Annual Grassland
- Blackberry Scrub
- Great Valley Willow Scrub
- Great Valley Cottonwood Forest
- Great Valley Mixed Riparian Forest
- Great Valley, Valley Oak Riparian
- Gravel and Sandbar
- Freshwater Marsh
- Open Water
- Row Crop

Source: TNC 2004, date of photographs May 24, 1999

Capay Habitat Types

Sacramento River–Chico Landing Subreach Habitat Restoration DEIR

EXHIBIT 4.4-2

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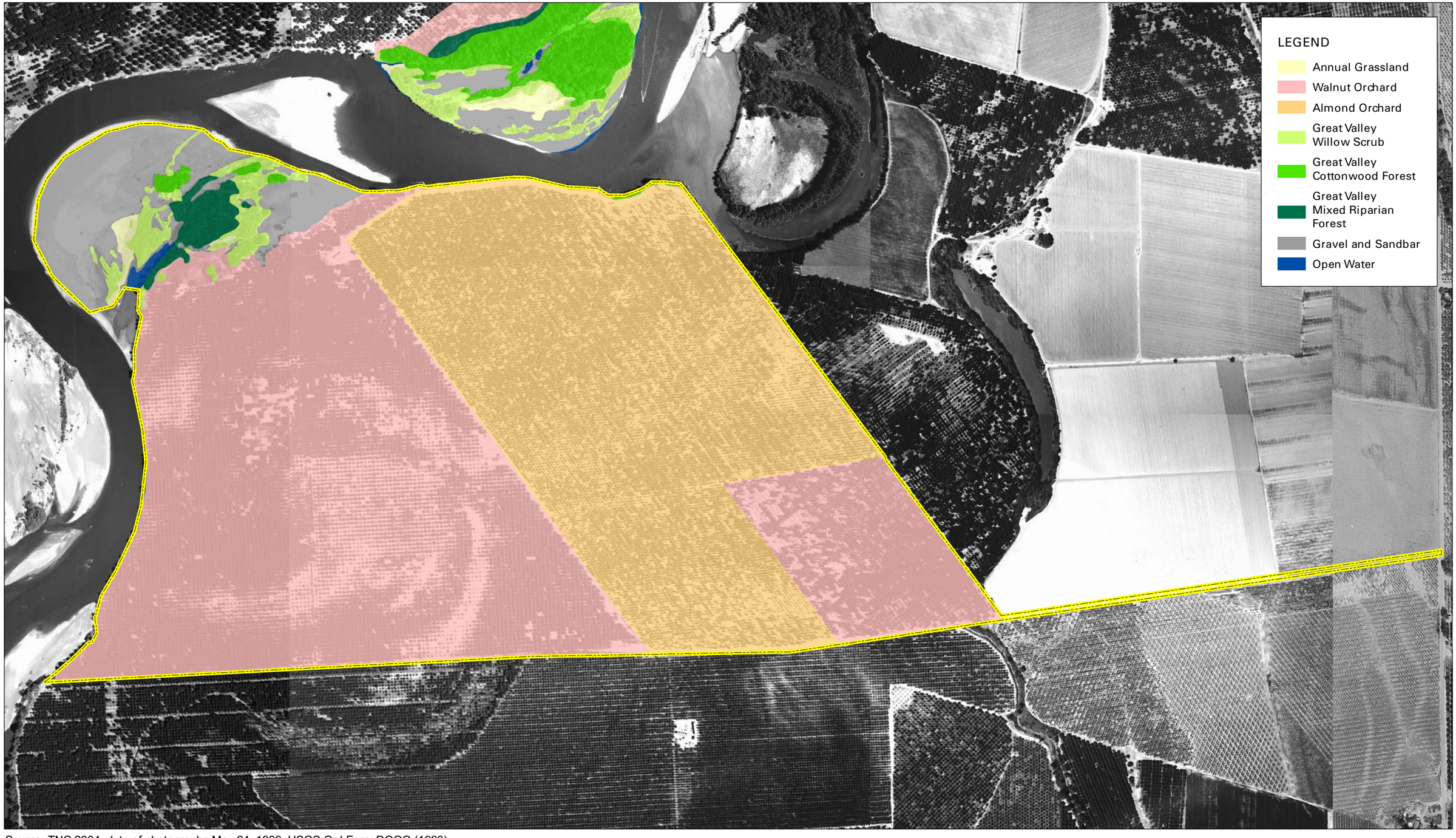

Source: TNC 2004, date of photographs May 24, 1999, USGS Ord Ferry DOQQ (1998)

Dead Man's Reach Habitat Types

EXHIBIT 4.4-3

Sacramento River–Chico Landing Subreach Habitat Restoration DEIR

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- Annual grassland is characterized by dense cover of nonnative annual grasses with numerous species of nonnative annual forbs, and some native wildflowers. Typical grass species include bromes (*Bromus diandrus*, B. *hordeaceus*, and B. *madritensis* ssp. *rubens*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), dogtail grass (*Cynosurus echinatus*), and Italian ryegrass (*Lolium multiflorum*). Common nonnative forbs include vetches (*Vicia* spp.), filarees (*Erodium* spp.), and clovers (*Trifolium* spp.). Native wildflowers such as California poppy (*Eschschozia californica*), California goldfields (*Lasthenia califonica*), Fremont's tidy-tips (*Layia fremontii*), and hayfield tarweed (*Hemizonia congesta*) are also common in annual grassland habitat. Herbland cover is a habitat category used in the SRNWR CCP (USFWS 2005) and includes cover composed of both annual and perennial grasses and forbs. For purposes of this report, areas categorized as herbland cover in the CCP are included in annual grassland habitat.

Pine Creek

The 21-acre area of Pine Creek Unit that is proposed for restoration consists of a fallow field that was previously planted as walnut orchard. The walnut orchard was removed from the site in 2003. Pine Creek (a tributary to the Sacramento River) forms the eastern boundary of the site. Small portions of Great Valley mixed riparian forest, Valley freshwater marsh, and Great Valley willow scrub are adjacent to the southern boundary of the site and near the east boundary along Pine Creek. Open water habitat is present in Pine Creek. The remaining acreage on Pine Creek Unit (approximately 555 acres) was recently restored (Exhibit 4.4-1).

Capay

The 576 acres of Capay Unit proposed for restoration consists of approximately 350 acres of row and field crops (wheat, vine seed, corn, and barley) and approximately 220 acres of current fallow field that could potentially be row cropped. This project site is bordered by the Sacramento River and a biologically rich slough with mature riparian vegetation to the east. An oxbow forms the south and southwest borders of the site. Small amounts of blackberry scrub, Great Valley willow scrub, Great Valley cottonwood forest, Great Valley mixed riparian forest, Great Valley valley oak woodland, annual grassland, and freshwater marsh are present along the slough and the oxbow adjacent to the project site. Open water habitat is present in the Sacramento River and slough to the east of the project site and the oxbow adjacent to the south and west portions of the site (Exhibit 4.4-2).

