Appendix J

Supporting Documentation Related to Biological Resources - Vegetation and Wildlife

Special-Status Species Tables and Maps

Table J-1: Special-Status Species Known to Occur or with the Potential to Occur in the Restoration Area
(after Reclamation and DWR 2011)

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Plants				
Alkali milk-vetch	*Astragalus tener* var. *tener*	1B.2	Alkaline vernal pools and playas, and valley and foothill grassland with alkaline adobe clay soils; 3–2,000 feet elevation. Flowering period is March – June	Medium; documented occurrences in Great Valley Grasslands State Park
Heartscale	*Atriplex cordulata*	1B.2	Alkaline or saline sites in chenopod scrub, meadows and seeps, and valley and foothill grassland with sandy soils; 3–1,250 feet elevation. Flowering period is April – October	Known to occur; documented occurrences in Great Valley Grasslands State Park, south of the Restoration Area in Reaches 5 and 4B2, north of the Eastside Bypass, and in the Chowchilla Bypass, and Reach 2A
Brittlescale	*Atriplex depressa*	1B.2	Alkaline clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, or vernal pools; 3–1,050 feet elevation. Flowering period is May – October	Medium; documented occurrences in Great Valley Grasslands State Park, south of the Restoration Area in Reaches 5 and 4B2 and north of the Eastside Bypass
San Joaquin spearscale	*Atriplex joaquiniana*	1B.2	Alkaline soils in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland; 3–2,750 feet elevation. Flowering period is April – October	Medium; suitable habitat present in the West Bear Creek Area and from south of the Restoration Area in Reach 5
Lesser saltscale	*Atriplex minuscula*	1B.1	Alkaline, sandy soils in chenopod scrub, playas, and valley and foothill grassland; 50–700 feet elevation. Flowering period is April – October	Known in Reach 3; documented occurrences in Great Valley Grasslands State Park and the Freitas Unit of San Luis National Wildlife Refuge (NWR)
Vernal pool smallscale	*Atriplex persistens*	1B.2	Alkaline vernal pools; 30–400 feet elevation. Flowering period June – October.	Known to occur in Reach 5; also documented occurrences in the Bear Creek Unit of San Luis NWR, north of Eastside Bypass

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Subtle orache	*Atriplex subtilis*	1B.2	Valley and foothill grassland; 130–330 feet elevation. Flowering period June –August.	Known to occur in Chowchilla and Eastside bypasses; suitable habitat present
Lost Hills crown scale	*Atriplex vallicola*	FT, SE, 1B.2	Alkaline vernal pools, alkaline soils in chenopod scrub and valley and foothill grassland; 160–2,100 feet elevation. . Flowering period April –August.	Medium; suitable habitat present and species known south of Mendota Pool
Succulent owl's-clover	*Castilleja campestris* ssp. *succulenta*	FT, SE, 1B.1	Vernal pools, often acidic; 160–2,500 feet elevation. Flowering period April – May.	Medium; suitable habitat present and species known adjacent to Reach 1A
California jewelflower	*Caulanthus californicus*	FE, SE, 1B.2	Historical from various valley habitats in both the Central Valley and Carrizo Plain. 200¬-3000 feet elevation. Prefers slightly alkaline sandy loam soils..	Low; one historic occurrence in the Fresno North quadrangle, but it has been extirpated; no other documented occurrences in the vicinity
Hoover's spurge	*Chamaesyce hooveri*	FT, 1B.2	Vernal pools; 80–820 feet elevation. Flowering period July – September.	Medium; suitable habitat present and species known from the Turner Ranch quadrangle
Hispid bird's-beak	*Cordylanthus mollis* ssp. *hispidus*	1B.1	Mesic alkaline soils in meadows and seeps, playas, and valley and foothill grassland; 3–500 feet elevation. Flowering period June – September.	Medium; documented occurrences in the West Bear Creek area of the San Luis NWR
Palmate-bracted bird's- beak	*Cordylanthus palmatus*	FE, SE, 1B.1	Alkaline soils in chenopod scrub and valley and foothill grassland; 15–500 feet elevation. Flowering period May– October.	Medium; suitable habitat present and species known to occur at the Alkali Sink Ecological Area and Mendota Wildlife Area (between Chowchilla Bypass and Reach 3)
Recurved larkspur	*Delphinium recurvatum*	1B.2	Alkaline soils in cismontane woodland and valley and foothill grassland; 10–2,500 feet elevation	Medium; suitable habitat present and species known from encompassing quadrangles

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Dwarf downingia	*Downingia pusilla*	2.2	Vernally mesic sites in valley and foothill grassland and vernal pools; 3–1,500 feet elevation. Flowering period March – May.	Medium; suitable habitat present and species known from the Friant quadrangle
Delta button-celery	*Eryngium racemosum*	SE, 1B.1	Vernally mesic clay depressions in riparian scrub habitat; 10–100 feet elevation. Flowering period June– September.	Known to occur in many locations in Eastside and Mariposa bypasses, Reaches 4B1, 4B2, and 5; documented occurrences in Great Valley Grasslands State Park and the West Bear Creek Unit of San Luis NWR
Spiny-sepaled button- celery	*Eryngium spinosepalum*	1B.2	Vernal pools and valley and foothill grassland; 250–850 feet elevation. Flowering period April– May.	Known to occur in Reach 1A; suitable habitat present
Hoover's eriastrum	*Eriastrum hooveri*	4.2	Alkaline soils in chenopod scrub and valley and foothill grassland; 150–3,000 feet elevation. Flowering period March– July.	Medium; suitable habitat present and species known to occur at the Alkali Sink Ecological Area and Mendota Wildlife Area (between Chowchilla Bypass and Reach 3)
California satintail	*Imperata brevifolia*	2.1	Mesic sites in chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub; 0–1,650 feet elevation. Flowering period September– May.	Medium; suitable habitat present and species documented in the Fresno North quadrangle
Coulter's goldfields	*Lasthenia glabrata* Lindl. ssp. *coulteri*	1B.1	Marshes and swamps, playas, and vernal pools; 0-4,000 feet. Flowering period February – June.	Medium, suitable habitat present especially within the later reaches of the San Joaquin River.
Munz's tidy-tips	*Layia munzii*	1B.2	Alkaline clay soils in chenopod scrub and valley and foothill grassland; 150–2,600 feet elevation. Flowering period March– April.	Known to occur in Reach 3; suitable habitat present
Heckard's pepper-grass	*Lepidium latipes* Hook. var. *heckardii* Roll	1B.2	Alkaline flats, valley and foothill grassland; 6-2,200 feet	Medium, suitable habitat present especially within the later reaches of the San Joaquin River.

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Madera leptosiphon	*Leptosiphon serrulatus*	1B.2	Woodlands and lower montane coniferous forest; 950–4,300 feet elevation. Flowering period April– May.	Medium; documented in the vicinity of the Restoration Area in the Friant, Madera, and Millerton Lake West quadrangles, including occurrences at Millerton Lake
Prostrate navarretia	*Navarretia prostrata*	1B.1	Vernally mesic sites in coastal scrub, alkaline soils in valley and foothill grassland, and vernal pools; 50–650 feet elevation. Flowering period April– July.	Known to occur in Reach 5;suitable habitat present
Colusa grass	*Neostapfia colusana*	1B.1	Large vernal pools with adobe clay soils; 15–4,000 feet elevation. Flowering period May–August..	Medium; suitable habitat present and species known from the Sandy Mush and Turner Ranch quadrangles
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	FT, SE, 1B.1	Vernal pools; 30–2,500 feet elevation. Flowering period April– September.	Known to occur in Reach 1A; suitable habitat present
Hairy Orcutt grass	*Orcuttia pilosa*	FE, SE, 1B.1	Vernal pools; 175–650 feet elevation. Flowering period Map– September.	Medium; suitable habitat present and species known from north of Reach 1A
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	FE, SE, 1B.1	Clay, often acidic, soils in cismontane and valley and foothill grassland habitats, especially on northern and northeastern aspects in mima mound topography; 50–500 feet elevation. Flowering period March– April.	Low to unlikely; species is known from the Millerton Lake West and Friant quadrangles, but the specific edaphic and topographic habitat requirements not expected to be present
Sanford's arrowhead	*Sagittaria sanfordii*	1B.2	Assorted shallow freshwater marshes and swamps; 0–2,000 feet elevation. Flowering period May– October.	Known to occur in Reach 1A at the DFG Milburn Ecological Reserve, Mendota Pool, and Eastside Bypass; suitable habitat in Restoration Area
Wright's trichocoronis	*Trichocoronis wrightii* var. *wrightii*	2.1	Alkaline soils of marshes and swamps, meadows and seeps, riparian forest, and vernal pools, usually on mud flats; 15–1,500 feet elevation. Flowering period May–September.	Known; occurs in the Chowchilla Bypass and reported occurrence in Great Valley Grasslands State Park

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	1B.1	Mesic alkaline soils in valley and foothill grassland, vernal pools; 160–1,300 feet elevation. Flowering period March– April.	Medium; suitable habitat present and documented occurrence south of Reach 1A
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	Vernal pools and swales	Known; occurs in suitable habitat on the San Luis National Wildlife Refuge (NWR) complex in Reaches 4B2 and 5 and Eastside Bypass
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE	Vernal pools and swales	Known; occurs in suitable habitat on the San Luis NWR complex in Reach 5
Vernal pool fairy shrimp	*Branchinecta lynchi*	FE	Vernal pools and other seasonal wetlands	Known; occurs in suitable habitat on the San Luis NWR complex in Reaches 4B1, 4B2, and 5, and Chowchilla and Eastside bypasses
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Vernal pools, swales, and other ephemeral wetlands	Known; occurs in suitable habitat on the San Luis NWR complex and at the Great Valley Grasslands State Park in Reaches 4B1, 4B2, and 5, and Chowchilla and Eastside bypasses
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Elderberry shrubs, typically in riparian habitats	Known; occurs in elderberry shrubs present in the riparian woodland in Reach 1A; expected to occur in suitable habitat in other locations in the Restoration Area

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Amphibians				
California tiger salamander	*Ambystoma californiense*	FT, SSC	Small ponds, lakes, or vernal pools in grasslands or oak woodlands	Known; occurs in suitable habitat on the San Luis NWR complex and at the Great Valley Grasslands State Park in Reaches 4B1, 4B2, and 5, and Chowchilla Bypass; other occurrences reported adjacent to Restoration Area in Reach 1A
California red-legged frog	*Rana draytonii*	FT, SSC	Aquatic habitats, such as creeks, streams, and ponds	Unlikely to occur; no longer occurs on the floor of the Central Valley.
Western spadefoot	*Spea hammondii*	SSC	Vernal pools and seasonal wetlands in upland with burrows and other belowground refuge	Known; occurs in suitable habitat on the San Luis NWR complex and at the Great Valley Grasslands State Park in Reaches 4B1, 4B2, and 5; other occurrences reported adjacent to Restoration Area in Reach 1A
Reptiles				
Western pond turtle	*Actinemys marmorata marmorata*	SSC	Ponds, marshes, rivers, streams, sloughs; nests in nearby uplands with suitable soils	Known; occurs in suitable habitat on the San Luis NWR complex, in the Mendota Wildlife Area, and at Mendota Pool; expected to occur in suitable habitat in other locations in the Restoration Area
Blunt-nosed leopard lizard	*Gambelia sila*	FE, SE	Open habitats with scattered low bushes on alkali flats, plains, washes, and arroyos	Known; occurs in the Chowchilla Bypass and adjacent to Reach 3
Silvery legless lizard	*Anniella pulchra pulchra*	SSC	Loose soil or thick leaf litter in chaparral, woodland, and riparian areas	Known; occurs in suitable habitat on the San Luis NWR complex and near the confluence of Willow Slough
San Joaquin whipsnake	*Masticophis flagellum ruddocki*	SSC	Open, dry vegetation in valley grasslands and saltbush scrub	Medium; suitable habitat present in Restoration Area

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California horned lizard	*Phrynosoma coronatum frontale*	SSC	Grasslands, brushlands, woodlands, and open coniferous forests	Could occur in suitable habitat
Giant garter snake	*Thamnophis gigas*	FT, ST	Streams, sloughs, ponds, and irrigation/drainage ditches; also requires upland refugia not subject to flooding during its inactive season	Known to occur in suitable habitat on the San Luis NWR complex and in the Mendota Wildlife Area; reported from Mendota Pool; expected to occur in suitable habitat in other locations in the Restoration Area
Birds				
Redhead	*Aythya americana*	SSC	Nests in freshwater emergent wetlands with dense patches of tules or cattails interspersed with areas of deep, open water; forages in open water	Unlikely; regular breeder in Central Valley; known to nest at Mendota Pool and also occurs at the San Luis NWR and Mendota Wildlife Area; expected in the Restoration Area
American white pelican	*Pelecanus erythrorhynchos*	SSC	Nests in protected inland wetlands; forages in shallow inland waters, including marshes and along lakes or rivers and in shallow coastal marine areas	Medium; in winter throughout Central Valley; expected in the Restoration Area
Least bittern	*Ixobrychus exilis*	SSC	Nests in dense emergent vegetation in fresh and brackish marsh	Unlikely; regular breeder in suitable habitat in the San Joaquin Valley; expected in the Restoration Area
Double-crested cormorant (rookery)	*Phalacrocorax auritus*	WL	Forages in inland ponds and lakes; nests in riparian forests	Known to occur in suitable habitat on the San Luis NWR complex; known along Reach 1A at DFG's Milburn Ecological Reserve
Great blue heron (rookery)	*Ardea herodias*	CNDDB tracked	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes; common over most of North America	Known; rookeries known to occur at base of Friant Dam, Milburn and Rank Island Ecological Reserves in Reach 1A

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Great egret (rookery)	*Ardea alba*	CNDDB tracked	Nests in colonies with other species, in shrubs and trees over water, and on islands; feeds in variety of wetlands, including marshes, swamps, streams, rivers, ponds, lakes, tide flats, canals, and flooded fields	Known; rookeries known to occur at base of Friant Dam, Milburn and Rank Island Ecological Reserves in Reach 1A
White-faced ibis (rookery)	*Plegadis chihi*	SSC	Freshwater marshes with tules, rushes, and cattails, and flooded agricultural fields	Known; suitable habitat on the San Luis NWR complex and other sites in the Restoration Area
Cackling (Aleutian) Canada goose	*Branta hutchinsii leucopareia*	Federally delisted, CNDDB tracked	Nests in the Aleutian Islands, winters in the Central Valley south to Merced	Known; winters in suitable habitat on the San Luis NWR complex and other suitable sites in the Restoration Area
Cooper's hawk	*Accipiter cooperii*	WL	Nests primarily in deciduous riparian forests; may also occupy dense canopied forests from gray pine-oak woodland to ponderosa pine; forages in open woodlands	Medium; potential nesting habitat present in Restoration Area; known to occur in suitable habitat in the San Joaquin Valley
Sharp-shinned hawk	Accipiter striatus	WL	Dense to open canopy pine or mixed conifer forest, riparian habitats, and grassland with scattered trees; permanent resident in parts of the Sierra Nevada, Cascade, Klamath, and North Coast Ranges; usually nests in conifers	Potential foraging and wintering habitat is present in Restoration Area
Golden eagle	Aquila chrysaetos	FP, WL	Nests on cliff faces with suitable ledges or in large trees in open areas; forages over open terrain	Uncommon winter visitor throughout the Central Valley; known to occur in suitable habitat on the San Luis NWR complex and other areas along the San Joaquin River
Ferruginous hawk	*Buteo regalis*	SSC	Forages in open grasslands and agricultural fields	Known; occurs during winter in suitable habitat on the San Luis NWR complex

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Swainson's hawk	*Buteo swainsoni*	ST	Forages in grasslands and agricultural fields; nests in open woodland or scattered trees	Known; nests in suitable habitat on the San Luis NWR complex and Great Valley Grasslands State Park and other areas along the San Joaquin River
Northern harrier	*Circus cyaneus*	SSC	Forages and nests in grassland, agricultural fields, and marshes	Known; occurs in suitable habitat on the San Luis NWR complex and other areas along the San Joaquin River
White-tailed kite	*Elanus leucurus*	FP	Forages in grasslands and agricultural fields; nests in isolated trees or small woodland patches	Known; occurs in suitable habitat in Lost Lake Park; expected to occur in suitable habitat in Restoration Area
Bald eagle	*Haliaeetus leucocephalus*	SE	Forages along inland waters; nests in adjacent large, old- growth trees or snags	Known; nests in suitable habitat on Lake Millerton and Chowchilla Bypass and occurs during winter and migration in the San Luis NWR complex
Merlin	*Falco columbarius*	WL	Forages in open woodlands, savannas, edges of grasslands and deserts, farms, and ranches	Known; occurs in suitable habitat on the San Luis NWR complex
Prairie falcon	*Falco mexicanus*	FP, WL	Nests on cliffs overlooking a large, open area; forages in open habitats	Low; suitable habitat in the Restoration Area
American peregrine falcon	*Falco peregrinus anatum*	Federally delisted, SE, FP	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes; permanent resident in the north and south Coast Ranges; winters in the Central Valley southward through the Transverse and Peninsular ranges; feeds almost exclusively on birds	Known; occurs at the San Luis NWR; expected to occur in suitable habitat in Restoration Area
Lesser sandhill crane	*Grus canadensis canadensis*	SSC	Forages in grasslands, pastures, and agricultural fields (particularly recently disturbed grain fields); roosts in a variety of wetlands with shallow water depths	Known; overwinters at the Merced NWR; expected to occur in suitable habitat in Restoration Area

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Greater sandhill crane	*Grus canadensis tabida*	ST, FP	Shallow lakes and freshwater marshes	Known; occurs during winter in suitable habitat on the San Luis NWR complex and along the San Joaquin River; no nesting habitat
Mountain plover	*Charadrius montanus*	SSC	Open plains or rolling hills with short grasses or sparse vegetation	Known; occurs in winter in suitable habitat near Tranquility
Long-billed curlew	*Numenius americanus*	WL	Nests in open grassland in the prairie region and far northeastern California; winters in range of wetland habitats, foraging in pastures, agricultural fields, and tidal estuaries	Common winter resident in the Central Valley in wet habitats, including San Luis NWR; expected in the Restoration Area
Black tern	*Chlidonias niger*	SSC	Nests semicolonially in protected marshes and rice fields; forages on fish and insects	Low; suitable habitat within San Luis NWR; expected during the nonbreeding season in the Restoration Area
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	SE	Inhabits wide, dense riparian forests with a thick understory of willows for nesting; prefers sites with a dominant cottonwood overstory for foraging	Low; no recent nesting records, but suitable nesting habitat present.
Short-eared owl	*Asio flammeus*	SSC	Tall (ungrazed) grasslands and marshes with dense vegetation	Known; occurs in suitable habitat on the San Luis NWR complex, where it possibly also nests
Burrowing owl	*Athene cunicularia hypugea*	SSC	Grasslands and agricultural fields	Known; occurs in suitable habitat along Chowchilla Bypass and on the San Luis NWR complex and at Mendota Pool
Loggerhead shrike	*Lanius ludovidianus*	SSC	Forages in grasslands and agricultural fields; nests in scattered shrubs and trees	Known; nests in suitable habitat on the San Luis NWR complex; expected to nest in other suitable habitat

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Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Willow flycatcher	*Empidonax traillii*	FE, SE	Riparian habitats and large wet meadows with abundant willows during migration	Low; rare spring and fall migrants in riparian habitats of the San Luis and West Bear Creek units of the San Luis NWR
Least Bell's vireo	*Vireo bellii pusillus*	FE, SE	Cottonwood-willow forest, oak woodland, shrubby thickets, and dry washes with willow thickets	Known; nests in suitable habitat on the San Joaquin River NWR in the San Luis NWR complex
California horned lark	*Eremophila alpestris actia*	WL	Grasslands and agricultural areas, especially sparsely vegetated or barren areas	Known; nests in suitable habitat on the San Luis NWR complex
Bank swallow	*Riparia riparia*	ST	Forages in various habitats; nests in banks or bluffs, typically adjacent to water	Low; no recent nesting records, but suitable nesting habitat present.
Yellow warbler	*Dendroica petechia brewsteri*	SSC	Riparian woodlands.	Low; potential nesting habitat present; known to occur during migration in suitable habitat on the San Luis NWR complex and other sites in the Restoration Area
Yellow-breasted chat	*Icteria virens*	SSC	Dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground and the borders of small ponds	Medium; Potential nesting habitat present in Restoration Area; known to occur during migration in suitable habitat in the San Joaquin Valley
Grasshopper sparrow	*Ammodramus savannarum*	SSC	Grassland, especially moderately open grassland with scattered shrubs	Known; breeds in the Los Banos Wildlife Area, the North Grasslands Wildlife Area, the San Luis NWR complex, and the Mendota Wildlife Area
Tricolored blackbird	*Agelaius tricolor*	SSC	Forages in grasslands and agricultural fields; nests in freshwater marsh, riparian scrub, and other dense shrubs and herbs	Known; occurs in suitable habitat on the San Luis NWR complex and other sites in the Restoration Area