Dead Man's Reach

The 239-acre area of Dead Man's Reach Unit that is proposed for restoration consists exclusively of almond orchard. Approximately 323 additional acres of walnut orchard cover the property to the west and southeast of the project site. The Sacramento River borders the Dead Man's Reach project site to the north and gravel/sediment bars covered with Great Valley riparian scrub, Great Valley mixed riparian forest, and areas of annual grassland are present to the north and northwest of the project site. Open water habitat is present in the Sacramento River, along the northern border of the project site (Exhibit 4.4-3).

WILDLIFE

The current wildlife habitat value of the project area is somewhat limited by the predominance of agricultural lands, which support a relatively low diversity of wildlife species. However, the orchards, row and field crops, and fallow fields onsite can be utilized by a number of common species, and fallow fields and some crops (e.g., wheat and barley) can support a variety of small mammals and provide high quality foraging habitat for many species of raptors. The fallow area at Capay, in particular, supports a relatively wide variety of bird species, including common yellowthroat (*Geothlypis trichas*), blue grosbeak (*Passerina caerulea*), and lazuli bunting (*Passerina amoena*) (TNC 1999).

More importantly, remnant native vegetation patches adjacent to or near the project area are likely to support a high diversity of wildlife species. Bird monitoring conducted by Point Reyes Bird Observatory (PRBO) Conservation Science has documented bird use on and near the three project sites. Of the many riparian sites

monitored by PRBO, the riparian habitat adjacent to Capay supported the highest species diversity in 2002. In addition, breeding territories of 24 species were documented on the Capay project site and adjacent riparian habitat in 2002 (Gilchrist et al. 2002). Many of these species are also likely to breed in riparian and oak woodland habitat adjacent to Pine Creek and Dead Man's Reach. The project area and adjacent remnant vegetation are also expected to support common reptiles and amphibians, such as Pacific tree frog (*Hyla regilla*), bullfrog (*Rana catesbeiana*), and gopher snake (*Pituophis melanoleucus*); and common mammals, such as beaver (*Castor canadensis*), gray fox (*Urocyon cinereoargenteus*), and raccoon (*Procyon lotor*).

FISHERIES

The Sacramento River provides vital fish spawning, rearing, and/or migratory habitat for a diverse assemblage of native and introduced fish species. Native species can be separated into anadromous (i.e., species that spawn in fresh water after migrating as adults from marine habitat) and resident species. Native anadromous species that occur in the Sacramento River include four runs of Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), green and white sturgeon (*Acipenser medirostris* and *A. transmontanus*), and pacific lamprey (*Lampetra tridentata*). Native resident species include Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento splittail (*Pogonichthys macrolepidotus*), Sacramento sucker (*Catostomus occidentalis*), hardhead (*Mylopharodon conocephalus*), and rainbow trout (*Oncorhynchus mykiss*). Introduced anadromous species include striped bass (*Morone saxatilis*) and American shad (*Alosa sapidissima*). Introduced resident species include largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), white and black crappie (*Pomoxis annularis* and *nigromaculatus*), channel catfish (*Ictalurus punctatus*), white catfish (*Ameiurus catus*), brown bullhead (*Ictalurus nebulosus*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomois cyanellus*), golden shiner (*Notemigonus crysaleucas*), and brown trout (*Salmo trutta*).

Shaded riverine aquatic (SRA) vegetation and instream tree and shrub debris provide important fish habitat. SRA habitat is defined as the nearshore aquatic habitat occurring at the interface between a river and adjacent woody riparian habitat. The principal attributes of this cover type are: (1) an adjacent bank composed of natural, eroding substrates supporting riparian vegetation that either overhang or protrude into the water; and (2) water that contains variable amounts of woody debris, such as leaves, logs, branches, and roots and has variable depths, velocities, and currents. Riparian habitat provides structure (through SRA habitat) and food for fish species. Shade decreases water temperatures, while low overhanging branches can provide sources of food by attracting terrestrial insects. As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat consisting of large woody debris (LWD) that furnishes refugia from predators, creates higher water velocities, and provides habitat for aquatic invertebrates. For these reasons, many fish species are attracted to SRA habitat.

The use of different areas within the study area by fish species is influenced by variations in habitat conditions, each species' habitat requirements, life history timing, and daily and seasonal movements and behavior. Altered flow regimes, flood control, and bank protection efforts along the Sacramento River have reduced sediment transport, channel migration and avulsion, LWD recruitment, and have isolated the channel from its floodplain. Historically, seasonal flooding covered the basins and provided spawning and rearing habitat for many fish species, including Sacramento splittail and juvenile Chinook salmon and steelhead. Flooded areas are highly productive rearing habitats in which young fish tend to grow very rapidly (Jones & Stokes 1999). Levee construction has caused a reduction in the overall amount of seasonal flooding and shallow water habitat in the Sacramento River system. In winter, however, some agricultural fields are allowed to flood (e.g., Butte Basin, Yolo Bypass, and Sutter Bypass) during heavy storms and are used by splittail for spawning and rearing, and by Chinook salmon and steelhead for rearing.

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources addressed in the following sections include those that are afforded special protection through CEQA, CESA, California Fish and Game Code, ESA, and the federal CWA.

Special-status Species

Special-status species include plants and animals that are legally protected or are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Special-status species addressed in this section include:

- Species listed or proposed for listing as threatened or endangered under ESA or CESA.
- Species considered as candidates for listing as threatened or endangered under ESA or CESA.
- Species identified by DFG as California Species of Special Concern.
- Animals fully protected in California under the California Fish and Game Code.
- Plants listed as Endangered or Rare under the California Native Plant Protection Act.
- Plants designated by the California Native Plant Society (CNPS) as List 1B (plants rare, threatened or endangered in California and elsewhere) or List 2 (plants rare, threatened or endangered in California but more common elsewhere).

An evaluation of special-status species with potential to occur on and adjacent to the project area was conducted, based on searches of the CNPS Electronic Inventory of Rare and Endangered Plants of California (CNPS 2005) and DFG's California Natural Diversity Database (CNDDB) (2004), as well as review of existing biological resource documents. CNPS inventory and CNDDB searches were conducted for the Ord Ferry, Hamilton City, Chico, Glenn, Llano Seco, Nelson, Foster Island, Nord, and Richardson Springs USGS 7.5-minute quadrangles.

Special-status Plants

Table 4.4-1 provides information on special-status plants with potential to occur adjacent to the project area, including each species' regulatory status, habitat requirements, and blooming period, and an assessment of their potential for occurrence. Species listed in the table include only those that could occur in adjacent areas based on the presence of suitable habitats. As described above, existing habitat within the project area is limited to agricultural lands that are either currently under cultivation or have only recently gone fallow; these lands would not be expected to provide suitable habitat for the species listed in Table 4.4-1.