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Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	SSC	Nests in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or ponds; its range extends as far west as central-interior British Columbia, moving directly south through the central-interior west coast to northeastern Baja California	Known; occurs in suitable habitat throughout San Joaquin Valley, including the San Luis NWR complex; potential nesting habitat present in Restoration Area
Mammals				
Pallid bat	*Antrozous pallidus*	SSC	Deserts, grasslands, shrublands, woodlands, and forests; most common in open, dry habitats with rocky areas for roosting	Medium; habitat present within the restoration area; highly associated with oak woodlands in the Central Valley
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC	Forages along edges of a variety of habitats; roosts in caves, tunnels, mines, trees, and buildings	No records known from the Restoration Area, although could occur in suitable habitat
Spotted bat	*Euderma maculatum*	SSC	Shrub-steppe grasslands	Known; occurs near Friant Dam
Western red bat	*Lasiurus blossevillii*	SSC	From Shasta County south to Mexico, west of the Sierra Nevada/Cascade crest and deserts; the winter range includes western lowlands and coastal regions south of San Francisco Bay; roosting habitat includes forests and woodlands from sea level up through mixed conifer forests	Known; occurs in Restoration Area along Reach 3, north of Mendota Wildlife Area
Hoary bat	*Lasiurus cinereus*	CNDDB tracked	Prefers woodlands and coniferous forests, but hunts over open areas and lakes; noncolonial	Medium; habitat for roosting in riparian trees and foraging over open water and in open woodland habitats
Yuma myotis	*Myotis yumanensis*	CNDDB tracked	Roosts colonially in caves, tunnels, trees, and buildings; inhabits arid regions; distributed throughout the western United States, Mexico, and Canada	Known; occurs in the Restoration Area along Reach 3, north of Mendota Wildlife Area

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Western mastiff bat	*Eumops perotis californicus*	SSC	Crevices on cliffs faces, boulders, and buildings, usually with space for at least a 10-foot vertical drop	Known; occurs in suitable habitat in the San Joaquin Valley
Riparian brush rabbit	*Sylvilagus bachmani riparius*	FE, SE	Dense thickets of brush associated with riparian or chaparral habitats	No records known from the Restoration Area, although could occur in suitable habitat; recently reintroduced on private land adjacent to the San Joaquin River NWR
Nelson's antelope squirrel	*Ammospermophilus nelsoni*	ST	Arid grasslands with loamy soils and moderate shrub cover	Medium; suitable habitat is present in Restoration Area; reported south of Mendota Pool
Giant kangaroo rat	*Dipodomys ingens*	FE, SE	Annual grasslands and shrubland habitats with sparse vegetative cover	Unlikely to occur in the Restoration Area; although historically known from the region, now known to occur only in the Kettleman Hills in Kings County and western Kern County
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	FE, SE	Alkali desert scrub habitats between 200 and 300 feet elevation	Unlikely; suitable habitat at the Alkali Sink Ecological Reserve and Mendota Wildlife Area near the Restoration Area, although may be extirpated along the San Joaquin River. Species possibly extinct.
San Joaquin pocket mouse	*Perognathus inornatus inornatus*	CNDDB tracked	Inhabits grassland and scrub habitats in Central and San Joaquin valleys; associated with friable soils	Known; occurs in suitable habitat in and in the immediate vicinity of the Restoration Area
San Joaquin (riparian) woodrat	*Neotoma fuscipes riparia*	FE, SSC	Riparian forests	No records known from the Restoration Area, although could occur in suitable habitat
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, ST	Saltbush scrub, grasslands, oak savannas, and freshwater scrub	Known; occurs in suitable habitat on the San Luis NWR complex and other sites in the Restoration area

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Ringtail	*Bassariscus astutus*	FP	Wooded and brushy areas, especially near water courses	Could occur in the Restoration Area; species distribution not well known; unlikely to occur on the valley floor, but could occur in Reach 1
American badger	*Taxidea taxus*	SSC	Scrub habitats	Known; occurs in suitable habitat in the San Joaquin Valley; reported from Reaches 4B2 and 5

1:Status

Federal

FE = Listed as endangered under the federal Endangered Species Act (ESA)
FT = Listed as threatened under ESA

State

SE = Listed as endangered under the California Endangered Species Act (CESA)
ST = Listed as threatened under CESA
FP = Fully Protected
SSC=Species of Special Concern

California Rare Plant Rank (CRPR)

1A = Plants Presumed extinct in California
1B = Plants rare, threatened, or endangered in California and elsewhere
2 = Plants rare, threatened, or endangered in California, but more common elsewhere
3 = Plants for which more information is need to determine status
4= Plants of limited distribution throughout a broader area in California with a relatively low vulnerability or susceptibility to threat.

CRPR Threat Code Extension

1. Species seriously endangered in California
2. Species fairly endangered in California
3. Species not very endangered in California

CDFG

SSC = California species of special concern
None = species without federal, state, CDFG, or CRPR status

2:Likelihood of Occurrence

A rating of **Known** indicates that the species has been observed in, or adjacent to the project site.
A rating of **High** indicates that the species has not been observed, but sufficient information is available to indicate suitable habitat and conditions are present within the project site and that the species is expected to occur on the project site.
A rating of **Moderate** indicates that it is not known if the species is present, but suitable habitat exists on the project site.
A rating of **Low** indicates that the species was not observed during biological surveys conducted to date on the project site and may not be expected given the species' known regional distribution or quality of habitat(s) located within the project site.
A rating of **None** indicates that the species would not be expected to occur within the project site because the site does not include the known range or does not support suitable habitat.

Table J-2. Special-Status Plant Species Known to Occur in the Vicinity of Broodstock Collection Sites							
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**Rare Plant Rank**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Pseudobahia bahiifolia	Hartweg's golden sunburst	FE	SE	1B.1	Valley and foothill grassland, cismontane woodland.	Clay soils, predominantly on the northern slopes of knolls, but also along shady creeks or near vernal pools. 15-150m.	Yuba River; Feather River
Orcuttia tenuis	slender Orcutt grass	FT	SE	1B.1	Vernal pools.	30-1735m.	Battle Creek
Eryngium racemosum	Delta button-celery	None	SE	1B.1	Riparian scrub.	Seasonally inundated floodplain on clay. 3-75m.	Stanislaus River
Fritillaria pluriflora	adobe-lily	None	None	1B.2	Chaparral, cismontane woodland, foothill grassland.	Usually on clay soils; sometimes serpentine. 55-820m.	Butte Creek; Deer Creek
Rupertia hallii	Hall's rupertia	None	None	1B.2	Cismontane woodland, lower montane coniferous forest.	On disturbed soils of roadsides and logged forests. 1000-1400m.	Deer Creek
Castilleja rubicundula ssp. rubicundula	pink creamsacs	None	None	1B.2	Chaparral, meadows and seeps, valley and foothill grassland.	Openings in chaparral or grasslands. On serpentine. 20-900m.	Feather River
Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	None	None	1B.2	Chaparral, cismontane woodland.	Often in roadcuts. 295-885m.	Yuba River

Table J-2. Special-Status Plant Species Known to Occur in the Vicinity of Broodstock Collection Sites							
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**Rare Plant Rank**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Clarkia gracilis ssp. albicaulis	white-stemmed clarkia	None	None	1B.2	Chaparral, cismontane woodland.	Dry, grassy openings in chaparral or foothill woodland. Sometimes on serpentine. 300-850m.	Butte Creek
Cryptantha crinita	silky cryptantha	None	None	1B.2	Cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, riparian woodland.	In gravelly stream beds. 85-220m.	Battle Creek
Eryngium spinosepalum	spiny-sepaled button-celery	None	None	1B.2	Vernal pools, valley and foothill grassland.	Some sites on clay soil of granitic origin; vernal pools, within grassland. 100-420m.	Stanislaus River
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	None	None	1B.2	Cismontane woodland.	Serpentinite. On slopes, in openings. 400-2000 m.	Butte Creek
Sidalcea robusta	Butte County checkerbloom	None	None	1B.2	Chaparral, cismontane woodland.	Small draws and rocky crevices. 85-335m.	Butte Creek
Clarkia rostrata	beaked clarkia	None	None	1B.3	Cismontane woodland, valley and foothill grassland.	North-facing slopes; sometimes on sandstone. 60-460m.	Stanislaus River

Table J-2. Special-Status Plant Species Known to Occur in the Vicinity of Broodstock Collection Sites							
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**Rare Plant Rank**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Imperata brevifolia	California satintail	None	None	2.1	Coastal scrub, chaparral, riparian scrub, mojavean scrub, meadows and seeps (alkali).	Mesic sites, alkali seeps, riparian areas. 0-500m.	Butte Creek
Anomobryum julaceum	slender silver moss	None	None	2.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest.	Moss which grows on damp rocks and soil; acidic substrates. Usually seen on roadcuts. 100-1000m.	Clear Creek
Didymodon norrisii	Norris' beard moss	None	None	2.2	Cismontane woodland, lower montane coniferous forest.	Moss from seasonally wet sheet drainages on exposed rock slabs or terraces that completely dry in summer. Less frequentl	Clear Creek
Downingia pusilla	dwarf downingia	None	None	2.2	Valley and foothill grassland (mesic sites), vernal pools.	Vernal lake and pool margins with a variety of associates. In several types of vernal pools. 1-485m.	Yuba River
Potamogeton epihydrus	Nuttall's ribbon-leaved pondweed	None	None	2.2	Marshes and swamps.	Shallow water, ponds, lakes, streams, irrigation ditches. 400-2110m.	Clear Creek

Table J-2. Special-Status Plant Species Known to Occur in the Vicinity of Broodstock Collection Sites							
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**Rare Plant Rank**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Scutellaria lateriflora	side-flowering skullcap	None	None	2.2	Meadows and seeps, marshes and swamps.	Wet meadows and marshes. In the delta, often found on logs. -3-500m.	Mokelumne River
Stuckenia filiformis	slender-leaved pondweed	None	None	2.2	Marshes and swamps.	Shallow, clear water of lakes and drainage channels. 15-2310m.	Butte Creek
Agrostis hendersonii	Henderson's bent grass	None	None	3.2	Valley and foothill grassland, vernal pools.	Little information exists; moist places in grassland or vernal pool habitat. 70-305m.	Stanislaus River
Fritillaria eastwoodiae	Butte County fritillary	None	None	3.2	Chaparral, cismontane woodland, lower montane coniferous forest.	Usually on dry slopes but also found in wet places; soils can be serpentine, red clay, or sandy loam. 40-1500M.	Butte Creek
Calystegia atriplicifolia ssp. buttensis	Butte County morning-glory	None	None	4.2	Lower montane coniferous forest.	Dry, mostly open slopes. 600-1200m.	Butte Creek; Deer Creek
Limnanthes floccosa ssp. floccosa	woolly meadowfoam	None	None	4.2	Chapparal, cismontane woodland, valley and foothill grassland, vernal pools.	Vernally wet areas, ditches, and ponds. 60-1275m.	Mill Creek

Table J-2. Special-Status Plant Species Known to Occur in the Vicinity of Broodstock Collection Sites							
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**Rare Plant Rank**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Sanicula tracyi	Tracy's sanicle	None	None	4.2	Cismontane woodland, lower montane coniferous forest, upper montane coniferous forest.	Dry gravelly slopes or flats, usually in or at the margin of oak woodland with scattered trees. 695-1670m.	Deer Creek
Astragalus tener var. ferrisiae	Ferris' milk-vetch	None	None	1B.1	Meadows, valley, and foothuill grassland.	Subalkaline flatson overflow land in the Central Valley; usually seen in dry, adobe soil. 5-75m.	Butte Creek
Chamaesyce hooveri	Hoover's spurge	Threatened	None	1B.2	Vernal pools, valley, and foothill grassland.	Vernal pools on volcanic mudflow or clay substrate. 25-130m.	Deer Creek
Delphinium recurvatum	recurved larkspur	None	None	1B.2	Chenopod scrub, valley and foothill grassland, cismontane woodland.	On alkaline soils; often in valley saltbush or valley chenopod scrub. 3-685m.	Feather River
Mondarella venosa	veiny monardella	None	None	1B.1	Valley and footholl grassland, cismontane woodland.	In heavy clay; mostly with grassland associates. Rediscovered in 1992. 60-410m.	Feather River

Table J-2. Special-Status Plant Species Known to Occur in the Vicinity of Broodstock Collection Sites							
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**Rare Plant Rank**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	None	None	1B.2	Marshes and swamps (freshwater).	Moist, freshwater-soaked river banks and low peat islands in sloughs; in Calif., known from the delta watershed. 0-150m.	Butte Creek

*** List of Abbreviations for Federal and State Species-Status:**
FE = Federal endangered
FT = Federal threatened
SE = State endangered
ST = State threatened
SR = State rare
1B = plants are considered rare, threatened, or endangered in California and elsewhere.
2 = plants are rare, threatened, or endangered in California, but more common elsewhere.
3 = plants about which more information is needed for review
4 = plants of limited distribution; a watch list
Threat Ranks:
0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2-Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
INVERTEBRATES						
Anthicus antiochensis	Antioch Dunes anthicid beetle	None	None	Extirpated from Antioch dunes but present in several localities along the Sacramento and Feather Rivers.	Not specfified	Mill Creek; Feather River
Monadenia mormonum buttoni	Button's Sierra sideband	None	None	Known from the central Sierra Nevada counties.	Not specfified	Stanislaus River
Anodonta californiensis	California floater	None	None	Freshwater lakes and slow-moving streams and rivers. Taxonomy under review by specialists.	Generally in shallow water.	Stanislaus River
Lanx patelloides	kneecap lanx	None	None	Endemic to upper sacramento river system. Breath entirely through mantle, & are very sensitive to polluted water.	Prefers fast, cold, well-oxygenated water and cobble-boulder substrate.	Battle Creek
Lytta moesta	moestan blister beetle	None	None	Central California.	Not specfified	Stanislaus River
Fluminicola seminalis	nugget pebblesnail	None	None	Originally from near mouth of the Sacramento River upstream into the Pit River. Now extirpated from the Sacramento River	Not specfified	Battle Creek
Hydrochara rickseckeri	Ricksecker's water scavenger beetle	None	None	Aquatic.	Not specfified	Mokelumne River

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Calicina breva	Stanislaus harvestman	None	None	Known only from the type locality, 1.6 km south of Knight's Ferry, Stanislaus County.	Found under basalt rocks in grassland.	Stanislaus River
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	None	Occurs only in the Central Valley of California, in association with blue elderberry (*sambucus mexicana*).	Prefers to lay eggs in elderberrries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	Battle Creek; Butte Creek; Feather River; Mill Creek; Mokelumne River; Stanislaus River
Lepidurus packardi	vernal pool tadpole shrimp	FE	None	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed & highly turbid.	Mokelumne River; Stanislaus River
Anthicus sacramento	Sacramento anthicid beetle	None	None	restricted to sand dune areas.	Inhabit sand slipfaces among bamboo and willow but may not depend on presence of these species.	Feather River
Cicindela hirticollis abrupta	Sacramento Valley tiger beetle	None	None	Sandy floodplain habitat in the Sacramento Valley. No beetles located during intensive 2001-2004 surveys.	Requires fine to medium sand, terraced floodplains or low sandy water edge flats.	Feather River

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
FISH						
Oncorhynchus tshawytscha	chinook salmon - Central Valley spring-run ESU	FT	ST	Federal listing refers to pops spawning in Sacramento River & tributaries.	Adult nos. depend on pool depth & volume, amount of cover & proximity to gravel. Water temps >27 C is lethal to adults.	Butte Creek; Clear Creek; Deer Creek; Feather River; Mill Creek; Yuba River
Oncorhynchus tshawytscha	chinook salmon - Sacramento River winter-run ESU	SE	SE	Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams.	Requires clean, cold water over gravel beds with water temperatures between 6 & 14 C for spawning.	Clear Creek; Mill Creek; Battle Creek
Oncorhynchus tshawytscha	chinook salmon - Central Valley fall/ late-fall run ESU	None	SSC	Populations spawning in the Sacramento & San Joaquin Rivers and their tributaries.	Not specified	Battle Creek; Butte Creek; Clear Creek; Deer Creek; Feather River; Mill Creek; Mokelumne River; Stanislaus River
Mylopharodon conocephalus	hardhead	None	SSC	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Also present in the Russian River.	Clear, deep pools with sand-gravel-boulder bottoms & slow water velocity. Not found where exotic centrarchids predominat	Stanislaus River

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Pogonichthys macrolepidotus	Sacramento splittail	None	SSC	Endemic to the lakes and rivers of the central valley, but now confined to the delta, Suisun Bay & associated marshes.	Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning & foraging for young.	Mokelumne River
AMPHIBIANS AND REPTILES						
Ambystoma californiense	California tiger salamander	FT	ST	Central Valley DPS federally listed as threatened.	Need underground refuges, especially ground squirrel burrows & vernal pools or other seasonal water sources for breeding	Mokelumne River; Stanislaus River
Rana boylii	foothill yellow-legged frog	None	SSC	Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats.	Need at least some cobble-sized substrate for egg-laying. need at least 15 weeks to attain metamorphosis.	Clear Creek; Deer Creek; Mill Creek
Thamnophis gigas	giant garter snake	FT	ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals & irrigation ditches.	This is the most aquatic of the garter snakes in California.	Butte Creek; Feather River
Actinemys [=Emys] marmorata	western pond turtle	None	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation, be	Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-layin	Battle Creek; Clear Creek; Deer Creek; Mill Creek; Mokelumne River; Stanislaus River
Spea hammondii	western spadefoot	None	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands.	Vernal pools are essential for breeding and egg-laying.	Mokelumne River

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
BIRDS						
Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.	Butte Creek
Haliaeetus leucocephalus	bald eagle	Delisted	SE	Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mi of water.	Nests in large, old-growth, or dominant live tree w/open branches, especially ponderosa pine. Roosts communally in winter.	Battle Creek; Feather River
Riparia riparia	bank swallow	None	ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Butte Creek; Battle Creek; Feather River
Laterallus jamaicensis coturniculus	California black rail	None	ST	Inhabits freshwater marshes, wet meadows & shallow margins of saltwater marshes bordering larger bays.	Needs water depths of about 1 inch that does not fluctuate during the year & dense vegetation for nesting habitat.	Butte Creek; Yuba River
Ardea herodias (Rookery)	great blue heron	None	None	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes.	Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Mill Creek
Ardea alba (Rookery)	great egret	None	None	Colonial nester in large trees.	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	Mill Creek

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Falco columbarius	merlin	None	WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches.	Clumps of trees or windbreaks are required for roosting in open country.	Stanislaus River
Pandion haliaetus	osprey	None	WL	Ocean shore, bays, fresh-water lakes, and larger streams.	Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	Battle Creek
Falco mexicanus	prairie falcon	None	WL	Inhabits dry, open terrain, either level or hilly.	Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Mill Creek; Deer Creek
Agelaius tricolor	tricolored blackbird	None	SSC	Highly colonial species, most numberous in Central Valley & vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.	Butte Creek; Yuba River
Buteo swainsoni	Swainson's hawk	None	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands	Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Deer Creek; Butte Creek; Feather River; Mokelumne River; Stanislaus River

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FC	SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, w/ lower story of blackberry, nettles, or wild grape.	Deer Creek; Butte Creek; Feather River; Stanislaus River; Yuba River
Empidonax traillii	willow flycatcher	None	SE	Inhabits extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters; 2000-8000 ft elevation	Requires dense willow thickets for nesting/roosting. Low, exposed branches are used for singing posts/hunting perches.	Mill Creek
Dendroica petechia brewsteri	yellow warbler	None	SSC	Riparian plant associations. prefers willows, cottonwoods, aspens, sycamores, & alders for nesting & foraging.	Also nests in montane shrubbery in open conifer forests.	Mokelumne River
Icteria virens	yellow-breasted chat	None	SSC	Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses.	Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	Mill Creek; Mokelumne River
Branta hutchinsii leucopareia	cackling (Aleutian Canada) goose	Delisted	None	Winters on lakes and inland prairies.	Forages on natural pasture or that cultivated to grain; loafs on lakes, reservoirs, ponds.	Butte Creek
Circus cyaneus	northern harrier	None	None	Coastal salt & freshwater marsh. Nest & forage in grasslands, from salt grass in desert sink to mountain cienegas.	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	Butte Creek

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
MAMMALS						
Ochotona princeps schisticeps	gray-headed pika	None	None	Mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation. At lower elev	Talus slopes, occasionally on mine tailings. Prefers talus-meadow interface.	Mill Creek
Lasiurus cinereus	hoary bat	None	None	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding.	Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Mill Creek; Stanislaus River
Myotis evotis	long-eared myotis	None	None	Found in all brush, woodland & forest habitats from sea level to about 9000 ft. Prefers coniferous woodlands & forests.	Nursery colonies in buildings, crevices, spaces under bark, & snags. Caves used primarily as night roosts.	Clear Creek; Mill Creek
Antrozous pallidus	pallid bat	None	SSC	Deserts, grasslands, shrublands, woodlands & forests. most common in open, dry habitats with rocky areas for roosting.	Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Mill Creek; Stanislaus River
Neotoma fuscipes riparia	riparian (=San Joaquin Valley) woodrat	FE	None	Riparian areas along the San Joaquin, Stanislaus & Tuolumne Rivers.	Need areas with mix of brush & trees. Need suitable nesting sites in trees, snags or logs.	Stanislaus River
Sylvilagus bachmani riparius	riparian brush rabbit	FE	FE	Riparian areas on the San Joaquin River in northern Stanislaus County.	Dense thickets of wild rose, willows, and blackberries.	Stanislaus River

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Vulpes vulpes necator	Sierra Nevada red fox	None	ST	Found from the Cascades down to the Sierra Nevada. Found in a variety of habitats from wet meadows to forested areas.	Use dense vegetation & rocky areas for cover & den sites. Prefer forests interspersed w/ meadows or alpine fell-fields.	Mill Creek
Lasionycteris noctivagans	silver-haired bat	None	None	Primarily a coastal & montane forest dweller feeding over streams, ponds & open brushy areas.	Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes & rarely under rocks. Needs drinking water.	Clear Creek; Feather River; Stanislaus River
Corynorhinus townsendii	Townsend's big-eared bat	None	SSC	Throughout California in a wide variety of habitats. Most common in mesic sites.	Roosts in the open, hanging from walls & ceilings. roosting sites limiting. Extremely sensitive to human disturbance.	Mill Creek; Stanislaus River
Eumops perotis californicus	western mastiff bat	None	SSC	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral etc	Roosts in crevices in cliff faces, high buildings, trees & tunnels.	Butte Creek; Feather River; Stanislaus River
Lasiurus blossevillii	western red bat	None	SSC	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests.	Prefers habitat edges & mosaics with trees that are protected from above & open below with open areas for foraging.	Clear Creek; Mill Creek; Stanislaus River
Myotis yumanensis	Yuma myotis	None	None	Optimal habitats are open forests and woodlands with sources of water over which to feed.	Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Butte Creek; Clear Creek; Mill Creek; Stanislaus River

Table J-3. Special-Status Wildlife Species Known to Occur in the Vicinity of Broodstock Collection Sites						
Scientific Name	**Common Name**	**Federal listing status**	**State listing status**	**General Habitat**	**Micro Habitat**	**Documented Occurrences**
Taxidea taxis	American badger	None	None	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable forage.	Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Butte Creek

*** List of Abbreviations for Federal and State Species-Status:**
FE = Federal endangered
FT = Federal threatened
FC = Federal candidate for listing
FP = State fully protected species
SE = State endangered
ST = State threatened
SSC = State species of special concern
WL = Watch List

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Prepared by:

Horizon WATER and ENVIRONMENT

Prepared for:

Broodstock Stream

500-foot Stream Buffer

N

0 1 2

Miles

Figure J-1
CNDDB Animal Occurrences
Clear Creek

SJRR Hatchery
Project Draft Environmental Impact Report

nugget pebblesnail
bald eagle
bald eagle
kneecap lanx
osprey
osprey
osprey
bank swallow
western pond turtle
valley elderberry longhorn beetle
Battle Creek
MILLVILLE PLAINS
Dersch Rd
Ash Creek Rd
Parkville Rd
Jellys Ferry Rd
Manton Rd
Inks Creek Rd
Spring Branch Rd
Lack Creek Rd
Shingletown Ridge Rd
Wildcat Rd
Buffalo Dr
Aoudad Dr
Impala Dr
Mallard Way
Melville Plains Rd
Bend Ferry Rd
Tuscan Springs Rd
Black Butte Rd
Cone Rd
44
36

CNDDB Animal Occurrences

- bald eagle
- bank swallow
- chinook salmon - Sacramento River winter-run ESU
- kneecap lanx
- nugget pebblesnail
- osprey
- valley elderberry longhorn beetle
- western pond turtle

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Prepared by:

Horizon WATER and ENVIRONMENT

Prepared for:

Broodstock Stream

500-foot Stream Buffer

N

0 1 2

Miles

Figure J-2
CNDDB Animal Occurrences
Battle Creek

SJRR Hatchery
Project Draft Environmental Impact Report

CNDDB Animal Occurrences

- Central Valley Drainage Resident Rainbow Trout Stream
- Central Valley Drainage Spring-Run Chinook Stream
- Sierra Nevada red fox
- chinook salmon - Central Valley spring-run ESU
- gray-headed pika
- willow flycatcher

Sierra Nevada red fox

Sierra Nevada red fox

Sierra Nevada red fox

Sierra Nevada red fox

gray-headed pika

Mill Creek

Central Valley Drainage Spring-Run Chinook Stream

willow flycatcher

Central Valley Drainage Resident Rainbow Trout Stream

Sierra Nevada red fox

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Horizon WATER and ENVIRONMENT

Prepared for:

Broodstock Stream

500-foot Stream Buffer

N

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Miles

Figure J-3a
CNDDB Animal Occurrences
Mill Creek and Deer Creek 1 of 4

SJRR Hatchery
Project Draft Environmental Impact Report

Sierra Nevada red fox

Mill Creek

Central Valley Drainage Spring-Run Chinook Stream

chinook salmon - Central Valley spring-run ESU

Central Valley Drainage Resident Rainbow Trout Stream

Deer Creek

Central Valley Drainage Spring-Run Chinook Stream

foothill yellow-legged frog

foothill yellow-legged frog

MILL CREEK PLATEAU

Lassen National Forest

TEHAMA BUTTE

CNDDB Animal Occurrences

- Central Valley Drainage Resident Rainbow Trout Stream
- Central Valley Drainage Spring-Run Chinook Stream
- Sierra Nevada red fox
- chinook salmon - Central Valley spring-run ESU
- foothill yellow-legged frog

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Broodstock Stream

500-foot Stream Buffer

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Miles

Figure J-3b
CNDDB Animal Occurrences
Mill Creek and Deer Creek 2 of 4

SJRR Hatchery
Project Draft Environmental Impact Report

prairie falcon

yellow-breasted chat

Mill Creek

foothill yellow-legged frog

Central Valley Drainage Spring-Run Chinook Stream

Central Valley Drainage Hardhead/Squawfish Stream

chinook salmon - Central Valley spring-run ESU

western pond turtle

Deer Creek

foothill yellow-legged frog

foothill yellow-legged frog

foothill yellow-legged frog

foothill yellow-legged frog

western pond turtle

foothill yellow-legged frog

Central Valley Drainage Hardhead/Squawfish Stream

CNDDB Animal Occurrences

- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Spring-Run Chinook Stream
- chinook salmon - Central Valley spring-run ESU
- foothill yellow-legged frog
- prairie falcon
- western pond turtle
- yellow-breasted chat

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Broodstock Stream

500-foot Stream Buffer

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Miles

Figure J-3c
CNDDB Animal Occurrences
Mill Creek and Deer Creek 3 of 4

SJRR Hatchery
Project Draft Environmental Impact Report

prairie falcon
Antioch Dunes anthicid beetle
Central Valley Drainage Fall Run Chinook Stream
Yuma myotis
long-eared myotis
Townsend's big-eared bat
western pond turtle
great egret
great blue heron
hoary bat
pallid bat
western red bat
valley elderberry longhorn beetle
Central Valley Drainage Valley Floor River
Mill Creek
western pond turtle
Central Valley Drainage Hardhead/Squawfish Stream
Central Valley Drainage Fall Run Chinook Stream
Central Valley Drainage Valley Floor River
western yellow-billed cuckoo
Swainson's hawk

CNDDB Animal Occurrences

- Antioch Dunes anthicid beetle
- Central Valley Drainage Fall Run Chinook Stream
- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Valley Floor River
- Great Valley Mixed Riparian Forest
- Hoover's spurge
- Swainson's hawk
- Townsend's big-eared bat
- Yuma myotis
- adobe-lily
- chinook salmon - Sacramento River winter-run ESU
- great blue heron
- great egret
- hoary bat
- long-eared myotis
- pallid bat
- prairie falcon
- valley elderberry longhorn beetle
- western pond turtle
- western red bat
- western yellow-billed cuckoo

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Broodstock Stream
500-foot Stream Buffer

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Miles

Figure J-3d
CNDDB Animal Occurrences
Mill Creek and Deer Creek 4 of 4

SJRR Hatchery
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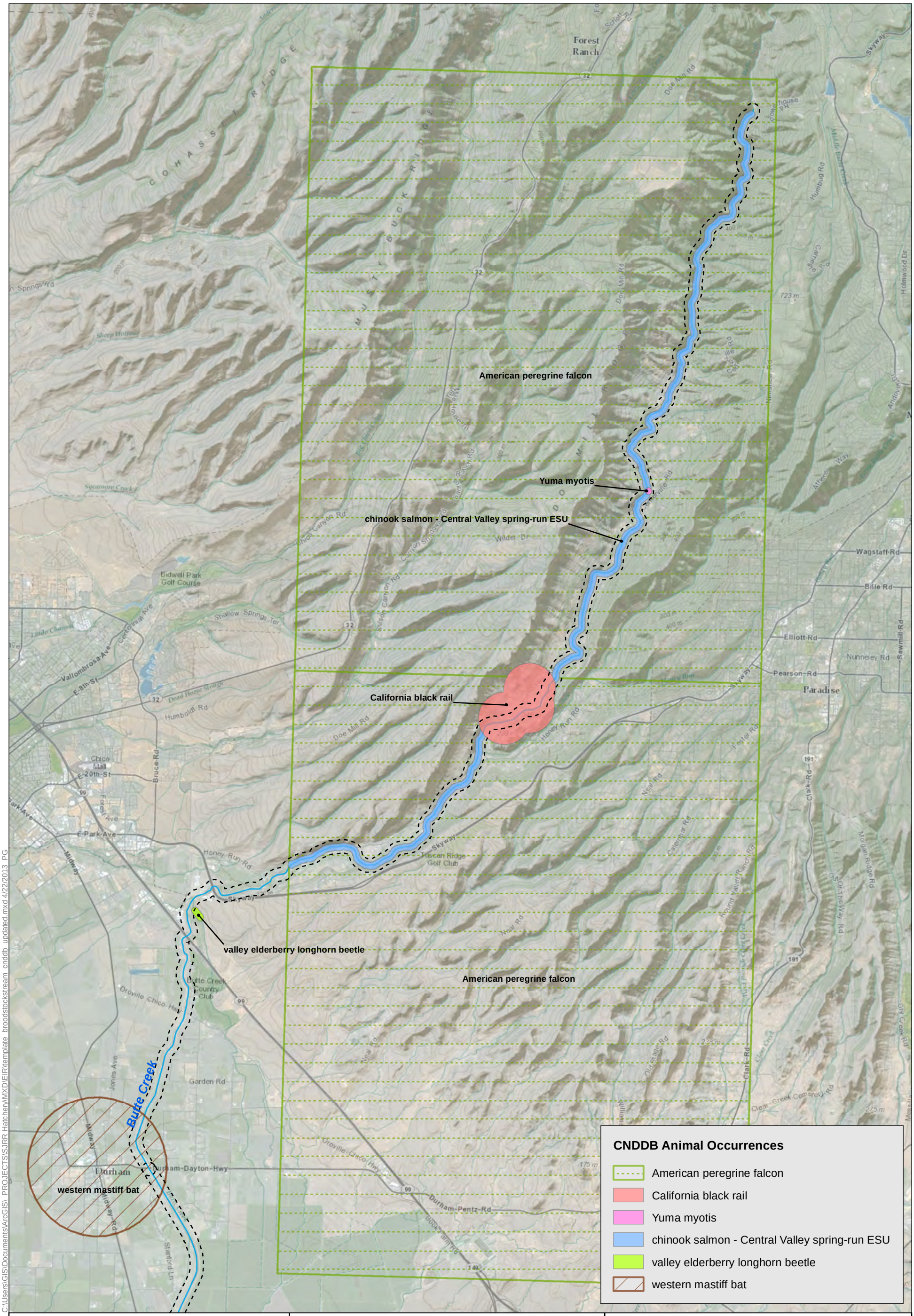

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Figure J-4a
CNDDB Animal Occurrences
Butte Creek 1 of 3

SJRR Hatchery
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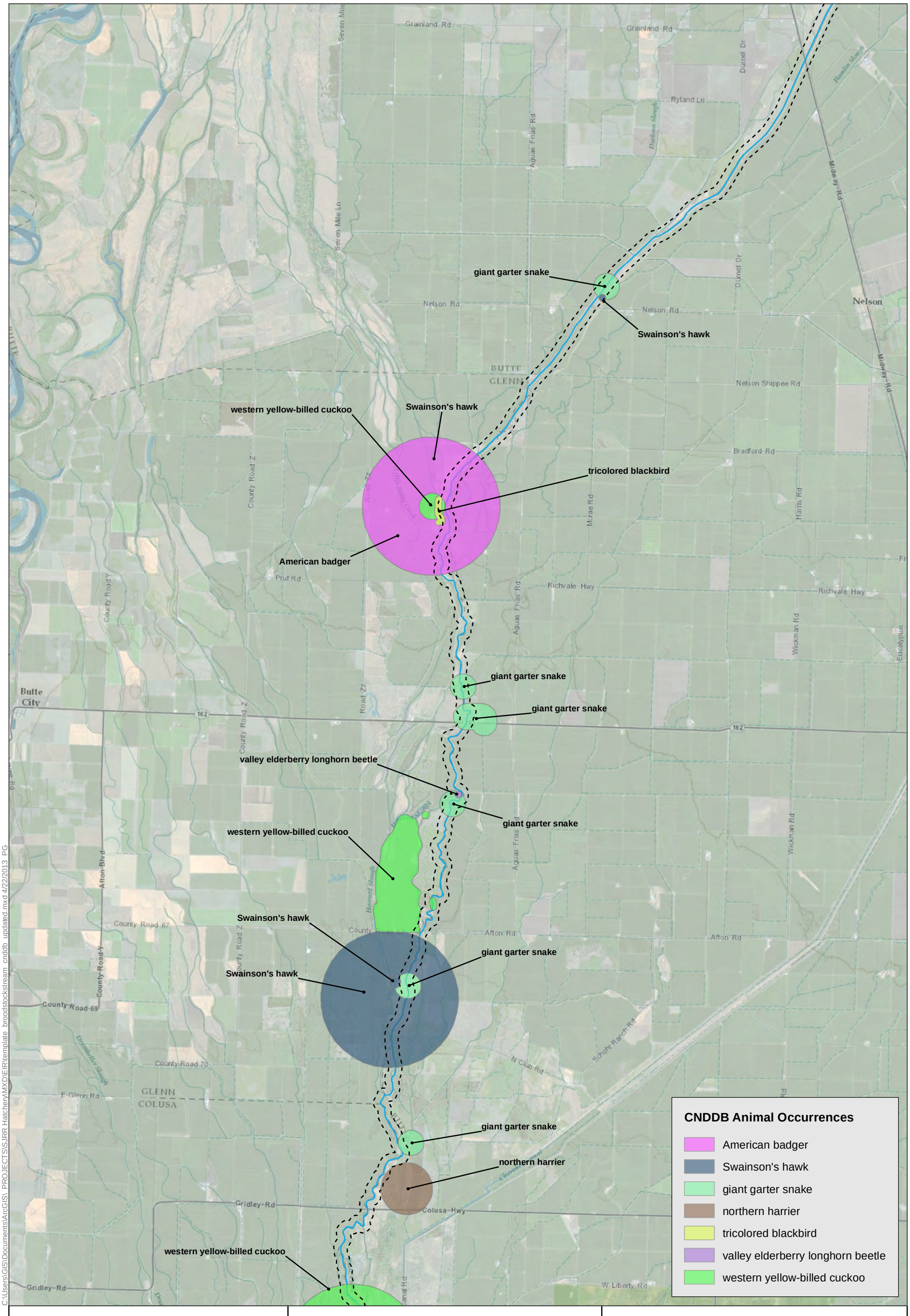
giant garter snake
Swainson's hawk
western yellow-billed cuckoo
Swainson's hawk
tricolored blackbird
American badger
giant garter snake
giant garter snake
valley elderberry longhorn beetle
giant garter snake
western yellow-billed cuckoo
Swainson's hawk
Swainson's hawk
giant garter snake
giant garter snake
northern harrier
western yellow-billed cuckoo
Grainland Rd
Seven Mile Ln
Aguas Frias Rd
Durham Slough
Durnel Dr
Ryland Ln
Hamlin Slough
Midway Rd
Nelson Rd
Nelson
BUTTE
GLENN
Nelson Shippee Rd
Bradford Rd
County Road Z
Road ZZ
Mcrae Rd
Harris Rd
Prut Rd
Richvale Hwy
Wickman Rd
Eucalyptus
Butte City
162
Howard Slough
Afton Blvd
County Road 67
County Road Y
County Road 69
Afton Rd
Schohr Ranch Rd
N Club Rd
County Road 70
E Glenn Rd
GLENN
COLUSA
Gridley Rd
Colusa Hwy
W Liberty Rd
Canal Rd
CNDDB Animal Occurrences
American badger
Swainson's hawk
giant garter snake
northern harrier
tricolored blackbird
valley elderberry longhorn beetle
western yellow-billed cuckoo
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Horizon
WATER and ENVIRONMENT
Prepared for:
California Department of Fish and Wildlife
California Department of General Services
Broodstock Stream
500-foot Stream Buffer
N
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Miles
Figure J-4b
CNDDB Animal Occurrences
Butte Creek 2 of 3
SJRR Hatchery
Project Draft Environmental Impact Report

western yellow-billed cuckoo

cackling (=Aleutian Canada) goose

cackling (=Aleutian Canada) goose

western yellow-billed cuckoo

CNDDB Animal Occurrences

- cackling (=Aleutian Canada) goose
- western yellow-billed cuckoo

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Broodstock Stream

500-foot Stream Buffer

N

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Miles

Figure J-4c
CNDDB Animal Occurrences
Butte Creek 3 of 3

SJRR Hatchery
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western mastiff bat

silver-haired bat

Feather River

chinook salmon - Central Valley spring-run ESU

valley elderberry longhorn beetle

giant garter snake

Swainson's hawk

bank swallow

bank swallow

bank swallow

bank swallow

bald eagle

bank swallow

bank swallow

bank swallow

CNDDB Animal Occurrences

- Swainson's hawk
- bald eagle
- bank swallow
- chinook salmon - Central Valley spring-run ESU
- giant garter snake
- silver-haired bat
- valley elderberry longhorn beetle
- western mastiff bat

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Broodstock Stream

500-foot Stream Buffer

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Miles

Figure J-5a
CNDDB Animal Occurrences
Feather River 1 of 3

SJRR Hatchery
Project Draft Environmental Impact Report

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bank swallow
bank swallow
valley elderberry longhorn beetle
bank swallow
Swainson's hawk
bank swallow
bank swallow
bank swallow
tricolored blackbird
Swainson's hawk
western yellow-billed cuckoo
bank swallow
western yellow-billed cuckoo
bank swallow
Swainson's hawk
valley elderberry longhorn beetle
bank swallow

Live Oak
Pennington-Rd
Schroeder Rd
Township-Rd
Simard Ave
Sheldon Ave
Ramirez-Rd
Paseo Ave
Clark-Rd
Madden Ave
Broadway
Encinal-Rd
Woodruff-Ln
Tanabe Rd
Mathews-Ln
Loma-Rica-Rd
Sanders Rd
Larkin-Rd
Live-Oak-Blvd
Ellis Rd
W Hallwood Blvd
Eager-Rd
Nuestro-Rd
Tierra-Buena-Rd
Walnut Ave
Butte-House-Rd
Queens-Ave
Yuba River
Colusa Hwy
Marysville
Simpson Ln
Hammonton-Smartsville-Rd
Franklin Rd
Franklin-Ave
Yuba Community College
Lincoln Rd
Lincoln-Rd
Erie Rd
Olivehurst
Bogue Rd
Bogue-Rd
Reed Rd
Oswald-Rd
Oswald-Ave
Mcgowan Pky
Pierce Rd
Broadway Rd
Hutchinson Rd
Anderson Ave
Obanion Rd
Levee Rd
Feather-River-Blvd
Yuba County Airport

CNDDB Animal Occurrences

- Ferris' milk-vetch
- Great Valley Cottonwood Riparian Forest
- Great Valley Mixed Riparian Forest
- Hartweg's golden sunburst
- Swainson's hawk
- bank swallow
- recurved larkspur
- tricolored blackbird
- valley elderberry longhorn beetle
- veiny monardella
- western yellow-billed cuckoo

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Broodstock Stream
500-foot Stream Buffer

N
0 1 2
Miles

Figure J-5b
CNDDB Animal Occurrences
Feather River 2 of 3

SJRR Hatchery
Project Draft Environmental Impact Report

valley elderberry longhorn beetle
bank swallow
bank swallow
Swainson's hawk
bank swallow
bank swallow
bank swallow
Sacramento Valley tiger beetle
Sacramento Valley tiger beetle
bank swallow
Sacramento anthicid beetle
western yellow-billed cuckoo
Swainson's hawk
bank swallow