Five special-status plant species—fox sedge (*Carex vulpinoidea*), four-angled spike rush (*Eleocharis quadrangulata*), rose-mallow (*Hibiscus lasiocarpus*), California beaked-rush (*Rhynchospora californica*), and Brazilian watermeal (*Wolffia brasiliensis*)—have potential to occur in freshwater marsh habitat south of the Pine Creek project site and west of the Capay project site. The potential for these species to occur, however, is low due to the limited extent of freshwater marsh habitat available in these areas. Fox sedge has moderate potential to occur in riparian habitats adjacent to the project area. Silky cryptantha (*Cryptantha crinita*) also has moderate potential to occur in gravelly streambeds within the riparian habitats adjacent to the project area. Table 4.4-1 also identifies goals for certain species evaluated as part of the MSCS. Refer to Chapter 3, "Description of the Proposed Project," for further discussion of the MSCS.

Table 4.4-1
Special-status Plants with Potential to Occur Adjacent to the Project Area

Species	Status [1]				Habitat and Blooming Period	Potential for Occurrence [2]
	Federal	State	CNPS	MSCS Goals [3]		
Plants						
Fox sedge *Carex vulpinoidea*	—	—	2	—	Freshwater marshes and swamps, riparian woodland Blooms May-June	Could occur; suitable habitat provided by marsh and riparian habitats
Silky cryptantha *Cryptantha crinita*	—	—	1B	m	Gravelly streambeds within cismontane woodland, lower montane coniferous forest, riparian scrub, riparian woodland, and valley and foothill grassland Blooms April-May	Could occur; suitable habitat provided by gravelly streambeds
Four-angled spike rush *Eleocharis quadrangulata*	—	—	2	m	Freshwater marshes and swamps Blooms May-September	Unlikely to occur; limited amount of potential habitat provided by freshwater marsh south of Pine Creek and west of Capay project sites
Rose-mallow *Hibiscus lasiocarpus*	—	—	2	m	Freshwater marshes and swamps Blooms June-September	Unlikely to occur; limited amount of potential habitat provided by freshwater marsh south of Pine Creek and west of Capay project sites
California beaked-rush *Rhynchospora californica*	—	—	1B	m	Bogs and fens, lower montane coniferopus forest, freshwater marshes and swamps Blooms May-July	Unlikely to occur; limited amount of potential habitat provided by freshwater marsh south of Pine Creek and west of Capay project sites
Brazilian watermeal *Wolffia brasilienensis*	—	—	2	—	Assorted shallow freshwater marshes Blooms in April-December	Unlikely to occur; limited amount of potential habitat provided by freshwater marsh south of Pine Creek and west of Capay project sites

[1] **Legal Status Definitions**
CNPS Categories
1B Plant species considered rare or endangered in California and elsewhere
2 Plant species considered rare or endangered in California but more common elsewhere

[2] **Potential for Occurrence Definitions**
Unlikely to occur: Suitable habitat is available on or adjacent to the project area; however, the amount of habitat is limited.
Could occur: Suitable habitat is available on or adjacent to the project area; however, there are little to no other indicators that the species is present.

[3] **Multi-Species Conservation Strategy Goals**
R Recovery. Recover species' populations within the MSCS focus area to levels that ensure the species' long-term survival in nature.
r Contribute to recovery. Implement some of the actions deemed necessary to recover species' populations within the MSCS focus area.
m Maintain. Ensure that any adverse effects on the species that could be associated with implementation of CALFED actions will be fully offset through implementation of actions beneficial to the species (CALFED 2000b).

Special-status Wildlife

Table 4.4-2 provides information on special-status wildlife species with potential to occur in or adjacent to the project area, including the species' regulatory status and habitat requirements, and an assessment of their potential for occurrence. Species listed in the table include only those that could occur in or adjacent to the project area based on the presence of suitable habitats. A total of seven wildlife species listed under the state and/or federal ESA have potential to occur in or adjacent to the project area: valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), giant garter snake (*Thamnophis gigas*), bald eagle (*Haliaeetus leucocephalus*), Swainson's hawk (*Buteo swainsoni*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), willow flycatcher (*Empidonax traillii*), and bank swallow (*Riparia riparia*). These and other special-status species are discussed further below. Table 4.4-2 also identifies goals for certain species evaluated as part of the MSCS.

Special-status Invertebrates

Valley elderberry longhorn beetles require blue elderberry shrubs for reproduction and survival, spending most of their life cycle as larvae within the stems. The larval stage may last 2 years, after which the larvae enter the pupal stage and transform into adults. Adults are active (feeding and mating) from March to June (USFWS 1984). Valley elderberry longhorn beetles are patchily distributed throughout riparian forests of the Central Valley, although they appear to be only locally common (i.e., found in population clusters that are not evenly distributed across the Central Valley) (USFWS 1984). Elderberry shrubs are likely to occur in riparian habitats adjacent to the project area; therefore, valley elderberry longhorn beetles could also occur in these locations.

Table 4.4-2
Special-status Wildlife with Potential to Occur In or Adjacent to the Project Area

Species	Status [1]			Habitat	Potential for Occurrence [2]
	Federal	State	MSCS Goals [3]		
Invertebrates					
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	—	R	Elderberry shrubs, typically in riparian habitats	Could occur; elderberry shrubs present in riparian habitats adjacent to the project area
Reptiles					
Giant garter snake *Thamnophis gigas*	T	T	r	Streams, sloughs, ponds, and irrigation and drainage ditches	Could occur; sloughs and other still or slow-moving aquatic habitats adjacent to the project area are potentially suitable
Western pond turtle *Emys marmorata*	—	SSC	m	Ponds, marshes, rivers, streams, sloughs	Known to occur; suitable aquatic habitat present adjacent to the project area
Birds					
American white pelican *Pelecanus erythrorhynchos*	—	SSC	—	Marshes, rivers, and other aquatic habitats	Known to occur; suitable foraging habitat provided by Sacramento River and other aquatic habitats adjacent to the project area, but not within breeding range

Table 4.4-2
Special-status Wildlife with Potential to Occur In or Adjacent to the Project Area