Tudor Rd
Thompson Rd
Everglade Rd
Pelger Rd
Marcuse Rd
Cypress Ave
Oak Ave
Laurel Ave
Subacco Rd
Sacramento Ave
Kirkville Rd
Nicolaus Ave
Varney Rd
Seymour Rd
Maddock Rd
Worth Rd
Striplin Rd
Mackert Rd
Ensley Rd
Sankey Rd
County Road 16
W Riego Rd
Riego Rd
Catlett Rd
W Catlett Rd
Howsley Rd
Marcum Rd
Rio Oso
Rio Oso Rd
Kempton Rd
Cornelius Ave
Pleasant Grove
Howsley Rd
Fifield Rd
Leach Rd
Levee Rd
Swanson Rd
Pleasant Grove Rd
Nicolaus
River Oaks Golf Club
SUTTER BASIN
AMERICAN BASIN
TBR BASIN
YUBA
SUTTER
YOLO
Garden Hwy
Sacramento Valley Blvd
Reclamation Rd
Armour Rd
Lee Rd
Garwood Rd
Powerline Rd
Bellevue Ave
Sawtelle Ave
Schlagle Rd
Murray Rd
Gateway Pkwy
River Oaks Blvd
4th Ave
El Centro Blvd
Berry Rd
Pacific Ave
Highway 99
East Canal
Cross Canal
Feather River
Natomas Main Drain Canal
Pleasant Grove Creek Canal
Giffard Rd
Becker Rd
Karnak Rd
Vernon Rd
Lee Rd
Powerline Rd
Garden Hwy
Pacific Ave
Pleasant Grove Rd
Howsley Rd
Marcum Rd
Catlett Rd
Riego Rd
Sankey Rd
Fifield Rd
Ensley Rd
Mackert Rd
Maddock Rd
Striplin Rd
Worth Rd
Seymour Rd
Varney Rd
Kirkville Rd
Nicolaus Ave
Sacramento Ave
Cornelius Ave
Kempton Rd
Rio Oso Rd
Rio Oso
Marcum Rd
Howsley Rd
Pleasant Grove
Catlett Rd
W Catlett Rd
W Riego Rd
Riego Rd
Sankey Rd
County Road 16
Ensley Rd
Fifield Rd
Leach Rd
Levee Rd
Swanson Rd
Pleasant Grove Rd
Nicolaus
River Oaks Golf Club
SUTTER BASIN
AMERICAN BASIN
TBR BASIN
YUBA
SUTTER
YOLO
Garden Hwy
Sacramento Valley Blvd
Reclamation Rd
Armour Rd
Lee Rd
Garwood Rd
Powerline Rd
Bellevue Ave
Sawtelle Ave
Schlagle Rd
Murray Rd
Gateway Pkwy
River Oaks Blvd
4th Ave
El Centro Blvd
Berry Rd
Pacific Ave
Highway 99
East Canal
Cross Canal
Feather River
Natomas Main Drain Canal
Pleasant Grove Creek Canal
Giffard Rd
Becker Rd
Karnak Rd
Vernon Rd
10 mi

CNDDB Animal Occurrences

- Antioch Dunes anthicid beetle
- Sacramento Valley tiger beetle
- Sacramento anthicid beetle
- Swainson's hawk
- bank swallow
- valley elderberry longhorn beetle
- western yellow-billed cuckoo

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Broodstock Stream
500-foot Stream Buffer

N
0 1 2
Miles

Figure J-5c
CNDDB Animal Occurrences
Feather River 3 of 3

SJRR Hatchery
Project Draft Environmental Impact Report

chinook salmon - Central Valley spring-run ESU

California black rail

Yuba River

Rackerby
Willow Glen Rd
Marysville Rd
Oregon House
Dobbins
Lake Wildwood
Indiana Hill Rd
Fountain House Rd
OREGON HILLS
Los Verjeles Rd
Collins Lake
Pleasant Valley Rd
Rough And Ready
Smartsville
Hammonton-Smartsville Rd
Penn Valley
Indian Springs Rd
Piper Ln
John Bull Rd
Wildflower Dr
Big Oak Dr
Black Rd
Daugherty Rd
Penn Valley Dr
Lake Vera Rd
Lone Valley Rd
Gold Tank Rd
Rices Crossing Rd
Dairy Rd
Township Rd
Dean Hanging Rd
Ellis Creek Rd
Click Yeager Rd
Wild Turkey Ln
Boulder Way
Boulder Creek
NEVADA
YUBA

CNDDB Animal Occurrences

- California black rail
- chinook salmon - Central Valley spring-run ESU

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Horizon WATER and ENVIRONMENT

Prepared for:

- Broodstock Stream
- 500-foot Stream Buffer

N

0 1 2
Miles

Figure J-6a
CNDDB Animal Occurrences
Yuba River 1 of 2

SJRR Hatchery
Project Draft Environmental Impact Report

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Broodstock Stream

500-foot Stream Buffer

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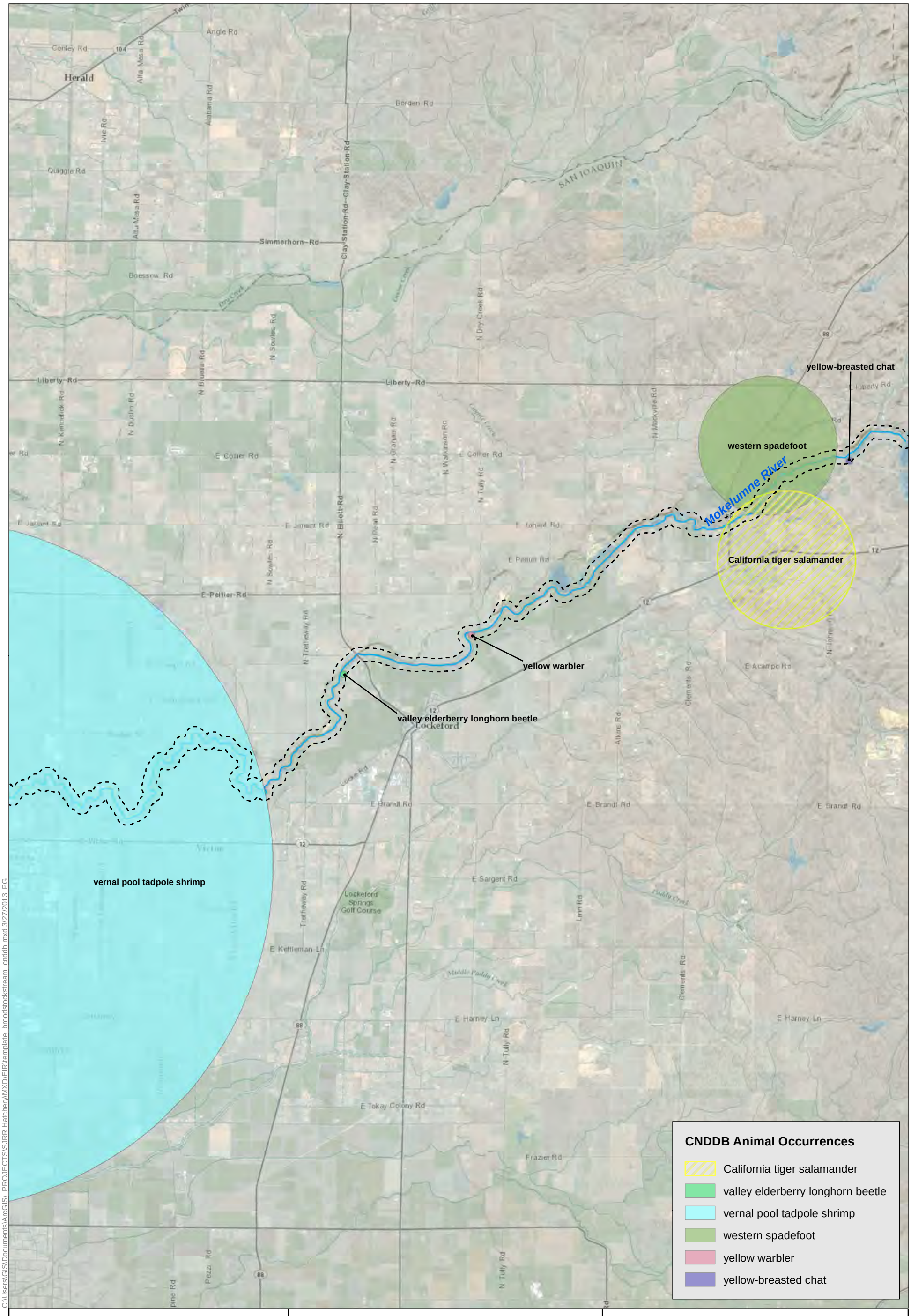
Miles

Figure J-6b
CNDDB Animal Occurrences
Yuba River 2 of 2

SJRR Hatchery
Project Draft Environmental Impact Report



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Prepared for:

Broodstock Stream

500-foot Stream Buffer

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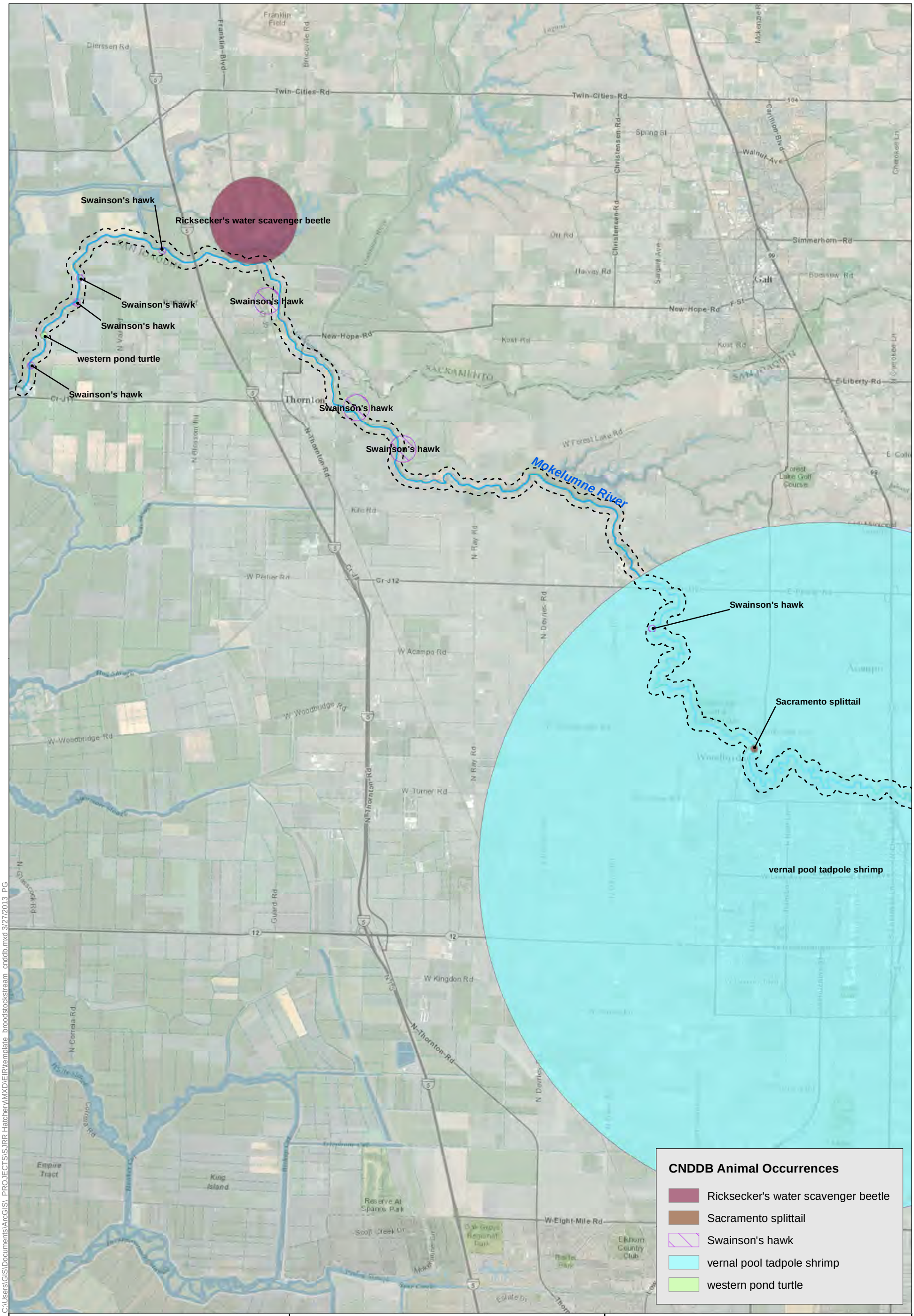
Miles

Figure J-7a
CNDDB Animal Occurrences
Mokelumne River 1 of 2

SJRR Hatchery
Project Draft Environmental Impact Report



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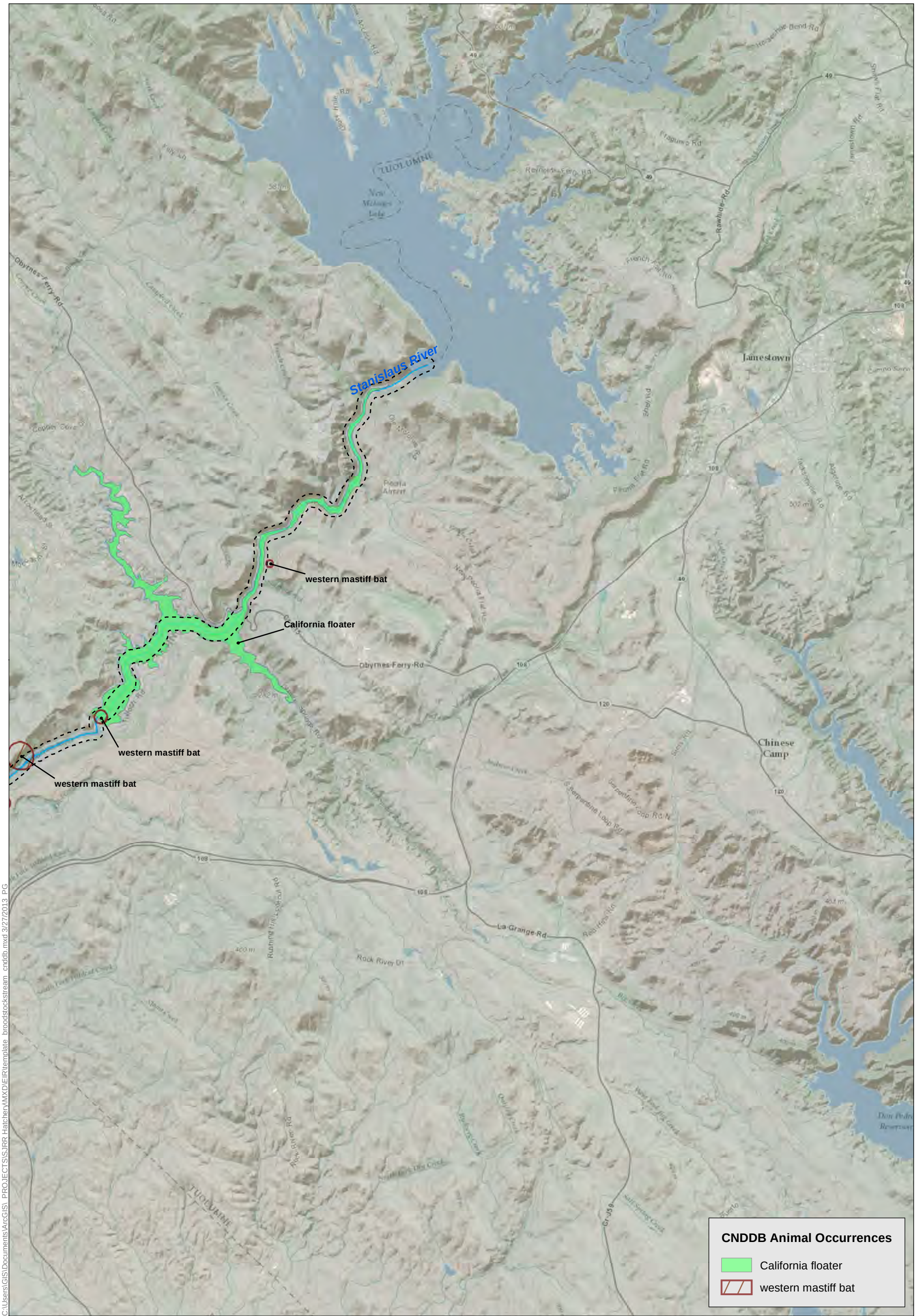
Prepared for:

Figure J-7b
CNDDB Animal Occurrences
Mokelumne River 2 of 2

SJRR Hatchery
Project Draft Environmental Impact Report



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Horizon WATER and ENVIRONMENT

Prepared for:

Broodstock Stream

500-foot Stream Buffer

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Miles

Figure J-8a
CNDDB Animal Occurrences
Stanislaus River 1 of 4

SJRR Hatchery
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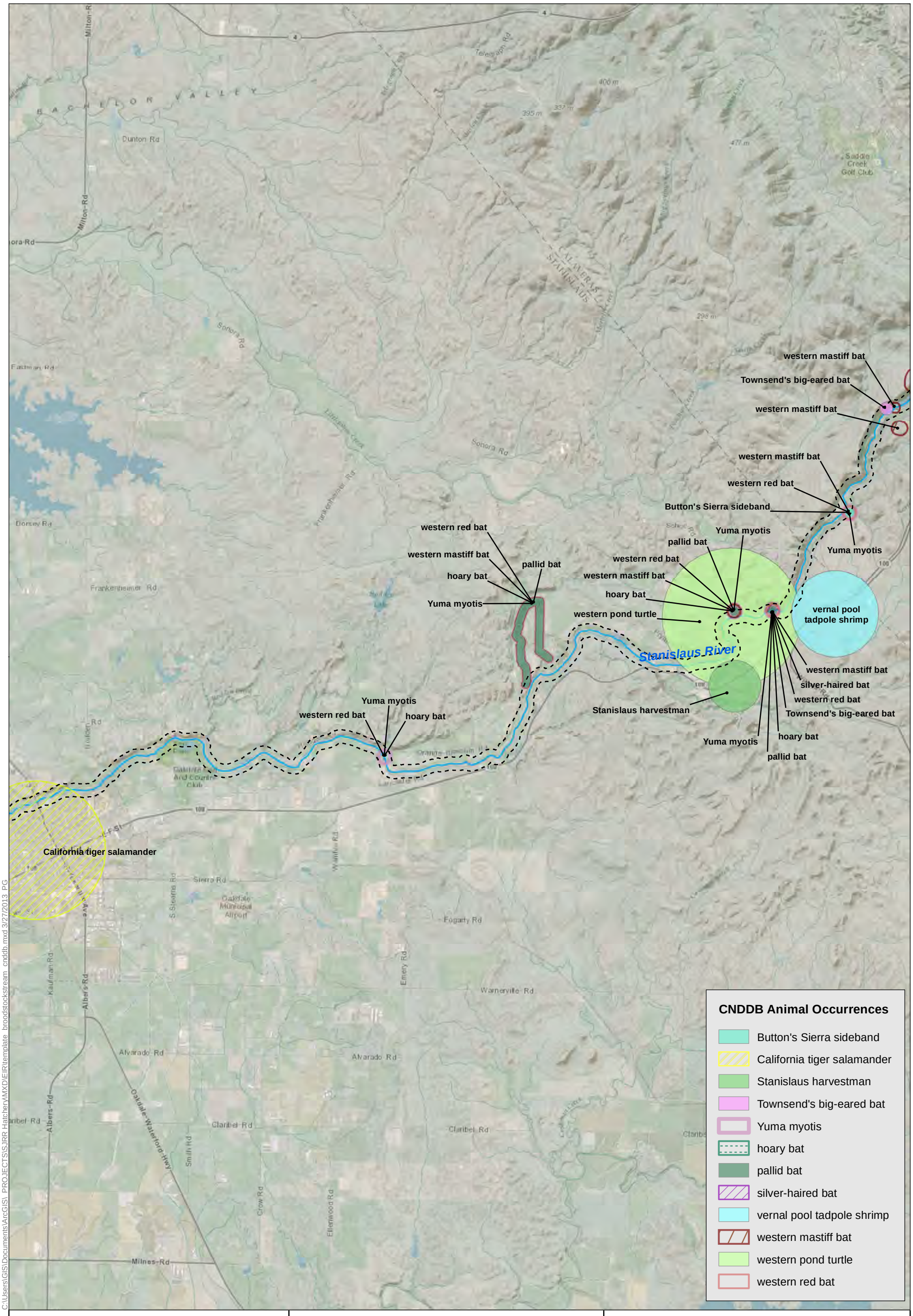

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Prepared for:

Broodstock Stream

500-foot Stream Buffer

N

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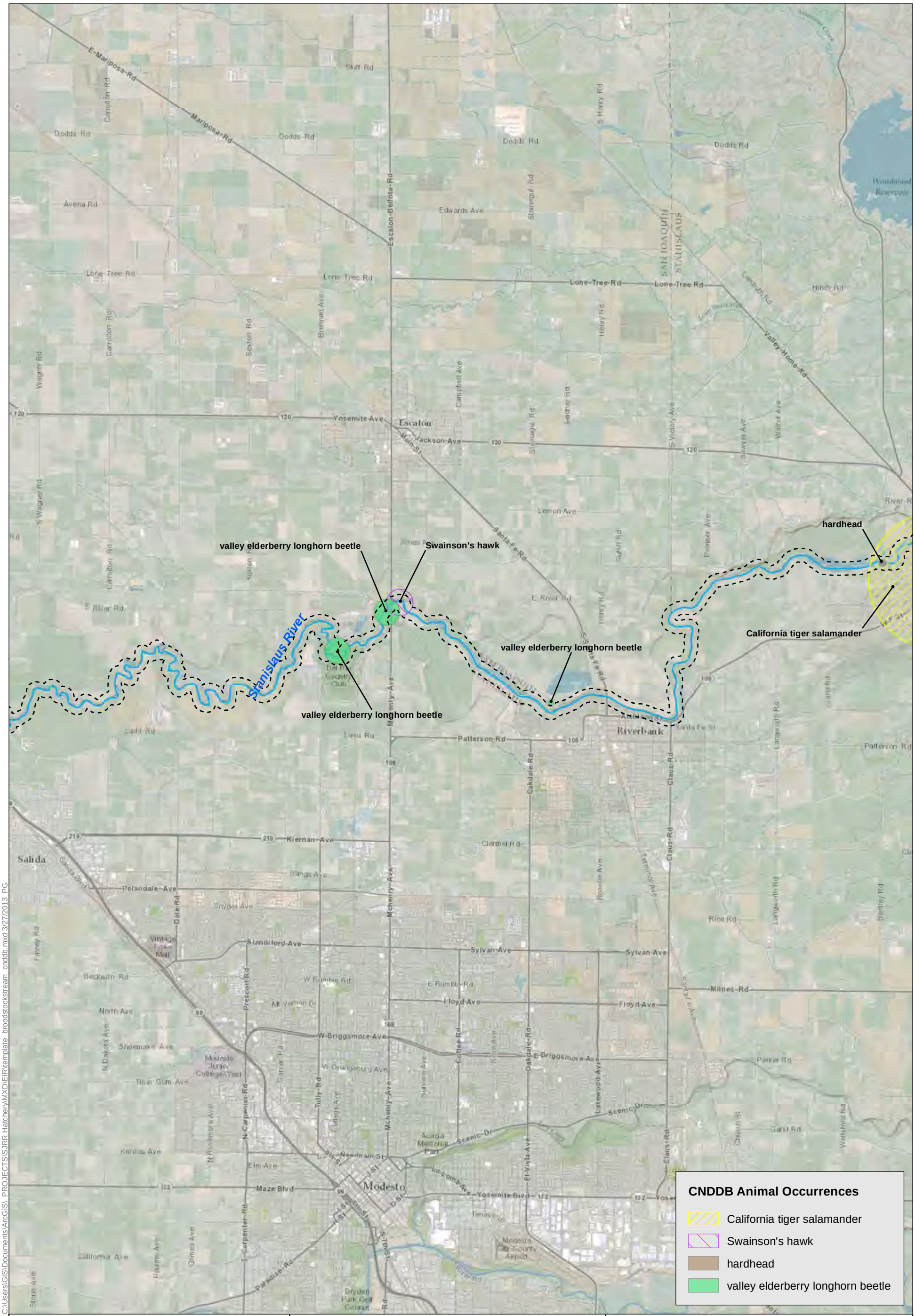
Miles

Figure J-8b
CNDDB Animal Occurrences
Stanislaus River 2 of 4

SJRR Hatchery
Project Draft Environmental Impact Report



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Prepared for:

Figure J-8c
CNDDB Animal Occurrences
Stanislaus River 3 of 4

SJRR Hatchery
Project Draft Environmental Impact Report

California tiger salamander

moestan blister beetle

Swainson's hawk

Swainson's hawk

Swainson's hawk

hardhead

Swainson's hawk

riparian (=San Joaquin Valley) woodrat

riparian brush rabbit

valley elderberry longhorn beetle

Swainson's hawk

riparian (=San Joaquin Valley) woodrat

Stanislaus River

Swainson's hawk

merlin

western yellow-billed cuckoo

CNDDB Animal Occurrences

- California tiger salamander
- Swainson's hawk
- hardhead
- merlin
- moestan blister beetle
- riparian (=San Joaquin Valley) woodrat
- riparian brush rabbit
- valley elderberry longhorn beetle
- western yellow-billed cuckoo

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Broodstock Stream

500-foot Stream Buffer

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Miles

Figure J-8d
CNDDB Animal Occurrences
Stanislaus River 4 of 4

SJRR Hatchery
Project Draft Environmental Impact Report

California Tiger Salamander First Year Field Survey Results

California Tiger Salamander First Year Field Survey Results

Salmon Conservation and Research Facility and San Joaquin Hatchery Public Access and Trail Project

Friant, Fresno County

California

Prepared by Matt Bigelow and Patrick Ferguson

California Department of Fish and Wildlife

July 2013

Introduction

The California Department of Fish and Wildlife (CDFW) is proposing two projects within the San Joaquin State Hatchery (Trout Hatchery) property located in Friant, California. These projects overlap, such that the studies were conducted in a manner to include 2012-2013 California tiger salamander (CTS) (*Ambystoma californiense*) survey activities within both biological study areas, collectively known as the 'Study Area' (Fig. 1).

One project is a part of the San Joaquin River Restoration Program (SJRRP), which is proposing to construct a new Salmon Conservation and Research Facility (SCARF). The SCARF will be used to rear and breed spring-run Chinook Salmon as part of the SJRRP reintroduction goal. The SCARF will include construction of a hatchery building, fish tanks, up to two staff residences, water supply pipelines, and the paving of a new access road (Fig. 1; Project Construction Area).

The other project proposed by CDFW is in cooperation with the San Joaquin River Conservancy, in which it is proposed to build a trail to connect the existing San Joaquin Trout Hatchery to Lost Lake Park Recreation Area. The San Joaquin Hatchery Public Access and Trail Project (Trail Project) would include a parking lot, a trail approximately 1 mile in length and 10-12 feet in width to meet Americans with Disabilities Act requirements, and an outdoor classroom that would accommodate 200 students. In addition the Small Fry Trail and Stormy Creek Project, an exploratory/discovery trail, is proposed that would parallel a section of the main trail behind the existing trout hatchery.

The SCARF and Trail Project will be placed on an unused portion of the Trout Hatchery property which is bounded to the northwest by the San Joaquin River, to the northeast by the existing San Joaquin Hatchery, southwest by Lost Lake Park and to the south by a residential neighborhood. The Trout Hatchery is a developed property containing multiple buildings, fish raceways, and employee family residences. The majority of the property is paved with concrete or asphalt. The San Joaquin River to the north is a large river with flow regulated by Friant Dam. Riparian and non-native vegetation line the banks of the San Joaquin River. To the southwest is Lost Lake Park, a small park containing picnic areas, restrooms, riparian vegetation, ponds and grasslands.

Ponds within the Study Area include six permanent ponds utilized to contain discharged Trout Hatchery effluent for primary treatment (Fig. 1; Ponds A, B, C, D, E, F). The effluent ponds are all hydrologically connected. Effluent treatment includes utilizing worms to treat waste prior to discharging to the San Joaquin River. One pond, Pond D located in between borrow areas 1 and 2 ,does not appear to have a surface water connection to any of the ponds used for effluent treatment (Fig. 1).

The SCARF hatchery, fish tanks, and residence construction will require filling the site (including four warm water ponds directly adjacent to the Interim Facility), grading, and vegetation removal. Fill will be taken from three proposed borrow areas located on adjacent CDFW property to the southwest of the proposed SCARF site. The borrow areas are grasslands with walking trails along their perimeters that can be accessed through Lost Lake Park. Road construction includes widening and paving an existing dirt road, Belcher Road, and filling portions of constructed ponds (Ponds E and F) (Fig.1; Project Construction Area).

The Study Area is located within 2 miles of multiple CTS occurrences as indicated through a search of the California Natural Diversity Database (CNDDB). Known breeding ponds are located across Friant Road, a four lane county road, and additional occurrences are located north of the San Joaquin River in Madera County. Potential upland habitat exists in the Study Area mainly in the borrow areas which are grassland, and contain many small mammal burrows.

This report summarizes the first year (2012-2013) results of the protocol level CTS upland habitat and aquatic surveys conducted by the CDFW within the Study Area.

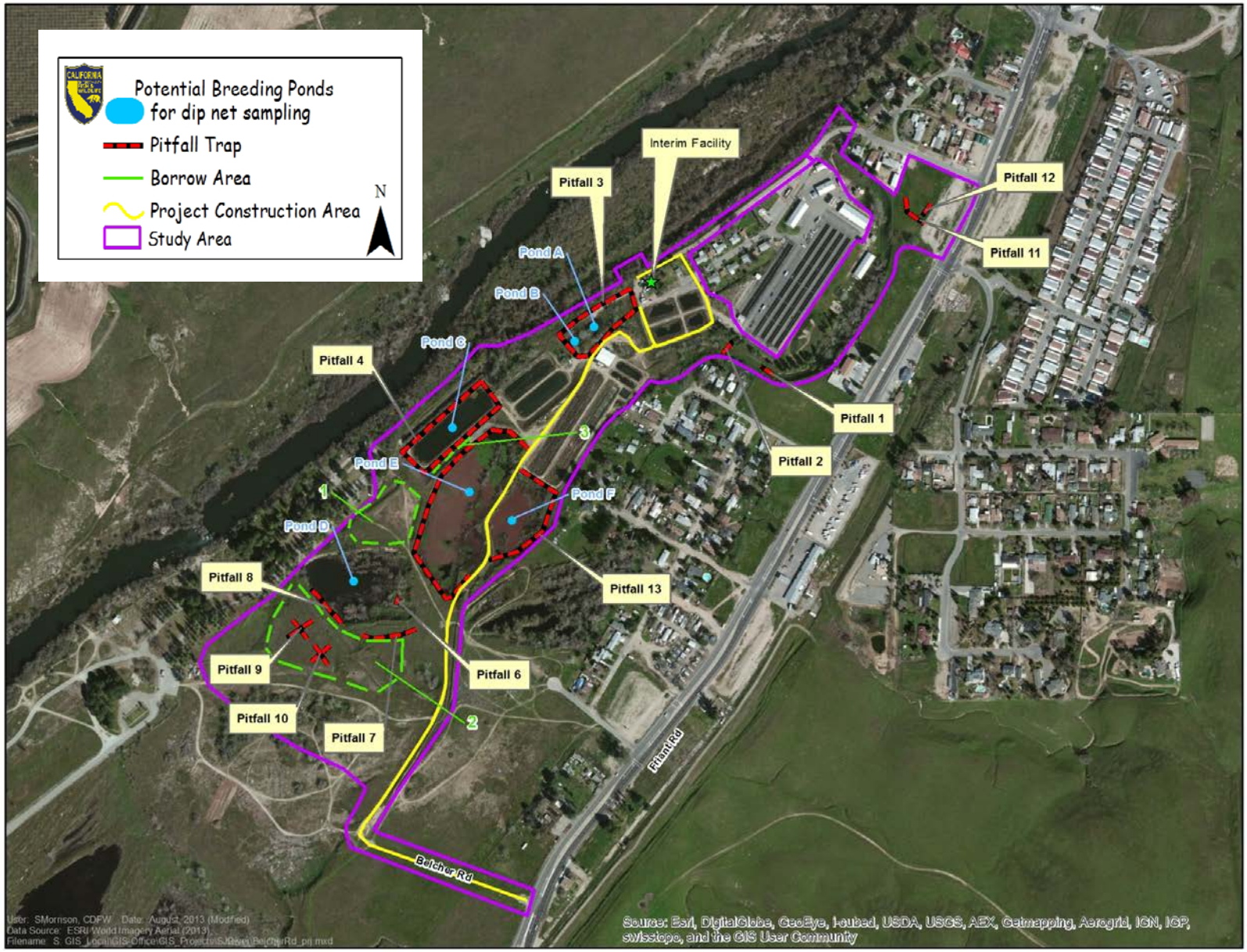


Figure 1. CTS survey activities within both biological study areas, collectively known as the Study Area.

Methods

Based on potential habitat and the close proximity of known CTS breeding ponds, CDFW conducted protocol-level upland habitat and aquatic surveys in accordance with the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003) (Interim Guidance) within the Study Area. A summary of the implemented survey protocols is below.

Upland Surveys

Upland surveys were conducted using drift fences and pitfall buckets (pitfall surveys). Drift fences and pitfall buckets were placed on the north and south ends of the Study Area, in potential upland habitat, and around permanent ponds to maximize the probability of capture. Pitfall survey arrays were installed in accordance with a CTS Survey Plan submitted to the United States Army Corps of Engineers and the United States Fish and Wildlife Service (USFWS), and authorization to conduct CTS surveys (2012-2013) was granted on November 1, 2012. Drift fences were constructed of aluminum flashing or silt fencing, and were greater than 1 foot in height from the ground. Fencing was held in place with stakes, and was trenched in; burying the bottom of the fencing at least 3 inches below ground. All drift fences were at least 30 feet long, as topography allowed, with openings left along the fencing approximately every 66 feet to allow passage of migrating animals. Fencing around permanent ponds was placed outside of the high water mark, and pitfall buckets were placed outside of areas of flooding. If flooding did occur, buckets were closed.

Pitfall buckets were placed along both sides of the drift fence or placed in line with drift fencing between fencing sections. Buckets used were either 1 gallon or 2 gallon plastic buckets (at least 8 inches deep) with lids that could be shut when not in use. Buckets were placed away from ant hills when possible and moved or closed when any new ant hills were observed within 10 feet of the bucket. Buckets had a hole drilled on the bottom allowing water to drain. Buckets were placed flush with the ground with lids kept suspended above the buckets by placing two stakes between the bucket and the lid. Wet non-cellulose sponges were placed in the buckets to ensure captured amphibians were kept moist. Twine was suspended from the bucket lid, so small animals inadvertently captured had a means to escape, thus decreasing the risk of mortality. The buckets and drift fences were installed in a manner that small mammal burrows were not disturbed or destroyed.

Pitfall buckets were opened based on criteria in the Interim Guidance (USFWS 2003). The following criterion was used:

- Pitfall traps will be opened beginning on or before October 15 before sunset if there is any rain during the day or if at 2 pm rain is forecasted for the remainder of the day or subsequent night with 70% or greater probability.
- Weather will be monitored utilizing the National Weather Service forecast.

- Traps will be opened each night and checked each morning until no rain has fallen within the preceding 24 hours. Nights with 75% or more humidity will be considered equivalent to a rain event once onsite or nearby seasonal wetlands have become inundated with standing water.
- Pitfall traps will be opened until 20 nights of surveying based on the above guidance have been conducted ending by March 15.
- After 20 nights of surveying is completed, and until March 15, pitfall buckets should be opened before sunset if there was any rain during the day, or if at 2 pm rain is forecast for the remainder of the day or subsequent night with 70% or greater probability.
- Traps will be checked the next morning before noon or earlier if the temperature is predicted to rise above 65 degrees Fahrenheit (^{0}F) or 18.3 degrees Celsius (^{0}C), and unless it is still raining or more rain is forecast, the traps will be closed until the next rain event.
- CTS will be released as close to a suitable small mammal burrow, as near as possible to the point of capture, and monitored to decrease predation.
- Once a CTS is captured all drift fences and pitfall buckets will be removed and filled in.

Aquatic Sampling

CDFW conducted aquatic sampling in six ponds; ponds A, B, C, D, E, and F (Fig. 1; Potential Breeding Ponds). Aquatic sampling was conducted three times between March and May with ten days separating each sampling event following standards found in the Interim Guidance (USFWS 2003). The following criterion was used for aquatic sampling:

- Ponds will be sampled by doing 50 sweeps using D-shaped dip nets with a mesh size of 1/8th inch or smaller. Walking will be done carefully; feet will be shuffled to ensure the least amount of disturbance as possible.
- If after 50 sweeps with the dip net no CTS are caught then seines will be used to cover up to 100% of ponds smaller than 1 acre and at least 30% of the surface area of ponds larger than 1 acre. Seines will be of 1/8th inch with weights on the bottom and floats along the top.
- CTS captured will be quantified and a representative sample will be photographed. Larvae will be processed as quickly as possible. CTS will remain in the nets no longer than 5 minutes and larvae will not be kept out of water longer than 30 seconds.
- Once CTS has been found at a pond, sampling will stop and surveyors will leave the pond with little disturbance as possible. If eggs are found during sampling then sampling will cease until eggs have hatched.
- Each pond will be measured to determine if the use of minnow traps would be necessary. Minnow trapping will be conducted if the pond cannot be adequately sampled by dip netting or through seining.
- To minimize spread of disease, fungus, non-native invertebrates, cysts, eggs, and other soil inhabitants, proper disinfectant methodologies provided by the Declining Amphibian Population Task Force's Code will be applied to all contaminated equipment (boots, nets, measuring poles, gloves, etc.) which will include cleaning with a 10% chlorine solution

and rinsing with clean water prior to sampling ponds not hydrologically connected (CDFG 2003).

Minnow Trapping

- Minnow traps will be composed of 1/8th inch mesh or finer.
- Minnow traps will be monitored for three 3-day intervals between March 1 and May 15 (for a total of nine days of trapping per site). Trapping intervals will be separated by at least ten days. Minnow trapping will cease if CTS presence is determined.
- Minnow trapping will not be checked when air temperatures are 80 ^{0}F (26.7^{0}C) or higher or when water temperatures reach 70 ^{0}F (21.1^{0}C) or warmer.
- Minnow traps will be deployed overnight and checked at least once per day.
- A minimum of four traps will be placed in each pond.
- For large ponds traps will be distributed along the shoreline with no more than 75 feet between traps. Anchoring points will be flagged for easy identification. If a trap is lost every effort will be made to retrieve it.
- Traps will be deployed in the deepest part of the pond and in shoreline areas with aquatic vegetation growth. Floats will be attached to minnow traps, if deemed necessary, to aid in detection.

Handling

All captured CTS will be documented, photographed, and USFWS will be contacted within 3 working days. If any CTS or other special status species are observed their GPS coordinates will be documented and occurrences will be submitted to CNDDB. CTS will be handled with care and expediency. If captured CTS appear stressed they will be released immediately at the point of capture or the nearest suitable refugia.

Sampling Crews

Upland habitat and aquatic surveys were conducted by Margarita Gordus, Benessa Espino, Matt Bigelow, and Patrick Ferguson (CDFW Environmental Scientists) with assistance from Brian Erlandsen (CDFW Senior Environmental Scientist), Erica Meyers, John Battistoni, and Erin Tennant (CDFW Environmental Scientists), Mike Grill, Mike Hubble, Jamie McGrath-Castro, Thomas Gromis, Kevin Gipson, and Rachel Walker (CDFW Scientific Aids), and Daniel Castro (Student Volunteer).

Results

Upland Surveys

A site visit was conducted by CDFW and USFWS staff on September 12, 2012 to establish drifts fence alignments based on the proposed Projects impact area and habitat. CDFW installed drift fences, pitfall 1, 2, and 3 on October 5, 2012. However, due to project timing, equipment backorders, and logistics, the complete array of drift fences was not operational until November 10th. In total, twelve pitfall trap arrays were installed (Fig. 1; Pitfall Trap).

Upland sampling for CTS began on October 23rd with pitfalls 1, 2, and 3 being checked following the first rainfall event occurring after October 15th. Sampling continued through March 9th, resulting in a total of thirty-seven sampling events. A list of sampling dates and resulting catch can be found in Table 1. Across all pitfall arrays and sampling dates, no CTS were detected. The organisms most abundant during upland sampling were invertebrate species, including insects and arachnids (see Appendix 1).

Over the course of sampling, weather was closely monitored based on the Friant, California National Weather Service forecast in accordance with Interim Guidance (USFWS 2003). Combined total rainfall observed at the Friant Weather Station (GHCND: USC00043261) was 9.843 inches. The Friant area typically receives 15 inches of rainfall, placing the total for this year near 66% of average. A summary of rainfall totals by date with daily minimum and maximum air temperatures can be viewed in Figure 2. Over the course of sampling, however, there were multiple rainfall events that occurred during the night where sampling did not take place due to the forecasted precipitation not meeting criteria specified in the Interim Guidance (USFWS 2003). Table 2 lists sampling dates with associated air temperature in degrees Fahrenheit (T max, T min) and precipitation in inches of rain (PRCP).

Table 1. Estimated number of organisms observed in pitfall traps from 10/23/12 to 03/9/13.

Species	10/23/12	11/10/12	11/17/12	11/18/12	11/19/12	11/28/12	11/29/12	12/1/12	12/2/12	12/3/12	12/4/12
Batrachoseps sp.	N	F	F	F	N	N	F	F	F	F	F
Bufo boreas	N	F	F	F	N	N	N	N	N	N	N
Rana catesbeiana	N	F	F	F	F	N	F	F	F	F	F
Uta stansburiana	N	F	N	N	F	N	N	N	N	N	N
Sceloporus occidentalis	N	N	N	N	N	N	N	N	N	N	N
Peromyscus maniculatus	N	F	N	N	N	N	N	N	N	N	N
Microtus californicus	N	N	N	N	N	N	F	N	N	N	N
Insecta	M	M	M	M	M	M	M	M	M	M	M
Arachnida	F	N	F	F	N	N	N	N	F	N	N
Diplopoda	F	N	N	F	N	N	N	N	N	N	N
Chilopoda	F	N	N	F	F	N	N	N	N	N	N
Mollusca	N	N	N	F	N	N	N	N	F	N	N
Annelida	N	N	N	F	N	N	N	N	F	N	N
Species	**12/8/12**	**12/9/12**	**12/10/12**	**12/11/12**	**12/12/12**	**12/13/12**	**12/14/12**	**12/15/12**	**12/16/12**	**12/18/12**	**12/19/12**
Batrachoseps sp.	F	F	F	F	N	F	F	N	N	F	N
Bufo boreas	N	N	N	N	N	N	N	N	N	N	N
Rana catesbeiana	N	F	N	F	F	F	F	N	N	F	F
Uta stansburiana	F	N	N	N	N	N	N	N	N	N	N
Sceloporus occidentalis	N	N	N	F	F	N	N	N	N	N	N
Peromyscus maniculatus	N	N	N	N	N	N	N	N	N	N	N
Microtus californicus	N	N	N	N	N	N	N	N	N	N	N
Insecta	M	M	M	M	M	M	M	F	F	M	M
Arachnida	N	F	N	N	N	N	N	N	F	N	F
Diplopoda	N	F	N	N	N	N	N	N	N	N	F
Chilopoda	N	F	N	N	N	N	N	N	N	N	N
Mollusca	N	F	N	N	N	N	N	N	N	F	N
Annelida	F	F	N	N	F	N	N	F	N	F	F

N = None, F = Few (<50), and M = Many (>50). Details are available in the attached data sheets.