Species	Status [1]			Habitat	Potential for Occurrence [2]
	Federal	State	MSCS Goals [3]		
Double-crested cormorant *Phalacrocorax auritus*	—	SSC	m	Isolated islets or tall lakeside trees near fish-bearing waters	Known to occur; suitable foraging habitat provided by Sacramento River and other aquatic habitats adjacent to project area, but not expected to nest nearby
Osprey *Pandion haliaetus*	—	SSC	m	Coastal habitats, freshwater lakes and reservoirs, and large rivers	Known to occur; suitable foraging habitat provided by Sacramento River and other aquatic habitats adjacent to project area, and could nest in large trees adjacent to project area
Bald Eagle *Haliaeetus leucocephalus*	PD	E	m	Large rivers, freshwater lakes and reservoirs, and marshes	Known to occur; suitable foraging habitat provided by Sacramento River and other aquatic habitats adjacent to project area, although it is not within breeding range
White-tailed kite *Elanus leucurus*	—	FP	m	Forage in grasslands and agricultural fields; nest in isolated trees or small woodland patches	Known to occur; suitable foraging habitat provided by agricultural and grassland habitats on and adjacent to project area, and suitable nesting habitat provided by adjacent riparian habitat
Northern harrier *Circus cyaneus*	—	SSC	m	Forage and nest in grasslands, agricultural fields, and marshes	Known to occur; suitable foraging and nesting habitat provided by agricultural and grassland habitats on and adjacent to project area
Cooper's hawk *Accipter cooperii*	—	SSC	m	Forage and nest in open woodlands and woodland margins	Known to occur; suitable foraging and nesting habitat provided by riparian habitat adjacent to project area
Sharp-shinned hawk *Accipter striatus*	—	SSC	—	Forage and nest in open woodlands and woodland margins	Known to occur; suitable foraging and nesting habitat provided by riparian habitat adjacent to project area
Swainson's hawk *Buteo swainsoni*	—	T	r	Forage in grasslands and agricultural fields; nest in open woodland or scattered trees	Known to occur; suitable foraging habitat provided by agricultural and grassland habitats on and adjacent to project area, and nesting habitat provided by adjacent riparian habitat

Table 4.4-2
Special-status Wildlife with Potential to Occur In or Adjacent to the Project Area

Species	Status [1]			Habitat	Potential for Occurrence [2]
	Federal	State	MSCS Goals [3]		
Burrowing owl *Athene cunicularia*	—	SSC	—	Grasslands and agricultural fields	Unlikely to occur; suitable foraging and nesting habitat provided by agricultural and grassland habitats in and adjacent to project area, but has not been documented on or adjacent to any of the project sites
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	C	E	r	Riparian forest, typically with mature cottonwoods and willows	Known to occur; suitable foraging and nesting habitat provided by riparian habitat adjacent to project area
Bank swallow *Riparia riparia*	—	T	r	Forage in various habitats; nests in banks or bluffs, typically adjacent to water	Known to occur; suitable foraging habitat present in the project area, and nesting colonies present along river at Capay and Dead Man's Reach.
Willow flycatcher *Empidonax traillii brewsteri*	—	E	—	Riparian woodland and scrub; typically nests in willow and alder patches	Known to occur; suitable foraging habitat provided by riparian habitat adjacent to project area, although it is not within currently known breeding range
Loggerhead shrike *Lanius ludovicianus*	—	SSC	—	Forage in grasslands, and agricultural fields; nest in scattered shrubs and trees	Known to occur; suitable foraging habitat provided by agricultural and grassland habitats in and adjacent to project area, and nesting habitat provided by adjacent riparian habitat
Yellow warbler *Dendroica petechia*	—	SSC	—	Riparian woodland and scrub	Known to occur; suitable foraging and nesting habitat provided by riparian habitat adjacent to project area; nesting has been documented at Capay
Yellow-breasted chat *Icteria virens*	—	SSC	m	Riparian woodland and scrub, with dense shrub cover	Known to occur; suitable foraging and nesting habitat provided by riparian habitat adjacent to project area; nesting has been documented at Capay

[1] **Legal Status Definitions**

Federal
- E Endangered
- T Threatened
- C Candidate for Listing
- PD Proposed for Delisting

State
- E Endangered
- T Threatened
- FP Fully Protected
- SSC Species of Special Concern

Table 4.4-2
Special-status Wildlife with Potential to Occur In or Adjacent to the Project Area

Species	Status [1]			Habitat	Potential for Occurrence [2]
	Federal	State	MSCS Goals [3]		

[2] **Potential for Occurrence Definitions**
Unlikely to occur: Suitable habitat is available in or adjacent to the project area; however, the species is not known to occur in the vicinity.
Could occur: Suitable habitat is available in or adjacent to the project area; however, there are little to no other indicators that the species is present.
Known to occur: The species was reported in a TNC Site Assessment as having been observed within 1 mile of the project area (Hubbell et al. 2003a and 2003b).

[3] **Multi-Species Conservation Strategy Goals**
R Recovery. Recover species' populations within the MSCS focus area to levels that ensure the species' long-term survival in nature.
r Contribute to recovery. Implement some of the actions deemed necessary to recover species' populations within the MSCS focus area.
m Maintain. Ensure that any adverse effects on the species that could be associated with implementation of CALFED actions will be fully offset through implementation of actions beneficial to the species (CALFED 2000b).

Special-status Reptiles

Giant garter snakes inhabit a variety of aquatic habitats, such as agricultural canals, marshes, sloughs, and ponds, but are typically absent from larger rivers and from wetlands with sand, gravel, or rock substrates (USFWS 1999). They also require adjacent upland habitat for basking and burrows that provide sufficient cover and are at high enough elevations to function as refuges from flood waters during the snakes' inactive season (October–May). Historically, the northern extent of the giant garter snake range is thought to have been Gridley, which is approximately 20 miles southeast of the study area, but data collected in the 1970s indicate the range extended north to the vicinity of Chico (USFWS 1999). This is consistent with the recent observation of a giant garter snake at the oxidation ponds adjacent to the Chico Wastewater Treatment Plan (Fitzgerald, pers. comm., 2005). All three of the project sites are within approximately 5 miles of these ponds. Although the Sacramento River is unlikely to provide suitable habitat for giant garter snake, still and slow-moving aquatic habitats adjacent to the project sites could be suitable. Uplands in and adjacent to the project sites are of limited value due to their long history of ground disturbance from agricultural activities.

Western pond turtles (*Emys marmorata*) generally occur in streams, ponds, freshwater marshes, and lakes. They require still or slow moving water with instream emergent woody debris, rocks, or other similar features for basking sites. Nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils. Western pond turtles could occur in still or slow-moving aquatic habitat adjacent to the Pine Creek and Capay project sites. They are unlikely to occur adjacent to the Dead Man's Reach project site because adjacent aquatic habitat is limited to the Sacramento River, which is generally fast-moving and unlikely to provide suitable habitat. Upland habitats in and adjacent to the project area are unlikely to be suitable for nesting, because of the long agricultural history.

Special-status Birds

In California, bald eagles nest along the shores of large rivers and lakes and forage in such water bodies. They do not nest in the Central Valley, but wintering and non-breeding individuals are known to occur along the Sacramento River. Therefore, bald eagles could forage and roost adjacent to the project area.

Swainson's hawks typically nest in scattered riparian or woodland trees adjacent to grasslands and/or agricultural fields that provide suitable foraging habitat. They are known to nest at Bidwell-Sacramento River State Park, across the river from Capay, and at other scattered locations in the study area (CNDDB 2004). Field crops (i.e., wheat and barley) at Capay and fallow agricultural areas at Capay and Pine Creek provide suitable foraging habitat for Swainson's hawks, and riparian habitat adjacent to the project area provides potential nest sites.