Table 1. (Continued)

Species	12/22/12	12/23/12	12/24/12	12/26/12	12/27/12	1/6/13	1/7/13	1/11/13	1/27/13	2/8/13	2/9/13
Batrachoseps sp.	F	F	N	N	N	F	F	N	F	F	F
Bufo boreas	N	N	N	N	N	N	N	N	N	N	N
Rana catesbeiana	F	F	F	N	F	F	N	N	N	N	F
Uta stansburiana	N	N	N	N	N	N	N	N	N	N	N
Sceloporus occidentalis	N	N	N	N	N	N	N	N	N	N	N
Peromyscus maniculatus	N	N	N	N	N	N	N	N	N	N	N
Microtus californicus	N	N	N	N	N	N	N	N	N	N	N
Insecta	M	M	M	M	M	M	M	M	M	F	F
Arachnida	N	N	N	N	N	N	F	N	N	N	N
Diplopoda	N	N	N	N	N	N	N	N	N	N	N
Chilopoda	N	N	N	N	N	N	N	N	N	N	N
Mollusca	N	N	N	N	N	N	N	N	N	N	N
Annelida	N	N	N	N	N	N	F	N	N	N	N

Species	2/20/13	3/7/13	3/8/13	3/9/13
Batrachoseps sp.	N	F	F	F
Bufo boreas	N	N	N	N
Rana catesbeiana	N	N	F	N
Uta stansburiana	N	N	N	N
Sceloporus occidentalis	N	N	N	N
Peromyscus maniculatus	N	N	N	N
Microtus californicus	N	N	N	N
Insecta	F	F	F	F
Arachnida	N	N	N	N
Diplopoda	N	N	N	N
Chilopoda	N	N	N	N
Mollusca	N	N	N	N
Annelida	N	N	N	N

N = None, F = Few (<50), and M = Many (>50). Details are available in the attached data sheets.

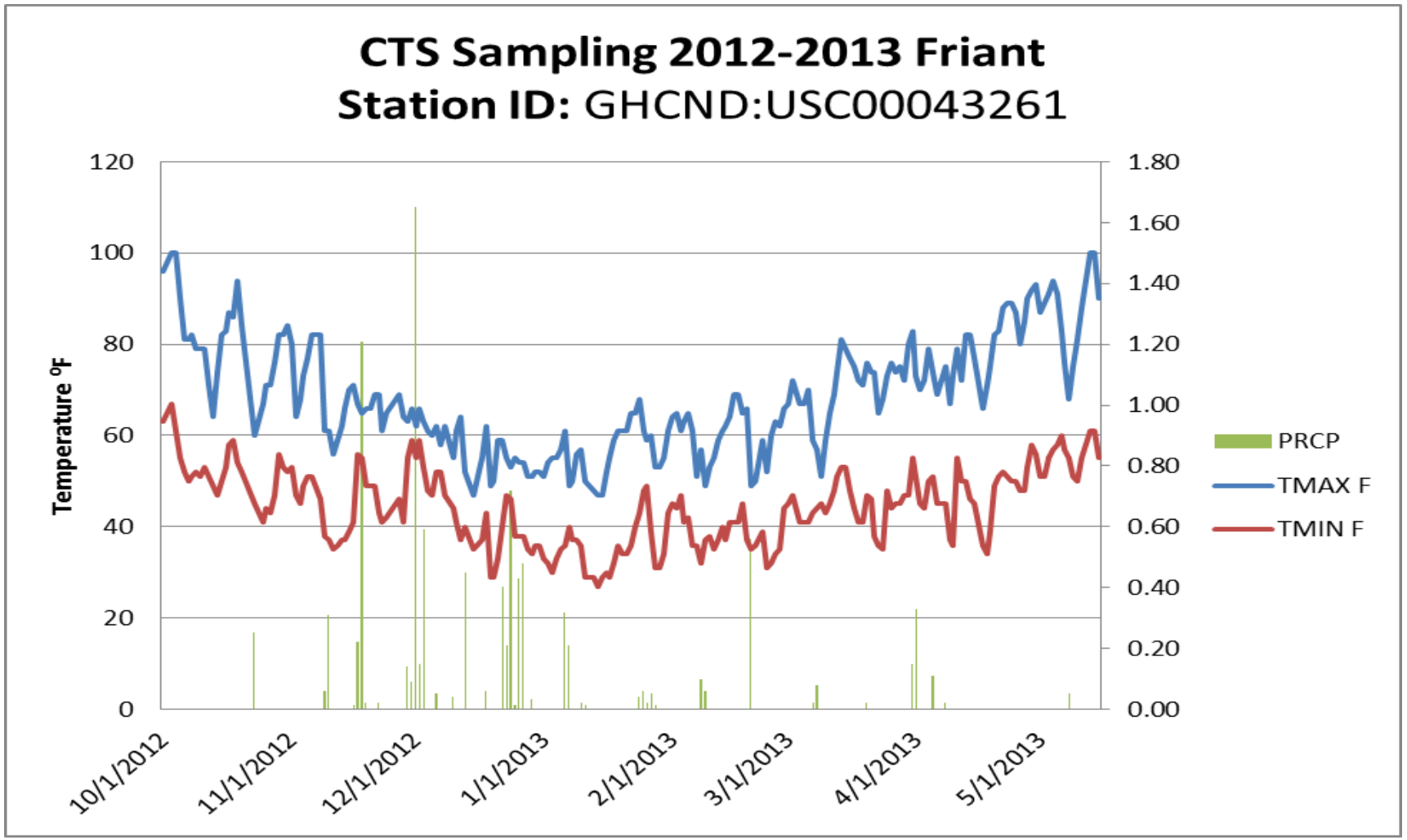


Figure 2. Weather data during CTS sampling. Air temperature in degrees Fahrenheit and precipitation in inches of rain. Data obtained from http://www.ncdc.noaa.gov/cdo-web/

Table 2. Maximum and minimum temperature (°F), and precipitation (in) by sampling interval.

T MAX	T MIN	PRCP	Date	Sample Dates
60.08	44.96	0	10/23/2012	10/23/2012
60.98	37.04	0	11/10/2012	11/10/2012
66.92	55.94	0.15	11/16/2012	11/17/2012
64.94	55.04	0	11/18/2012	11/18/2012
66.02	48.92	Error	11/19/2012	11/19/2012
69.08	46.04	0.22	11/27/2012	
64.04	41	1.21	11/28/2012	11/28/2012
62.96	55.04	0	11/29/2013	11/29/2012
62.06	55.04	0	12/1/2012	12/1/2012
66.02	59	0	12/2/2012	12/2/2012
62.96	53.06	0	12/3/2012	12/3/2012
60.98	48.02	0.02	12/4/2012	12/4/2012
62.06	46.94	0.02	12/8/2012	12/8/2012
No data available				12/9/2012
55.04	44.06	0	12/10/2012	12/10/2012
60.98	41	0	12/11/2012	12/11/2012
64.04	37.04	0	12/12/2012	12/12/2012
51.98	39.92	0.05	12/13/2012	12/13/2012
No data available				12/14/2012
46.94	35.06	0	12/15/2012	12/15/2012
No data available				12/16/2012
55.04	37.04	0	12/18/2012	12/18/2012
48.92	28.94	0.14	12/19/2012	12/19/2012
59	39.92	1.65	12/21/2012	12/22/2012
55.04	46.94	0	12/23/2012	12/23/2012
53.06	46.04	0	12/24/2012	12/24/2012
53.96	37.94	0	12/26/2012	12/26/2012
53.96	37.94	0	12/27/2012	12/27/2012
60.98	35.96	0	1/6/2013	1/6/2013
48.92	39.92	0	1/7/2013	1/7/2013
50	28.94	0	1/11/2013	1/11/2013
60.08	39.02	0	1/27/2013	1/27/2013
51.08	35.96	0.02	2/7/2013	
57.02	32	0	2/8/2013	2/8/2013
48.92	37.04	0	2/9/2013	2/9/2013
48.92	35.06	0	2/20/2013	2/20/2013
59	42.98	0.02	3/7/2013	3/7/2013
57.02	44.06	0	3/8/2013	3/8/2013
51.08	44.96	0.01	3/9/2013	3/9/2013

Aquatic Sampling

Aquatic sampling for CTS began during the last week of March 2013, and continued until mid-May. Aquatic sampling consisted of dip netting, seining, and minnow trapping to assess CTS presence. The number of dip net sweeps and estimated seining area covered in each pond are presented in Table 3. A summary of pond depth and area of each pond sampled may also be found in Table 3. Maximum and minimum air temperature (°F), and precipitation (inches) during associated aquatic sampling can be found in Table 4. Across all ponds and sampling dates, no CTS eggs or larva were detected. The organisms most abundant during aquatic sampling were invertebrate species, including aquatic snails, back swimmers, water boatmen, damselfly nymphs, and dragonfly nymphs (see Appendix 2).

March

Aquatic sampling for CTS began during the last week of March 2013 (from March 26-28th) with dip nets and seines used to assess CTS presence. Fifty dip net sweeps (approximately 3ft in length) were conducted first in all ponds (Pond A, 8ft in depth, 0.17 acres; Pond B, 8ft in depth, 0.15 acres; Pond C, 9ft in depth, 1.13 acres; Pond D, 12ft in depth, 1.67 acres; Pond E, 10ft in depth, 3.78 acres; Pond F, 6ft in depth, 0.98 acres) (Fig. 1; Potential Breeding Ponds; Table 3) followed by seining. Ponds A, B, D, E and F had submerged/emergent vegetation and depths that prohibited and/or hindered the ability to seine certain areas, although the majority of each pond was surveyed.

Ponds A and B surveyed on March 26th had water temperatures of 19 ^{0}C. American bullfrogs (*Rana catesbeiana*) were present (observed at the water's edge) but not captured. Bullfrog tadpoles were, however, caught in dip net sweeps in addition to numerous bullfrog and snail eggs. Prickly Sculpin (*Cottus asper*) and Western Mosquitofish (*Gambusia affinis*) were also captured in dip nets. The numbers of mosquitofish captured during seining were too numerous to count, and bullfrog tadpoles were also detected. Seining in these ponds consisted of 1 to 4 drags per side (4 sides to these square shaped ponds) that were approximately 10-30 feet in length. Some areas were not seined due to snagging on either submerged trees or emergent vegetation such as cattails. It was estimated that nearly 80% of these small ponds were sampled.

Pond C, surveyed on March 27th, had a water temperature of 10 ^{0}C. Bullfrogs were present (observed at the water's edge) but not captured. 24 of the 50 dip net sweeps detected at least one Threespine Stickleback *(Gasterosteus aculeatus)* (TSS) with some sweeps detecting bullfrog and snail eggs. The quantity of TSS captured during seining were too numerous to count. Sacramento Pikeminnow *(Ptychocheilus grandis)* were also observed but not captured in pond C. Seining in this pond consisted of 1 to 4 drags per short side and 5 – 9 drags on the longer sides (4 sides to this rectangular shaped pond) that were approximately 10-50 feet in length. Some areas were not seined due to depth. It was estimated that 40% of this pond was sampled.

Surveyed on March 27th, pond E had a water temperature of 12 ^{0}C. Bullfrogs were present (observed at the water's edge) but not captured. After 50 dip net sweeps, 5 Western Mosquitofish were captured. With the use of seines, 25 additional mosquitofish and 3 bullfrog tadpoles were detected.

Pond F was surveyed on March 27th and had a water temperature of 14 ^{0}C. Dip netting detected 3 Western Mosquitofish, and seining detected 10 additional mosquitofish and 2 bullfrog tadpoles.

Pond D, surveyed on March 28th, had a water temperature of 18 ^{0}C. Dip netting detected 25 Western Mosquitofish, 4 bullfrog tadpoles and 8 crayfish. Seining of pond D produced similar results, although with several more mosquitofish captured.

Seining in these ponds (D, E, and F) consisted of multiple drags that were approximately 10-30 feet in length. Some areas were not seined due to water depth and snagging on either submerged trees or emergent vegetation such as cattails. It was estimated that 30% of these large ponds were sampled.

April

Aquatic sampling for CTS resumed in mid-April (from April 16th to the 19th), with all ponds surveyed by dip nets. In addition to seining, minnow traps were also added to survey methods; all ponds except pond C were surveyed by minnow traps. During sampling, ponds were first surveyed with 50 dip net sweeps and then either seined or deployed with minnow traps. Minnow traps were checked every 24 hours for three consecutive days.

Ponds A and B were dip netted on April 16th, with minnow traps deployed from April 16th to the 19th. The two ponds had water temperatures ranging from 11.5 ^{0}C to 14 ^{0}C. Dip netting detected Prickly Sculpin, Western Mosquitofish, adult bullfrogs, bullfrog tadpoles, numerous insect larva, snail eggs, and frog eggs. Due to the presence of submerged vegetation discovered in these ponds, it was deemed more effective to deploy minnow traps. Minnow traps were set in the afternoon on April 16th in pond A (4 traps), pond B (4 traps), and removed on the afternoon of the 19th. These traps detected all of the same species as discovered with dip netting, only in greater quantities and larger sized samples of Sculpin.

Pond C was dip netted and seined on April 17th, and had a water temperature of 10 ^{0}C. After 50 dip net sweeps, Threespine Stickleback, leaches, and snails were detected. As this pond had no limiting vegetation and is relatively shallow, it was consider suitable for seining. Thus, no minnow traps were deployed in this pond. Seining detected the same species as dip netting, only in greater numbers.

Ponds D, E and F had minnow traps deployed on April 16th and were removed on April 19th and were dip netted (50 dip net sweeps each) on the 17th. Pond D had a water temperature of 18 ^{0}C and after 50 dip net sweeps, mosquitofish and crayfish were detected. Minnow traps in pond D

(18 traps) captured mosquitofish, crayfish, bullfrog tadpoles, adult bullfrogs and dragonfly nymphs. Ponds E and F had water temperatures ranging from 14 ^{0}C to 17.5 ^{0}C, and were similar to pond D in organisms detected by dip netting. Minnow traps deployed in pond E (18 traps) and pond F (14 traps) were also similar to results found in pond D; however, a Brown Bullhead catfish (*Ameiurus nebulosus*) was also identified in pond F.

May

Aquatic sampling for CTS concluded during mid-May, with sampling conducted from May 13th to the 15th. Ponds were again surveyed with minnow trap, seines and dip nets to assess CTS presence. Ponds were surveyed with 50 sweeps with a dip net, and then either seined or minnow trapped; all ponds except pond C being surveyed by minnow trap. Minnow traps were once again checked every 24hrs for three consecutive days.

Ponds A and B were dip netted on May 14th, and had minnow traps deployed from May 13th to the 15th. The two ponds had water temperatures ranging from 14.5 ^{0}C to 16 ^{0}C. Dip netting detected Prickly Sculpin, Western Mosquitofish, adult bullfrog, bullfrog tadpoles, numerous insect larva, snail eggs, and frog eggs. Due to the presence of submerged vegetation on these ponds it was considered more effective to use minnow traps instead of seines. Minnow traps were set in the afternoon on May 13th in ponds A (4 traps), Pond B (4 traps) and removed on the afternoon of May 15th. The traps detected the same species as discovered with dip netting only in greater quantities and larger sized Sculpin.

Pond C had a water temperature of 12 ^{0}C, and was dip netted and seined on May 15th. As this pond is relatively shallow and has no limiting vegetation, seining was conducted, and no minnow traps were deployed. After 50 dip net sweeps, 4 Threespine Stickleback and a dead Rainbow Trout (*Oncorhynchus mykiss*) were detected. Seining of pond C revealed similar results as dip netting only with greater numbers of Threespine Stickleback being detected.

Ponds D, E and F had minnow traps deployed on May 13th and were dip netted on the 14th. Water temperatures in pond D were above 21 ^{0}C on May 14th, thus minnow traps were pulled and no further sampling was conducted. After one night of minnow trapping on pond D (18 traps), mosquitofish, crayfish, and bullfrog tadpoles were detected. Pond E and F, had water temperatures between 18 ^{0}C - 21 ^{0}C. Results were similar to previous sampling dates with the exception of Threespine Stickleback being detected in pond F (14 traps) and Sacramento Pikeminnow in pond E (18 traps).

Table 3. Summary of pond characteristics and aquatic sampling conducted by pond

	Max Depth	Area of Pond (acres)	# Sweeps w/ Dip Net	% Seine sampled March	% Seine sampled April	% Seine sampled May	Number of Minnow Traps
Pond A	8ft	0.17	50	80%	*	*	4
Pond B	8ft	0.15	50	80%	*	*	4
Pond C	9ft	1.13	50	40%	40%	40%	0
Pond D	12ft	1.67	50	30%	*	*	18
Pond E	10ft	3.78	50	30%	*	*	18
Pond F	6ft	0.98	50	30%	*	*	14
* indicates use of minnow traps in-lieu of seining							

Table 4. Maximum and minimum temperature (°F), and precipitation (in) during associated aquatic sampling.

T MAX	T MIN	PRCP	Date
75.92	44.06	0	3/26/2013
73.94	44.96	0	3/27/2013
75.02	44.96	0	3/28/2013
No weather Data			4/16/2013
66.02	35.96	0	4/17/2013
71.06	33.98	0	4/18/2013
75.02	39.02	0	4/19/2013
100.04	60.98	0	5/13/2013
100.04	60.98	0	5/14/2013
89.96	55.04	0	5/15/2013

It is of interest to note that on April 22-23, 2013 Dr. Pete Trenham conducted a workshop in Fresno on the Biology and Management of California Tiger Salamander through the Elkhorn Slough Coastal Training Program. The workshop contained a sampling method and survey design element that included a field exercise where workshop participants conducted aquatic sampling using dip nets, minnow traps, and a seine in a known CTS breeding stock pond. Set within a 1,000 acre property currently used for cattle grazing, and consisting of vernal pool wetlands and upland grassland habitat, the breeding stock pond chosen for this portion of the workshop is located approximately 6.5 miles west of the CDFW Study Area. The stock pond, approximately 100 feet wide by 420 feet long, is just under an acre in size and has a maximum depth of 7 feet. During the aquatic sampling field component for the workshop, numerous CTS

larvae were captured in the stock pond demonstrating CTS breeding successfully occurred in close proximity to the CDFW Study Area during the 2012-2013 wet season.

Conclusion

Across all sampling surveys (2012-2013), upland sampling as well as aquatic sampling, no CTS eggs, larva, or adults were detected while following Interim Guidance (USFWS 2003) protocols. The most abundant organisms detected during upland sampling were invertebrate species, including insects and arachnids. Additionally, the most abundant organisms detected during aquatic sampling were invertebrate species, including aquatic snails, back swimmers, water boatmen, damselfly nymphs, and dragonfly nymphs.

2013-2014 upland CTS surveys are scheduled to begin on or before October 15, 2013 with pitfall trap arrays in place by late-September. Pitfall trap arrays will be placed in the same general areas as were used in 2012-2013 surveys. 2013-2014 aquatic CTS surveys are scheduled to begin in March 2014 and continue until May 2014. Aquatic sampling will take place in the same ponds as 2012-2013 surveys and will include dip netting, seining, and minnow trapping. Both 2013-2014 upland surveys and aquatic surveys will follow criteria found in the Interim Guidance (USFWS 2003).

References

California Department of Fish and Wildlife. 2012. California Natural Diversity Data Base. Biogeographic Data Branch, Sacramento.

National Climatic Data Center. 2013. Available at http://www.ncdc.noaa.gov/cdo-web/ (accessed 6 June 2013).

United States Fish and Wildlife (USFWS). 2003. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander.