Yellow-billed cuckoos require large blocks (greater than 40 hectares) of riparian forest vegetation for nesting (Laymon et al. 1997). Historically, this species was common and widespread in river bottom riparian habitat throughout California, but numbers have declined dramatically as a result of habitat loss. Cuckoos have recently been documented nesting at Phelan Island, less than two miles south of Capay (Small et al. 2000), and they were detected at Bidwell-Sacramento River State Park, across the river from Capay, in 1998 (Manolis 1998) and 2002 (Gilchrist et al. 2002). Western yellow-billed cuckoos are not currently known to nest in riparian habitat adjacent to the project area, although there is potential for them to do so, particularly at Capay.

Willow flycatchers have been eliminated from much of their former range in California, and breeding populations in northern California are now primarily restricted to montane meadows in the Sierra Nevada. This species nests in shrubby riparian vegetation, typically in areas with at least some surface water (Bombay et al. 2000). Willow flycatchers are likely to occur in riparian habitat adjacent to the project area during migration, but they are not expected to nest there.

Bank swallows nest colonially in vertical banks and cliffs with fine-textured sandy soils and tend to return to these colonial nests year after year. Foraging occurs primarily over open riparian areas, but also over grassland, shrubland, and savannah habitats during the breeding season. Historically, bank swallows nested on coastal bluffs in southern California and in riverbanks throughout the Central Valley and northern California, but the current nesting population is concentrated on the banks of Central Valley rivers. Approximately 75% of the current breeding population occurs along banks of the Sacramento and Feather Rivers (City of Sacramento et al. 2003). Nesting colonies are present in the river bank along the Capay project site and along the western edge of the Dead Man's Reach Unit, approximately ½ mile from the project site (Schlorff 2004).

Aquatic habitats adjacent to the project area provide suitable foraging habitat for American white pelican (*Pelecanus erythrorhynchos*) and double-crested cormorant (*Phalacrocorax auritus*). Double-crested cormorant also has limited potential to nest in trees and snags in less disturbed locations along the Sacramento River and adjacent areas, though no known nesting colonies are present.

A variety of special-status raptors not previously discussed could occur in or adjacent to the project area, including osprey (*Pandion haliaetus*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipter cooperii*), sharp-shinned hawk (*Accipter striatus*), and burrowing owl (*Athene cunicularia*). In general, these raptors nest in trees in or near riparian habitat, with the exception of northern harrier and burrowing owl, which nest in grasslands and agricultural fields. Burrowing owl, however, is unlikely to occur because this species has not been documented during the years of bird surveys conducted in and adjacent to the project area. It is considered very unlikely that burrowing owl will be at any of the project sites (Joe Silveira, pers. comm., 2005). Osprey are known to nest adjacent to Capay (Gilchrist et al. 2002) and at Bidwell-Sacramento River State Park (Elliott, pers. comm., 2002). The remaining species could also nest in or adjacent to the project area.

Loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*) are known to occur in and/or adjacent to the project area. Loggerhead shrikes occur in open areas and use scattered shrubs and trees for nesting. They are likely to nest adjacent to the Pine Creek project site (Gilchrist et al. 2002), and have potential to forage in and nest adjacent to the project area. Yellow warblers typically nest in willow thickets, and yellow-breasted chats typically nest in riparian habitats with a dense shrub layer. Yellow warblers are relatively uncommon breeders in the Central Valley, but a breeding pair nested in riparian habitat adjacent to the Capay project site in 1999 (TNC 1999), and a breeding territory has been documented at Bidwell-Sacramento River State Park (Manolis 1998). Yellow-breasted chats also breed in riparian habitat adjacent to Capay and are likely to nest adjacent to Pine Creek (Gilchrist et al. 2002).

Special-status Fish

Table 4.4-3 provides information on special-status fish species known to occur in the Sacramento River, including the species' regulatory status and habitat description, and an assessment of their potential for occurrence. A total of five special-status fish species are known or have potential to occur adjacent to the project area. In some cases,

it is an evolutionarily significant unit (ESU) of a fish species, rather than the entire population, that is listed. (An ESU is a distinctive group of Pacific salmon, steelhead, or sea-run cutthroat trout. ESU is further described below.) Special-status fish species potentially occurring in the vicinity of the proposed project include Central Valley fall-/late-fall-run Chinook salmon, Sacramento River winter run Chinook salmon, Central Valley spring run Chinook salmon, steelhead, Sacramento splittail, and green sturgeon. Most of these species are anadromous and spend various life stages at the study area. The only exception is splittail, which is the only resident species. Table 4.4-3 also identifies goals for certain species evaluated as part of the MSCS.

Chinook Salmon

Four runs of Chinook salmon occur in the Sacramento River, including fall-, late fall-, winter-, and spring-run. The distribution and abundance of each run is limited by the availability of suitable habitat during their respective spawning seasons. Chinook salmon use this portion of the Sacramento River as a migratory pathway for adults and as rearing habitat for emigrating juveniles. Fall-run Chinook salmon is the most abundant ESU, documented to comprise about 80% of the Sacramento Basin stock in the early 1980s (Kjelson et al. 1982). Under ESA, an ESU is considered a population (or group of populations) that is reproductively isolated from other populations of the same species and that contributes substantially to the ecological/genetic diversity of the species (Waples 1991). Different runs of the same salmon species are often considered separate ESUs because the populations are reproductively isolated due to different spawning times. The portion of the Sacramento River within the project study area (along with other areas) is designated as critical habitat for winter-run Chinook salmon. It was also proposed as critical habitat for Central Valley spring-run Chinook salmon in November 2004; a final rule is expected in June 2005. Critical habitat includes the river water, river bottom, and adjacent riparian zone (i.e., those adjacent terrestrial areas that directly affect a freshwater aquatic ecosystem).

Table 4.4-3
Special-status Fish with Potential to Occur Adjacent to the Project Area

Species	Status [1]			Habitat
	Federal	State	MSCS Goals [2]	
Chinook salmon – Sacramento River winter run *Oncorhynchus tshawytscha*	E	E	R	Rivers and streams, including the Sacramento River.
Chinook salmon - Central Valley spring run *Oncorhynchus tshawytscha*	T	T	R	Rivers and streams, including the Sacramento River.
Chinook salmon - Central Valley fall/late fall run *Oncorhynchus tshawytscha*	—	SSC	R	Rivers and streams, including the Sacramento River.
Central Valley steelhead *Oncorhynchus mykiss*	T	—	R	Rivers and streams, including the Sacramento River.
Sacramento splittail *Pogonichthys macrolepidotus*	—	SSC	R	Bay-Delta and associated rivers and streams, including the Sacramento River.
Green sturgeon *Acipenser medirostris*	C	SSC	R	Bay-Delta and associated large rivers, including the Sacramento River.

[1] Legal Status Definitions

Federal		State	
E	Endangered	E	Endangered
T	Threatened	T	Threatened
C	Candidate for listing	SSC	Species of Special Concern

[2] **Multi-Species Conservation Strategy Goals**

R Recovery. Recover species' populations within the MSCS focus area to levels that ensure the species' long-term survival in nature.
r Contribute to recovery. Implement some of the actions deemed necessary to recover species' populations within the MSCS focus area.
m Maintain. Ensure that any adverse effects on the species that could be associated with implementation of CALFED actions will be fully offset through implementation of actions beneficial to the species (CALFED 2000b).