Supporting Information

Photos

Upland sampling equipment

Construction of drift fences and pitfall buckets

Aquatic sampling equipment

Seine and dip nets used during aquatic CTS sampling

Seining Pond F, note emergent vegetation in background

Seine haul from pond C showing numerous Threespine Stickleback

Minnow trap (top view) used during aquatic CTS surveys

Minnow trap (on end), picture show trap opening

Upland species

Slender salamander

Western toad

Bullfrog

Side blotched lizard

Western fence lizard and insects

Deer mouse

California vole

Centipede

Aquatic species

Sculpin captured in pond A

Brown Bullhead catfish captured in pond F

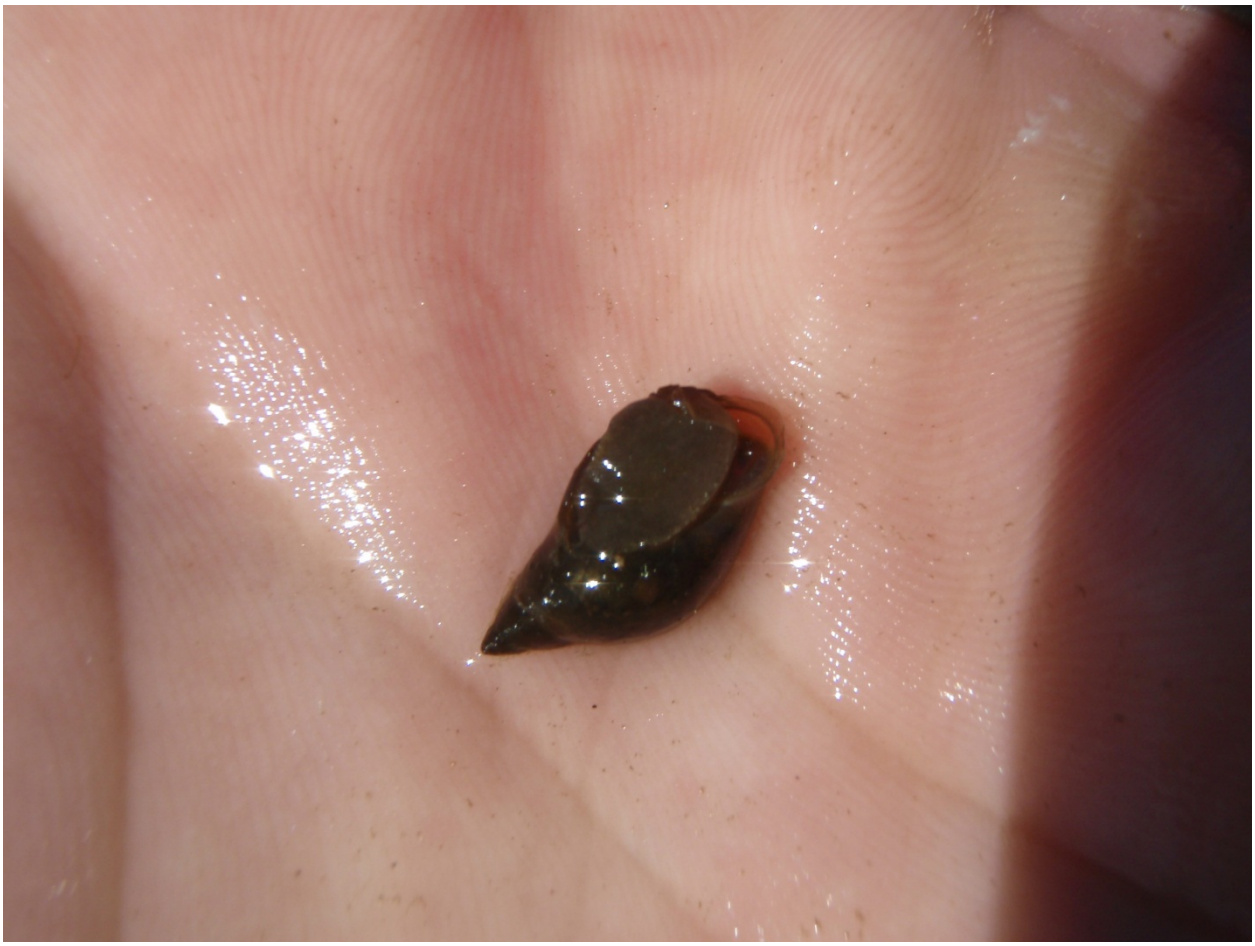
Bullfrog tadpole

Threespine Stickleback

Western Mosquitofish

Crayfish

Bullfrog



Aquatic snail

Appendix 1: Pitfall trap datasheets

Appendix 2: Aquatic sampling datasheets

Branchiopod First Year Field Survey Results

State of California – Natural Resources Agency
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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

August 15, 2013

Salmon Conservation and Research Facility (SCARF) Project and San Joaquin Hatchery Public Access and Trail Project (Trail Project) Branchiopod Surveys (Survey Season 2012-2013)

California Department of Fish and Wildlife (Department) Environmental Scientists, Reagen O'Leary and John Battistoni, operating under United States Fish and Wildlife Service (USFWS) 10(a)(1)(A) permit #TE-54631A-0.1 as authorized individuals to independently conduct vernal pool branchiopod activities, conducted year 1 of protocol-level wet season surveys for federally listed Branchiopods within the SCARF Project and Trail Project biological study areas, from December 2012 through April 2013. These Projects overlap such, that the studies were conducted in a manner to include 2012-2013 vernal pool branchiopod survey activities within both biological study areas, collectively known as the 'Study Area'.

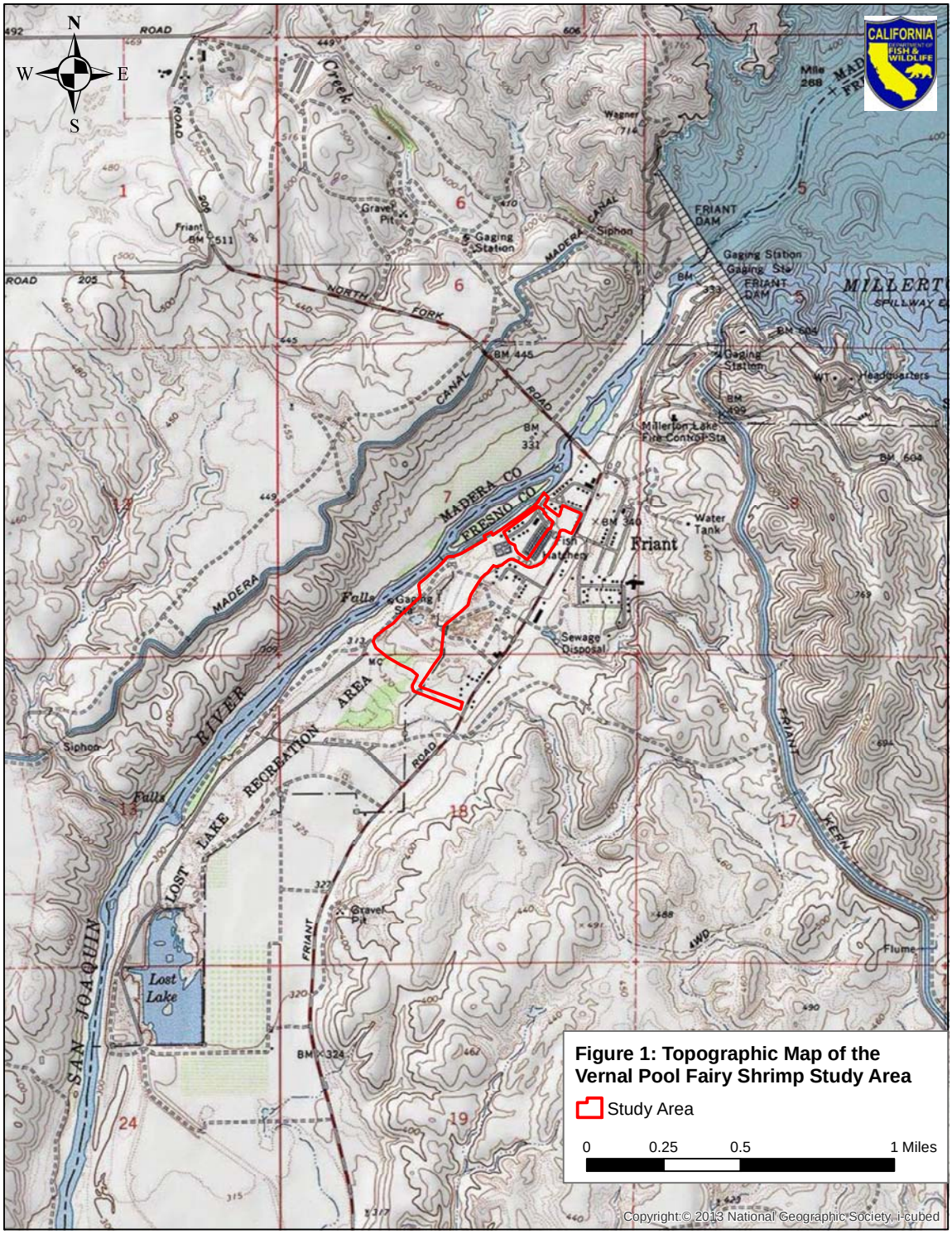
Study Area Location:

The Study area is bounded by the San Joaquin River to the west, Flemming Avenue to the north, Friant Road to the east, and Belcher Avenue to the south in the town of Friant in Fresno County, California. It is approximately 20 miles north of the downtown area of the City of Fresno, and approximately 1 mile downstream (southwest) of Friant Dam. The Project is within the Friant United States Geological Survey (USGS) 7.5-minute quadrangle (northeast ¼ of northwest ¼), Section 7, Township 11 south, Range 21 east, and within the Mount Diablo meridian. Figure 1 displays the USGS 24K topographic map of the Study Area. Coordinates for the approximate center point of the Study Area is latitude 36.986113 and longitude -119.717773 in the datum WGS 84.

Methods:

In accordance with the 1996 (USFWS) Interim Survey Guidelines for Listed Vernal Pool Branchiopods, Department authorized individuals with support staff surveyed and recorded all pools or swales holding 1 inch or more of water after 24 hours following the first significant rain event of the season. The identification of initial pools meeting these criteria was conducted on December 14, 2012, after an overnight rain event of 0.3 inches on December 12, 2012. Once the pools began to hold water for 14 days they were numbered, sampled, marked, and GPS location information was obtained.

Figure 1: Topographic map of the Study Area



The pools were sampled every 2 weeks (or close to 2 weeks) if they were inundated starting December 14, 2012, until they were all dry, last sampling effort occurred on March 27, 2013, as the last ephemeral feature was dry by April, 10, 2013. Each pool meeting the inundation criteria was sampled using medium sized aquarium nets and/or dip nets and all invertebrates found were identified and recorded. A total of five pools were sampled, four ephemeral pools were found to meet the inundation criteria, whereas the fifth pool (pool 5) never fully dries. It was decided to include it in the sampling effort since the habitat it provides closely resembles a site, known by Department staff, to contain *Linderiella occidentalis* in the San Joaquin River floodplain. Table 1 lists vernal pool branchiopod sampling dates, surveyors, pools sampled on that date.

Table 1

Sampling Date	**Surveyors**	**Pools Sampled**
December 14, 2012	John Battistoni & Reagen O'Leary	1 & 2
December 28, 2012	Reagen O'Leary & Steven Hulbert	1
January 11, 2013	John Battistoni, Reagen O'Leary, & Cheryl Moxley	1, 2, 3, 4, & 5
January 25, 2013	John Battistoni & Reagen O'Leary	3 & 5
February 15, 2013	John Battistoni & Reagen O'Leary	3 & 5
March 5, 2013	Reagen O'Leary & Molly Schnur	3 & 5
March 27, 2013	John Battistoni and Reagen O'Leary	3 & 5

Results:

Five pools associated with either the compacted soils of dirt roads or fed by ground water seepage from the nearby fish hatchery operation held water 14 days after initial inundation. See attached photographs. Table 2 includes pool numbers, latitude/longitude, and acreage of pools. Figure 2 provides an aerial of the Study Area with the pool locations. While rainfall in the area was well below average annual precipitation rates, branchiopods species were found in other parts of Fresno County during this timeframe as part of other ongoing branchiopod monitoring efforts that were conducted by the Department. None of the sampled pools in the Study Area contained Branchinectid species. Other aquatic invertebrate species detected during surveying include: seed shrimp (ostracods), water fleas (daphnia sp.), cyclopoid copepods

(*Megacyclops viridis*), mosquito larva (order Diptera), stonefly larva (order Plecoptera), dero worm (subclass Oligochaeta), predacious diving beetle (family Dytiscidae), bloodworm (family Glyceridae) and horsehair worm (Gordius sp.). See attached data sheets. Pool 5 was the only pool that contained bull frog (*Rana catesbeiana*), as this pool never fully dies up.

Table 2

Pool #	Latitude/Longitude WGS 84	Acres
1	36.98007864/-119.7222687	0.003
2	36.98817287/-119.7127355	0.008
3	36.98706277/-119.7142928	0.131
4	36.98166072/-119.7210681	0.0007
5	36.9866213/-119.7183081	0.037

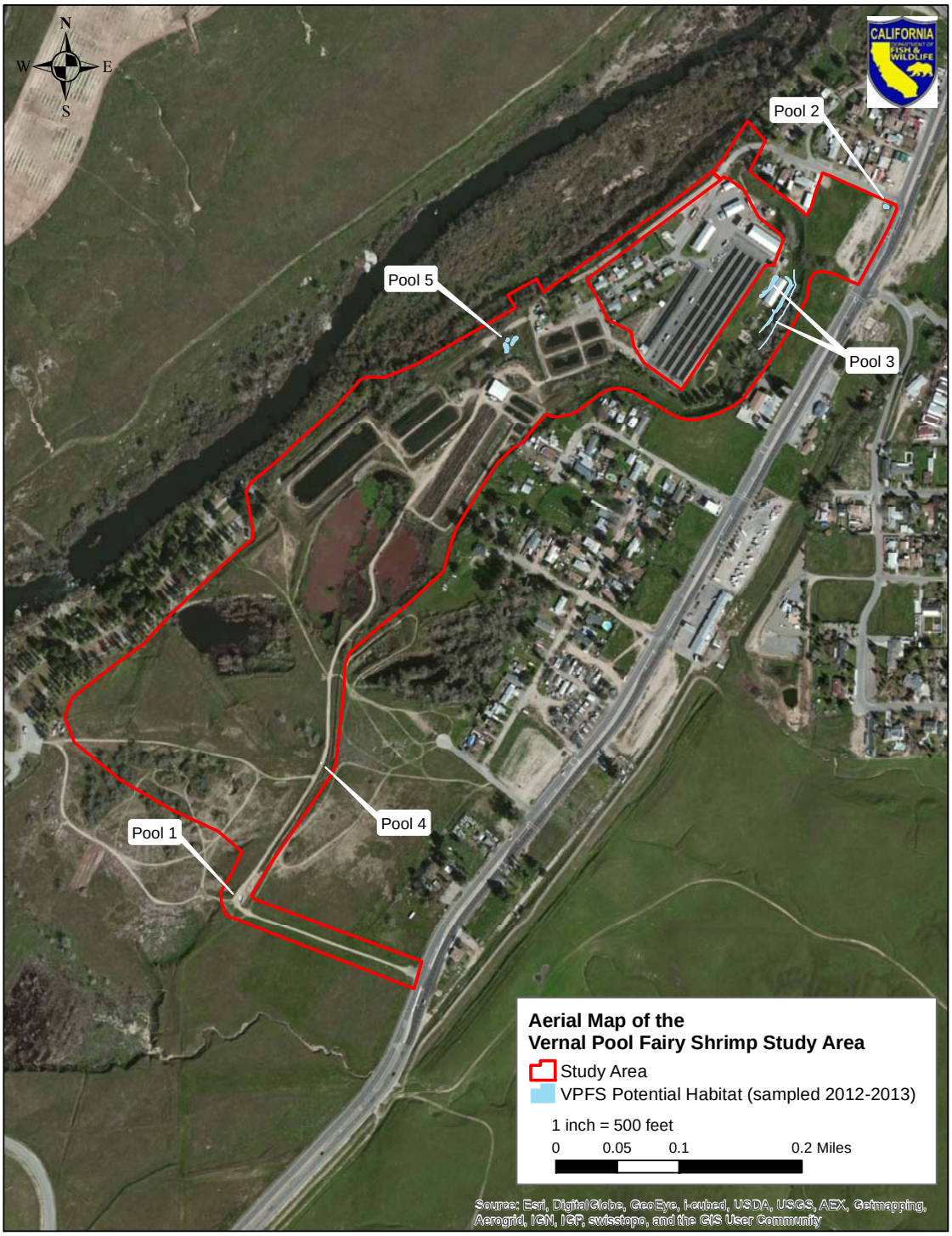
If you have any questions on this survey effort, please contact me or John Battistoni at the address provided on this letterhead, by telephone at (559) 243-4014, extension 244 or 219 respectively, or by electronic mail at Reagen.OLeary@wildlife.ca.gov or John.Battistoni@wildlife.ca.gov.

Sincerely,

Reagen O'Leary

Reagen O'Leary
Environmental Scientist

Figure 2: Aerial Map of the Study Area with pool locations



Photographs:

▲ Pool 1 on December 14, 2012, inundated. Photograph collected by Reagen O'Leary.

▲ Pool 1 on January 11, 2013, almost dry. Photograph collected by Reagen O'Leary.

▲ Pool 2 on December 14, 2012, inundated. Photograph collected by Reagen O'Leary.

▲ Pool 2 on January 11, 2013, dry. Photograph collected by Reagen O'Leary.

▲ Pool 3 complex on December 28, 2012, inundated. Photograph collected by Reagen O'Leary.

▲ Pool 3 ditch on December 28, 2012, inundated. Photograph collected by Reagen O'Leary.

▲ Pool 3 complex on January 11, 2013, almost dry. Red tail hawk soaking its feet. Photograph collected by Reagen O'Leary.

▲ Pool 4 location on January 11, 2013, inundated. Photograph collected by John Battistoni.

▲ Pool 4 location on March 5, 2013, wet. Photograph collected by Reagen O'Leary.

▲ Pool 5 on January 11, 2013, inundated. This is one third of the pool complex. Photograph collected by Reagen O'Leary.

▲ Pool 5 on March 5, 2013, inundated. This is the other third of the pool complex. Photograph collected by Reagen O'Leary.

▲ Pool 5 on March 5, 2013, inundated. This is the last third of the pool complex. Photograph collected by Reagen O'Leary.

Data Sheets: 23 pages

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Vernal Pool Data Sheet, DFG Central Region
Wet Season Survey
Cover Page

Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of a 90-day report: ___ no X yes

Required color photographs for the Project site are included: ___ no X yes

Project Site: SCARF and Trail Project Date: 12/14/12

Collector(s): J. Battiston & R. O'leary Permit #: TE-54631A-0.1

County: Fresno USGS Quadrangle: Friant

Township: 11S Range: 21E Section: 7

List pool unique #'s sampled on this date: 1 & 2

Beginning Time: 9:15am Ending Time: 11:55 am

Beginning Air Temperature: 8.3 °C Ending Air Temperature: 8.2 °C

Habitat Condition: (circle where appropriate)

- Undisturbed/Disturbed: (tire tracks) garbage disking/plowing
(Ungrazed)/Grazed: Type: cattle horses sheep other none
Impact: light moderate (heavy)

- Land use of habitat: hatchery, recreation, worm farm

Vernal Pool Data Sheet, DFG Central Region
Wet Season Survey

Pool #: 1 Date: 12-14-12 Time Sampled: 9:20 am

Previously sampled? (No)/Yes Photo Collected? No/(Yes) Camera #: 1

will collect on another date

GPS Unit #: _____ GPS Coordinates: lat: 36.98007864 long: -119.7222687 WGS 84

Pool Description: depression in road at gate on Belcher rd. Water Temperature: 8.0 °C

Pool Depth: present 6.5 cm / estimated maximum 7 cm

Surface Area of Pool: present 4.5 m x 7.5 m / estimated maximum: 5 m x 7.5 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

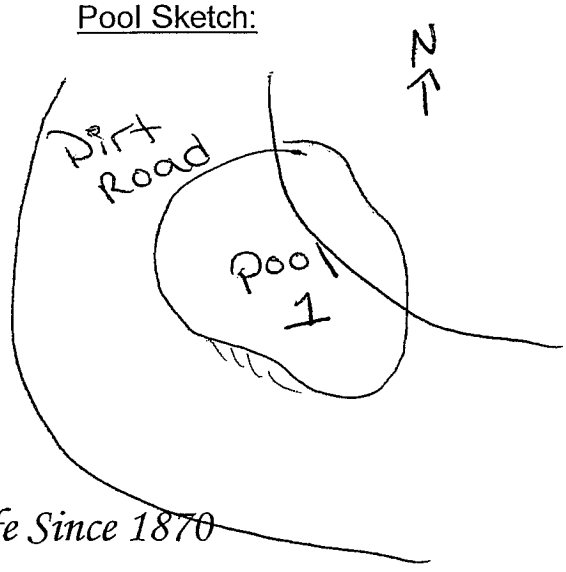
Species	# Individuals	Accession/Catalog #

Notes:

Did not detect life in pool

pH 2.9 - 3.00? equipment must be off?