All Chinook salmon require cold, freshwater streams with suitable gravel for reproduction. Females deposit their eggs in nests, or "redds," which they excavate in the gravel bottom in areas of relatively swift water (Moyle 2002). For maximum survival of incubating eggs and larvae, water temperatures must be between 39°F and 57°F. After emerging, Chinook salmon fry tend to seek shallow, nearshore habitat with slow water velocities and move to progressively deeper, faster water as they grow (DFG 1998). Freshwater rearing habitat extends from upstream spawning reaches to the Bay-Delta and Suisun Bay (USFWS 1997). Juveniles typically rear in fresh water for up to 5 months before migrating to sea, although spring-run juveniles frequently reside in freshwater habitat for 12–16 months. Chinook salmon spend 2–4 years maturing in the ocean before returning to their natal streams to spawn. All adult Chinook salmon die after spawning.

Winter-run Chinook salmon typically migrate through the study area from December through July as adults, and from November through May as emigrating juveniles. Adult spring-run generally migrate through the study area from March to September, while juveniles and yearlings emigrate downstream from March to June and November to April, respectively. Adult fall-run Chinook salmon enter the Sacramento River system from July through December and spawn from October through December. Late fall-run Chinook salmon enter the river from October to April and spawn from January to April (Vogel and Marine 1992).

Since 1981, USFWS personnel have captured juvenile Chinook salmon using beach seines at 13 sampling sites between RM 298 (Redding) and RM 164 (Princeton), including the RM 193 site at Chico Landing, directly across the river from the Capay Unit. USFWS data provides information on presence/absence, timing of migration, and size of juvenile Chinook salmon runs. The four different runs of Chinook salmon exhibit different rearing strategies that are partially explained by the availability of food, river flows, and water temperatures in the upper and lower river and Bay-Delta area. Generally, fall and spring-run Chinook salmon move out of the upper river 1–2 months after emergence, and are hypothesized to rear in the lower river or in the Bay-Delta. A portion of winter-run migrate out of the upper river soon after emergence; however, the majority appear to rear in the upper river and tributaries (Maslin et al. 1997 and 1998). Late-fall-run Chinook salmon tend to reside 4–6 months in the upper river before moving out of the system (USFWS 1992).

Juvenile Chinook salmon captured at RM 193 during 1990–1999 follow the above patterns, and their presence at this location suggests they were likely migrating down the river, so occurrences here were temporary and indicate timing of outmigration. Fall-run Chinook salmon were the most abundant run captured and occurred at RM 193 in greater numbers during March, which corresponded to a time of high streamflows. Winter-run outmigration peaked during November, a likely response to increasing streamflows due to winter rains. Late-fall run outmigration was bimodal with some moving out as fry in May and the majority as smolts in October. Spring-run outmigration occurred soon after emergence and was also bimodal corresponding to peak streamflows during the winter (rain events) and spring (snowmelt) (USFWS 1992).

Other Special-status Fish

Steelhead use the portion of the Sacramento River within the project study area (along with other areas) as a migratory pathway for adults and as rearing habitat for emigrating juveniles. Historical records indicate that adult steelhead enter the mainstem Sacramento River in July, reach peak abundance in the fall, and continue migrating through February or March (McEwan and Jackson 1996). Juveniles emigrate downstream to the ocean beginning in November and continuing through May (Schaffter 1980), although most Sacramento River steelhead emigrate in spring and early summer. Sacramento River steelhead generally migrate as 1-year-olds (Barnhart 1986, Reynolds et al. 1993). The portion of the Sacramento River within the project study area (and areas beyond) was proposed as critical habitat for Central Valley steelhead in November 2004; a final rule is expected in June 2005.

Sacramento splittail were historically widely distributed throughout much of the Central Valley, but dams and diversions have prevented them from reaching many upstream reaches, and the current population is concentrated in the Bay-Delta region. Recent data indicate that splittail occur in the Sacramento River as far upstream as the Red Bluff Diversion Dam (RM 240) (Sommer et al. 1997, Maslin et al. 1997), and that some adults spend the

summer in the mainstem Sacramento River rather than return to the estuary (Baxter 1999). Several adults were observed in Mud Creek and Kusal Slough in 1996 and 1997 (Maslin et al. 1997). The distribution and extent of spawning and rearing along the mainstem Sacramento River is unknown. Splittail spawn over flooded terrestrial or aquatic vegetation (Moyle 2002, Wang 1986) in early March and May in the lower reaches of the Sacramento River (Moyle et al. 1989). Spawning has been observed as early as January and continues through July (Wang 1986). Larval splittail are commonly found in the shallow, vegetated areas where spawning occurs. Larvae eventually move into deeper open water habitats as they grow and become juveniles. Riparian vegetation in the study area that is prone to flooding provides potential splittail spawning and rearing habitat.

Green sturgeon occur in the lower reaches of large rivers, including the Sacramento-San Joaquin River basin, and in the Eel, Mad, Klamath and Smith Rivers. Little is known about green sturgeon stock abundance and distribution, life history, or factors affecting abundance. Green sturgeon make extensive ocean migrations and spend less time in estuaries and fresh water than do white sturgeon. Juvenile fish have been collected in the study area near Hamilton City. Adults and juveniles have been observed near the Red Bluff Diversion Dam in late winter and early spring. Juveniles inhabit the estuary until they are approximately 4–6 years old, when they migrate to the ocean (Kohlhorst et al. 1991).

SENSITIVE HABITATS

Sensitive habitats include those that are of special concern to resource agencies or that are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, or Section 404 of the federal CWA as discussed further in Section 4.4.2, "Regulatory Setting." Sensitive habitats are of special concern because they are of high value to plants, wildlife, and fish species and have high potential to support special-status species. Sensitive habitats also provide other important ecological functions, such as enhancing flood and erosion control and maintaining water quality.

There are no sensitive habitats within any of the project site boundaries. A variety of sensitive habitats, including blackberry scrub, Great Valley willow scrub, Great Valley cottonwood riparian forest, and freshwater marsh, and open water (i.e., Sacramento River) are present adjacent to the project area. These habitats are protected under the Fish and Game Code and/or federal CWA.

The Sacramento River, including the study area, has also been designated as Essential Fish Habitat (EFH) by the Pacific Fisheries Management Council (PFMC) to protect and enhance habitat for coastal marine fish and macroinvertebrate species that support commercial fisheries. EFH is defined as waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Under the Pacific Coast salmon fisheries management plan (Pacific Fishery Management Council 2003), the entire Sacramento River, including the section through the study area, has been designated as EFH for spring-, fall-, late fall- and winter-run Chinook salmon.

4.4.2 REGULATORY SETTING

Important regulations that protect biological resources and could be applicable to the proposed project are discussed below.

FEDERAL REGULATIONS

Federal Endangered Species Act

The USFWS and the National Oceanic and Atmospheric Administration (NOAA) Fisheries have authority over projects that may affect the continued existence of a federally-listed (Threatened or Endangered) species. Section 9 of ESA prohibits the take of federally-listed species; take is defined under ESA, in part, as killing, harming, or harassment. Under federal regulations, take is further defined to include habitat modification or degradation where

it actually results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of ESA outlines procedures for federal interagency cooperation to conserve federally-listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species. For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain incidental take under Section 10(a) of ESA. Section 10(a) of ESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP) that includes components to minimize and mitigate impacts associated with the take.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, provides for international migratory bird protection and authorizes the Secretary of the Interior to regulate the taking of migratory birds. MBTA provides that it shall be unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird. The current list of species protected by MBTA can be found in Title 50, Code of Federal Regulations Section 10.13. The list includes nearly all birds native to the United States. Loss of nonnative species, such as house sparrows, European starlings, and rock pigeons, are not covered by this statute.

Clean Water Act

Pursuant to Section 404 of the CWA, the USACE regulates discharge of dredge or fill material into waters of the United States. Waters of the United States and their lateral limits are defined in 33 CFR Part 328.3 (a) and include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Fill is defined as any material that replaces any portion of a water of the United States with dry land or changes the bottom elevation of any portion of a water of the United States. Any activity resulting in the placement of dredge or fill material to waters of the United States requires a permit from the USACE. Pursuant to Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredge or fill material must obtain water quality certification from the Regional Board (formerly called RWQCB) indicating that the project would uphold state water quality standards.

Magnuson-Stevens Fishery Conservation and Management Act

The amended Magnuson-Stevens Fishery Conservation and Management Act, also known as the Sustainable Fisheries Act, requires all federal agencies to consult with the Secretary of Commerce on activities or proposed activities authorized, funded, or undertaken that may adversely affect EFH of commercially managed marine and anadromous fish species (Office of Habitat Conservation 1999). The EFH provisions of the Sustainable Fisheries Act are designed to protect fishery habitat from being lost due to disturbance and degradation. The act requires that EFH must be identified for all species federally managed under PFMC. PFMC is responsible for managing commercial fisheries resources along the coasts of Washington, Oregon, and California. Managed species are covered under three fisheries management plans: Pacific Groundfish Fishery Management Plan, Coastal Pelagic Fishery Management Plan, and Pacific Salmon Fishery Management Plan.

STATE REGULATIONS

California Endangered Species Act

Pursuant to the CESA and Section 2081 of the Fish and Game Code, a permit from DFG is required for projects that could result in the take of a state-listed Threatened or Endangered species. Under CESA, the definition of "take" is understood to apply to an activity that would directly or indirectly kill an individual of a species, but the

definition does not include "harm" or "harass," as the federal act does. As a result, the threshold for a take under the CESA is typically higher than that under the ESA. Take may be authorized as long as it is incidental to an otherwise lawful activity and the impacts of authorized take must be minimized and fully mitigated.

California Fish and Game Code Section 2800 et seq. – Natural Communities Conservation Planning Act

The Natural Communities Conservation Planning (NCCP) Act of 1991 was established by the California legislature, is directed by DFG, and is being implemented by the state, and public and private partnerships to protect habitat in California. The DFG NCCP program is the mechanism for implementation of the NCCP Act. As opposed to the single species interpretation of the ESA, this act aims at protecting many species using a regional approach to habitat preservation. NCCPs describe conservation programs designed to minimize and mitigate effects to specified biological resources. The program takes a broad-based ecosystem approach to conservation planning. Its primary objective is to conserve natural communities at the ecosystem scale while accommodating compatible land uses. An NCCP identifies and provides for the regional protection of plants, animals, and their habitats, including species protected under the CESA, while allowing compatible and appropriate economic activity.

California Fish and Game Code Sections 3503 and 3513 – Protection of Birds

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., eagles, hawks, owls, and falcons), including their nests or eggs. Section 3513 of the California Fish and Game Code provides for adoption of MBTA's provisions. It states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird. These state codes offer no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame, migratory birds. Typical violations include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Sections 3503.5 and 3513 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction.

Fully Protected Species under the Fish and Game Code

Protection of fully protected species is described in four sections of the Fish and Game Code that list 37 fully protected species (Fish and Game Code Sections 3511, 4700, 5050, and 5515). These statutes prohibit take or possession at any time of fully protected species. DFG is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species. DFG has informed non-federal agencies and private parties that they must avoid take of any fully protected species in carrying out projects.

California Fish and Game Code Section 1602 – Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream or lake in California that supports wildlife resources are subject to regulation by DFG, pursuant to Section 1602 of the California Fish and Game Code. Section 1602 states that it is unlawful for any person, governmental agency, state, local, or any public utility to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake without first notifying DFG of such activity. The regulatory definition of stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports wildlife, fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or have supported riparian vegetation. DFG's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, "waters of the state" fall under the jurisdiction of the Regional Board. Under the act, the Regional Board must prepare and periodically update its Basin Plan. Each Basin Plan sets forth water quality standards for surface water and groundwater, as well as actions to control non-point and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the Regional Board, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

4.4.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

These significance thresholds are based on relevant provisions of CEQA, the State CEQA Guidelines, environmental questions in Appendix G of the Guidelines, and significance criteria used in other relevant environmental compliance documents for similar projects.

The proposed habitat restoration project would be considered to have a significant effect on biological resources if it would:

- Result in the substantial loss or degradation of native vegetation;
- Result in a substantial net loss of important wildlife habitat, including habitat occurring on agricultural fields;
- Result in a substantial net loss of important fisheries habitat, or EFH;
- Result in a construction-related temporary loss of substantial areas of natural habitat or a substantial disturbance of sensitive wildlife on or near the project site;
- Result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFG or USFWS;
- Result in a substantial reduction of the habitat of a fish or wildlife species;
- Cause a fish or wildlife population to drop below self-sustaining levels, or threaten to eliminate a plant or animal community; or
- Result in a substantial reduction in the number or restrict the range of an endangered, rare, or threatened plant or animal.

IMPACT ANALYSIS

Plants

IMPACT 4.4-a *Change in Habitat Conditions. Implementation of the proposed project would involve restoration of native Sacramento River riparian habitat on land that has been actively cultivated and on fallow agricultural habitats. It would not result in loss or disturbance of natural habitats or special-status plant species because these resources are not present in areas that would be disturbed during restoration activities. Restoration of natural habitat would, in fact, have a long-term* ***beneficial*** *effect to native vegetation and associated plant species.*

Restoration of riparian habitat at the project sites would occur on approximately 350 acres of row and field crops, 239 acres of almond orchard, and 241 acres of fallow agricultural fields. These lands would be restored to native habitat, including a combination of mixed riparian forest, savannah, and grassland. This restoration could temporarily reduce the local populations of common plant species, but these habitats and species are locally and regionally abundant and are not considered sensitive. Sensitive habitats, including Great Valley willow scrub, Great Valley cottonwood riparian forest, and freshwater marsh, are present adjacent to the project area. In addition, six special-status plant species have potential to occur in riparian and freshwater marsh habitats adjacent to the project area. However, none of these habitats would be adversely affected by the proposed restoration project, and the project would result in a long-term increase in the overall amount of sensitive habitat within the project area. Therefore, impacts to vegetation, including sensitive habitats and special-status plants, would be beneficial.

Wildlife

IMPACT 4.4-b *Potential Effects on Wildlife. Implementation of the proposed project would result in restoration of actively cultivated and fallow agricultural habitats that provide important habitat for some wildlife species. Habitat restoration could also result in loss or disturbance of special-status birds nesting on and/or adjacent to the project area during project implementation phases. However, the project has been designed to include avoidance and minimization measures that address potential impacts to nesting birds. (Refer to Chapter 3, "Description of the Proposed Project.") In addition, restoration of native habitats would have a long-term* ***beneficial*** *effect to native vegetation and associated wildlife species.*

Restoration of native habitats at the project sites would occur on approximately 350 acres of row and field crops, 239 acres of almond orchard, and 241 acres of fallow agricultural fields. The proposed restoration project would eliminate existing agricultural habitat and could reduce the local populations of some common wildlife species associated with this habitat, including birds such as house finch (*Carpodacus mexicanus*), yellow-billed magpie (*Pica nuttalli*), and western meadowlark (*Sturnella neglecta*) and mammals such as California ground squirrel (*Spermophilus beecheyi*) and California vole (*Microtus californicus*). However, most of the species in question are also likely to utilize the riparian, savannah, and grassland habitats that would replace the agricultural ones. In addition, orchards and croplands, and the wildlife they support, are locally and regionally common. Therefore, no substantial net loss of wildlife habitat would occur.

The project area and adjacent sensitive habitats are known to support several special-status wildlife species and could support a number of others. Aquatic species, such as giant garter snake and western pond turtle, would not be adversely affected by the proposed project because restoration activities would be restricted to disturbed upland habitats that are unlikely to be utilized by these species. In addition, potential impacts to giant garter snake would be avoided through implementation of measures, such as timing of restoration activities and pre-construction surveys, as described in Section 3.4 (Chapter 3, "Description of the Proposed Project"). Elderberry shrubs that could support valley elderberry longhorn beetle are likely to occur adjacent to the project area, particularly at Pine Creek and Capay. However, elderberry shrubs would not be affected by restoration activities, because such activities would be restricted to areas that have long been subject to high levels of disturbance from agricultural activities. Therefore, there is little potential for disturbance to occur during restoration that would affect nearby shrubs and beetles that could be present. As indicated in Section 3.4 (Chapter 3, "Description of the Proposed Project"), no elderberry shrubs would be planted within 100 feet of levees or other flood control structures to avoid potential conflicts with maintenance activities in these areas. This will minimize potential for recruitment of elderberry shrubs into areas subject to regular maintenance or other disturbances that could result in adverse effects to the shrubs.

Implementation of the proposed habitat restoration project could result in construction-related loss and/or disturbance of birds, including special-status species, nesting in or near the project area. Fallow agricultural habitat at Capay is known to support nesting pairs of species considered sensitive by conservation organizations, including blue grosbeak and common yellowthroat; however, these species are not officially recognized by resource agencies as special-status species. These and other common bird species are also protected under MBTA

and the California Fish and Game Code. In addition, fallow habitat at Capay and Pine Creek provides nesting habitat for northern harrier, which is a special-status bird. Natural habitats adjacent to the project area provide nesting habitat for a variety of common and special-status species. Restoration activities could result in direct loss of active nests when the sites are cleared of existing vegetation. Birds nesting in habitat adjacent to the sites could also be disturbed by restoration activities, potentially resulting in nest abandonment and mortality of eggs or chicks. However, these potential impacts to nesting birds would be avoided and/or minimized through implementation of measures, such as conducting vegetation removal in the non-nesting season and implementing buffer areas around sensitive nests, as described in Section 3.4 (Chapter 3, "Description of the Proposed Project").

Restoration of riparian and savannah habitat would also reduce the amount of foraging habitat for Swainson's hawk and other raptors. However, fallow fields and row crops provide marginal quality habitat, and foraging habitat of similar type and quality is common in the region. In addition, restoration of native grassland could provide high-quality foraging habitat. Therefore, conversion of fallow fields and row and field crops is not anticipated to have an overall adverse effect to foraging raptors.

Planting of elderberry shrubs would be limited to areas at least 100 feet from site boundaries, and measures to avoid/minimize potential adverse effects to nesting birds would be incorporated into the proposed project design; therefore, no adverse impacts would occur to these resources. Because agricultural habitat would be restored to native habitats anticipated to support a similar assortment and higher diversity of wildlife species, restoration of native riparian habitat would have a long-term beneficial effect to native vegetation and associated wildlife species. The overall effect of re-establishing riparian, savannah, and grassland habitats is considered beneficial to wildlife species.

Fisheries

IMPACT 4.4-c *Potential Effects on Fisheries. Implementation of the proposed project would not result in loss or disturbance of fish habitat or special-status fish because these resources are not present in areas that would be disturbed during restoration activities. Restoration of natural habitat would, in fact, have a long-term beneficial effect to fish.*

The Sacramento River provides important habitat for a variety of common and special-status fish species. Implementation of the proposed project would not directly alter any fish habitat. Ground-disturbing activities could potentially result in soil erosion and/or sedimentation of local drainages or the Sacramento River channel and subsequent water quality degradation resulting in potential adverse effects to special-status fish. (See also Impact 4.3-c in Section 4.3, "Hydrology, Water Quality, and River Geomorphology.") However, restoration would utilize standard agricultural practices already in use throughout the study area, including orchard removal, disking, seeding, and planting. Irrigation system modification and expansion would include standard trench and backfill techniques. Therefore, potential water quality degradation and subsequent effects resulting from these activities would be minor. Minor and temporary increases in sediment load to the river could also occur during flood events. Increased sediment input could increase turbidity and reduce feeding efficiency of juvenile and adult fish. However, native vegetation would be planted concurrently or soon after removal of existing vegetation to minimize the potential for severe erosion to occur on disturbed, unprotected land. Because the Sacramento River is typically a turbid system, additional sediment input resulting from proposed restoration project activity would be comparatively minimal, and is not anticipated to have any noticeable effect relative to the overall condition of the river. Gravel recruitment rates would not be significantly affected. In addition, restoration of agricultural lands to natural riparian areas would result in long-term beneficial effects to fish in the Sacramento River by increasing complexity of the aquatic environment and providing cover, food, and other habitat components. Therefore, overall impacts to fish habitat and special-status fish species are considered beneficial.

4.4.4 MITIGATION MEASURES

No mitigation is required for impacts to biological resources.

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