Pool Sketch:



Vernal Pool Data Sheet, DFG Central Region
Wet Season Survey

Pool #: 2 Date: 12-14-12 Time Sampled: 10:45 am

Previously sampled? (No) Yes Photo Collected? No (Yes) Camera #: 1

will collect on another date

GPS Unit #: _____ GPS Coordinates: lat: 36.98817287 long: -119.7127355 WGS 84

Pool Description: depression at corner of lot at Friant and Flemming Water Temperature: 10.8 °C

Pool Depth: present 8 cm / estimated maximum 10 cm

Surface Area of Pool: present 5.5 m x 9 m / estimated maximum: 6.5 m x 10 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

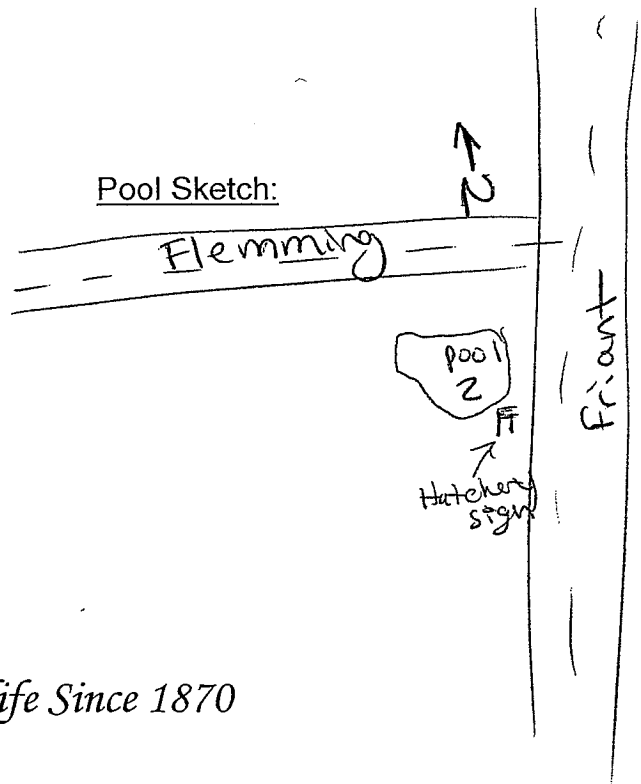
Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

Did not detect life in pool.
Algae present though
pH 9.8

Pool Sketch:



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Vernal Pool Data Sheet, DFG Central Region
Wet Season Survey
Cover Page

Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of a 90-day report: ___ no X yes

Required color photographs for the Project site are included: ___ no X yes

Project Site: SCARF Date: 12/28/12

Collector(s): R. O'Leary & Steve Holbert Permit #: TE-54631A-0.1

County: Fresno USGS Quadrangle: Friant

Township: 11S Range: 21E Section: 7

List pool unique #'s sampled on this date: 1, pool 2 was dry, observed the inundation down by the Kokanee shed & stormy creek

Beginning Time: 10:19am Ending Time: 10:40 am

Beginning Air Temperature: 14.4 °C Ending Air Temperature: 15 °C

Habitat Condition: (circle where appropriate)

- ~~Undisturbed~~/Disturbed: (tire tracks) garbage disking/plowing
- (Ungrazed)/~~Grazed~~: Type: cattle horses sheep other none
  Impact: light moderate ~~heavy~~

- Land use of habitat: hatchery, recreation, worm farm

Vernal Pool Data Sheet, DFG Central Region
Wet Season Survey

Pool #: 1 Date: 12-28-12 Time Sampled: 10:20 am

Previously sampled? No (Yes) Photo Collected? (No) Yes Camera #: ___
will wait for collection of GPS data
GPS Unit #: _____ GPS Coordinates: lat: 36.98007864 long: -119.7222687 WGS 84

Pool Description: depression in road at gate on Belcher rd. Water Temperature: 8.9 °C

Pool Depth: present 6.5 cm / estimated maximum 7 cm

Surface Area of Pool: present 40 m x 6.5 m / estimated maximum: 5 m x 7.5 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

dero worms - Oligochaeta
mosquito larvae - Nematocera
- Diptera

Pool Sketch:

see sketch from data sheet dated 12-14-12

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Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey
Cover Page

Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of a 90-day report: ___ no X yes

Required color photographs for the Project site are included: ___ no X yes

Project Site: SCARF & Trail Prj Date: 1/11/13

Collector(s): R. O'Leary, C. Moxley & J. Bathistoni Permit #: TE-54631A-0.1

County: Fresno USGS Quadrangle: Friant

Township: 11S Range: 21E Section: 7

List pool unique #'s sampled on this date: 1, 2, 3, 4, 45

Beginning Time: 10:20am Ending Time: 2:00pm

Beginning Air Temperature: 6.7 °C Ending Air Temperature: 10 °C

Habitat Condition: (circle where appropriate)

- Undisturbed/Disturbed: (tire tracks) garbage disking/plowing
- Ungrazed/Grazed: Type: cattle horses sheep other _____
  Impact: light moderate heavy

- Land use of habitat: hatchery, recreation, wormfarm

1st of the day

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 2 Date: 1-11-13 Time Sampled: 10:25 am

Previously sampled? No/(Yes) Photo Collected? (No)/Yes Camera #: ___
will collect on another date

GPS Unit #: _____ GPS Coordinates: lat: 36.988817287 long: -119.7127355 WGS 84

Pool Description: at corner of parking lot at Friant & Flemming Water Temperature: 7.8 °C

Pool Depth: present 4.5 cm / estimated maximum 10 cm

Surface Area of Pool: present 6 m x 5 m / estimated maximum: 6.5 m x 10 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

Arachnida - mite (orange to red)

Pool Sketch:

see sketch from data sheet dated 12-14-12

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 3 Date: 1-11-13 Time Sampled: 10:50 am

Previously sampled? (No)/Yes Photo Collected? No/(Yes) Camera #: Johns camera olympus 100-008
will collect on another date photos also collected on 12/28/12
GPS Unit #: _____ GPS Coordinates: lat: 36.98706277 long: -119.7142928 WGS84

Pool Description: stormy creek and around Kokanee shed Water Temperature: 5 °C

Pool Depth: present 22.5 cm / estimated maximum 40 cm

Surface Area of Pool: present 40 m x 140 m / estimated maximum: 40 m x 140 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

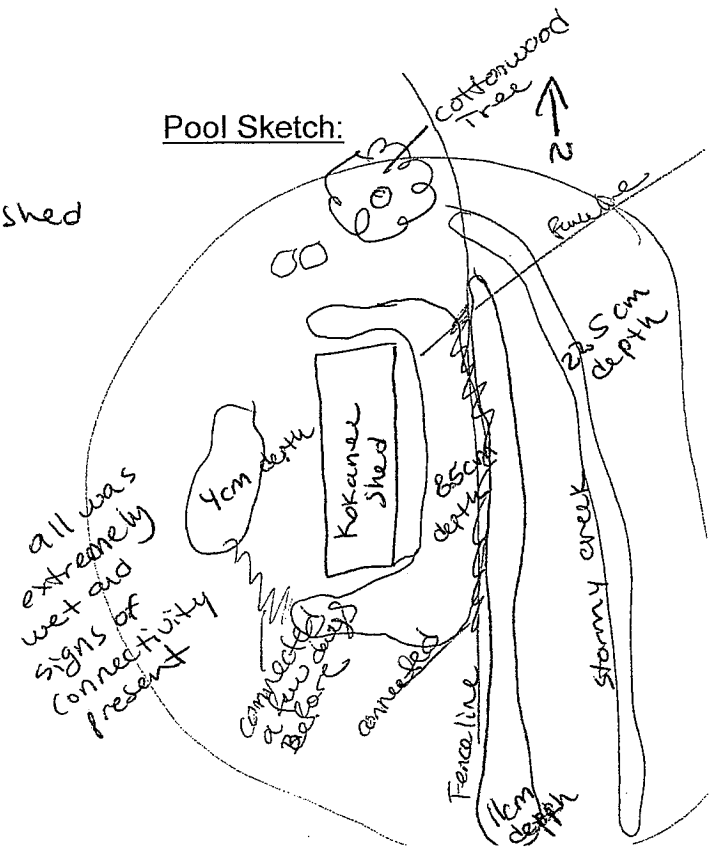
Species	# Individuals	Accession/Catalog #

Notes:

Decided to group "stormy creek" with ponding around Kokanee shed

Ostracods (seed shrimp)
Glyceridae (worms)
Nematocera (mosquito larvae)
Oligochaeta (Dero worms)
Cyclopoid copepods

Pool Sketch:



Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 1 Date: 1-11-13 Time Sampled: 12:30 pm

Previously sampled? No/(Yes) Photo Collected? (No)/Yes (not today) Camera #: ___
will collect on another date
GPS Unit #: ___ GPS Coordinates: lat: 36.98007864 long: -119.7222687 WGS 84

Pool Description: Corner of Belcher Rd Water Temperature: 13.3 °C

Pool Depth: present 5.5 cm / estimated maximum 7 cm

Surface Area of Pool: present 5 m x 3 m / estimated maximum: 5 m x 7.5 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature ___ # juvenile ___
Notostracans: total # 0 # mature ___ # juvenile ___

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:
Nematocera (mosquito larvae)
Oligochaeta (Zero worms)

Pool Sketch:
See sketch from datasheet dated 12-14-12

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 4 Date: 1-11-13 Time Sampled: 12:47 pm

Previously sampled? (No)/Yes Photo Collected? No/(Yes) Camera #: John's camera

will collect on another date

GPS Unit #: _____ GPS Coordinates: lat: 36.98166072 long: -119.7210681 WGS 84

Pool Description: road rut pool between Belcher Rd and worm farm Water Temperature: 14.4 °C

Pool Depth: present 3.5 cm / estimated maximum 6 cm

Surface Area of Pool: present 1.5 m x 1 m / estimated maximum: 2 m x 1.5 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 6 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

1 Gordius sp. (Horsehair worm)

Pool Sketch:

last of the day

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 5 Date: 1-11-13 Time Sampled: 1:35 pm

Previously sampled? (No)/Yes Photo Collected? (No)/Yes Camera #: ___
data available in wetland delineation folder (appears the same) WGS 84
GPS Unit #: _____ GPS Coordinates: ~~lat:~~ -119.7183081 ~~long:~~ Lat: 36.9866213
3 connected pools Longe
Pool Description: "Wetland" Named in wetland delineation Water Temperature: 7.7 °C

Pool Depth: present 30 cm / estimated maximum 38 cm

Surface Area of Pool: present 75 m x 20 m / estimated maximum: 80 m x 20 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 6 # mature _____ # juvenile _____

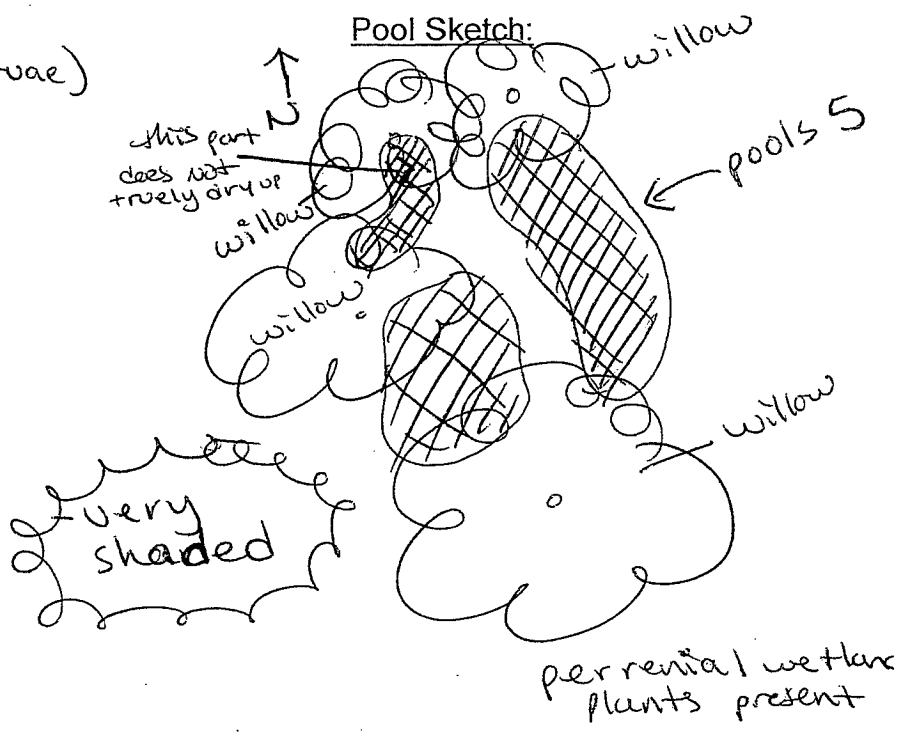
Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

Nematocera (mosquito larvae)
Ostracods (seed shrimp)
Glyceridae (red worms)
Gastropoda (snails)
Cladcera (water flea)

Pool Sketch:



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Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey
Cover Page

Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of a 90-day report: ___ no X yes

Required color photographs for the Project site are included: ___ no X yes

Project Site: SCARF & Trail Prj Date: 1/25/13

Collector(s): R. O'Leary & J. Battistoni Permit #: TE-54631A-0.1

County: Fresno USGS Quadrangle: Friant

Township: 11S Range: 21E Section: 7

List pool unique #'s sampled on this date: 3 & 5

Beginning Time: 12:30pm Ending Time: 1:30pm

Beginning Air Temperature: 14.4 °C Ending Air Temperature: 13.3 °C

Habitat Condition: (circle where appropriate)

- Undisturbed/Disturbed: ~~tire tracks~~ garbage disking/plowing
- Ungrazed/Grazed: Type: cattle horses sheep other _____
  Impact: light moderate heavy

- Land use of habitat: hatchery, recreation, worm farm

pools 1, 2, & 4 are dry (pool 1 refilled after rainevent 2 days ago)
photo collected of where pool 1 was in its reinodation and depth (1.5 cm) 1/24/13

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 3 Date: 1-25-13 Time Sampled: 12:24 pm

Previously sampled? No/(Yes) Photo Collected? No/(Yes) Camera #: 1
will collect on another date
GPS Unit #: _____ GPS Coordinates: lat: 36.98706277 long: -119.7142928 WGS84

Pool Description: Stamy creek & Kokanee pond Water Temperature: 14.4 °C

Pool Depth: present 3 cm / estimated maximum 40 cm

Surface Area of Pool: present 40 m x 140 m / estimated maximum: 40 m x 140 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

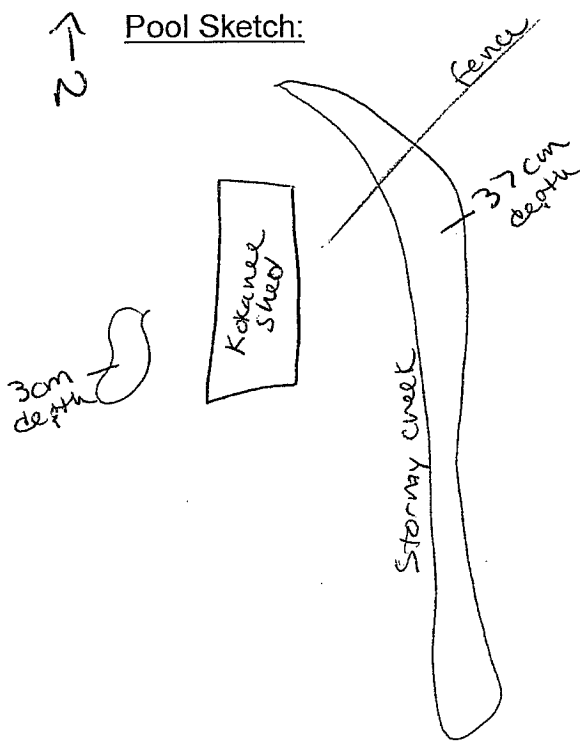
Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:
Oligochaeta (dero worms)
Ostracods (seed shrimp)
Isopods (Asellus)

Pool Sketch:



Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 5 Date: 1/25/13 Time Sampled: 1:10 pm

Previously sampled? No/(Yes) Photo Collected? No/(Yes) Camera #: 1
will collect on another date
GPS Unit #: _____ GPS Coordinates: lat: 36.9866213 long: -119.7183081 WGS84

Pool Description: "wetland" Water Temperature: ___ °C

Pool Depth: present 24 cm / estimated maximum 38 cm

Surface Area of Pool: present 70 m x 20 m / estimated maximum: 80 m x 20 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:
dero worms - oligocheata
mosquito larvae - Nematocera
Diperta - fly larvae
Daphnia - water flea
roundworm (looking thing)
Ostracods (seed shrimp)
snails - Gastropoda

Pool Sketch:
See sketch from datasheet dated 1-11-13

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Wet Season Survey
Cover Page

Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of a 90-day report: ___ no X yes

Required color photographs for the Project site are included: ___ no X yes

Project Site: SCARF & Trail Pj. Date: 2/15/13

Collector(s): J. Battistoni & R. O'leary Permit #: TE-54631A-0.1

County: Fresno USGS Quadrangle: Friant

Township: 11S Range: 21E Section: 7

List pool unique #'s sampled on this date: 3 & 5

Beginning Time: 2.45 pm Ending Time: 3:40 pm

Beginning Air Temperature: 24.4°C Ending Air Temperature: 24.4°C

Habitat Condition: (circle where appropriate)

- Undisturbed/Disturbed: ~~tire tracks~~ garbage disking/plowing
- Ungrazed/Grazed: Type: cattle horses sheep other _____
  Impact: light moderate heavy

- Land use of habitat: Hatchery, recreation, worm farm

- Note: GPSd all pools today

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 3 Date: 2-15-13 Time Sampled: 2:51 pm

Previously sampled? No/(Yes) Photo Collected? (No)/Yes not today Camera #: ___

GPS Unit #: Lands unit Trimble Juno GPS Coordinates: lat: 36.98706277 long: -119.7142928 WGS84

Pool Description: stormy creek - Kokanee shed Water Temperature: 16.7°C
west of Kokanee shed 2.5cm

Pool Depth: present 32 cm / estimated maximum 40 cm

Surface Area of Pool: present 40 m x 100 m / estimated maximum: 40 m x 140 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

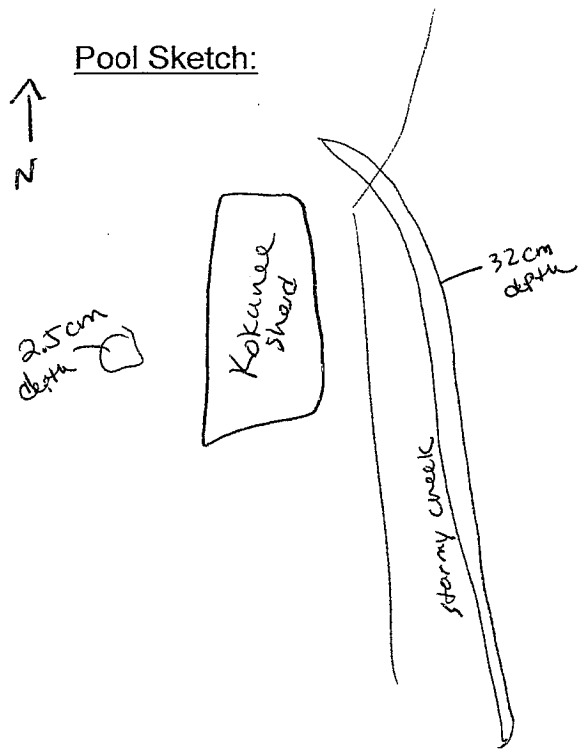
Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

Dytiscidae (predaceous diving Beetles)
Nematocera (mosquito larvae)
Seed shrimp (ostracods)
dero worms (oligochaeta)

Pool Sketch:



Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 5 Date: 2-15-13 Time Sampled: 3:30 pm

Previously sampled? No/(Yes) Photo Collected? (No)/Yes not today Camera #: ___

GPS Unit #: Trimble (lands unit) Juno GPS Coordinates: lat: 36.98666213 long: -119.7183081 WGS84

Pool Description: wetland Water Temperature: 15.6°C

Pool Depth: present 19 cm / estimated maximum 38 cm

Surface Area of Pool: present 60 m x 20 m / estimated maximum: 80 m x 20 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

Nematocera (mosquito larvae)
Ostracods (seed shrimp)

Pool Sketch:

See sketch from datasheet dated 1-11-13

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey
Cover Page

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This form is being submitted to serve as part of a 90-day report: ___ no X yes

Required color photographs for the Project site are included: ___ no X yes

Project Site: SCARF & Trail Prj. Date: 3/5/13

Collector(s): R. O'Leary & Molly Schnur Permit #: TE-54631A-0.1

County: Fresno USGS Quadrangle: Friant

Township: 11S Range: 21E Section: 7

List pool unique #'s sampled on this date: 3 & 5

Beginning Time: 9:50am Ending Time: 11:40 am

Beginning Air Temperature: 18.3°C Ending Air Temperature: 20 °C

Habitat Condition: (circle where appropriate)

- Undisturbed/Disturbed: ~~tire tracks~~ garbage disking/plowing
- Ungrazed/Grazed: Type: cattle horses sheep other _____
  Impact: light moderate heavy

- Land use of habitat: heteiwy, recreation, wormfarm

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 3 Date: 3-5-13 Time Sampled: 10:00 am

Previously sampled? No/(Yes) Photo Collected? No/(Yes) Camera #: 2
collected on 2/15/13
GPS Unit #: _____ GPS Coordinates: lat: 36.9870627 long: -119.7142928 WGS84

Pool Description: Stormy creek Dry around Kokanee shed Water Temperature: 12.8°C

Pool Depth: present 35 cm / estimated maximum 40 cm

Surface Area of Pool: present 1.5 m x 100 m / estimated maximum: 40 m x 140 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

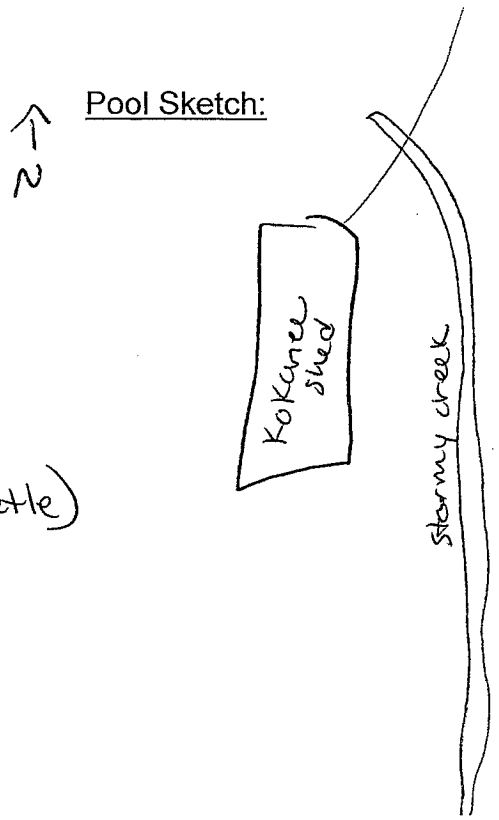
Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

Nematocera (mosquito larvae)
Ostracods (seed shrimp)
Cladocerans (Daphnia - waterfleas)
Oligochaeta (dero worms)
Cyclopoid copepods
Gastropoda (snails)
Diptera (fly larvae)
Dytiscidae (predaceous diving beetle)
stonefly?

Pool Sketch:



Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 5 Date: 3-5-13 Time Sampled: 11:25

Previously sampled? No/(Yes) Photo Collected? No/(Yes) Camera #: 2

GPS Unit #: collected on 2/15/13 GPS Coordinates: lat: 36.98666213 long: -119.7183081 WGS84

Pool Description: wetland Water Temperature: 14.4 °C

Pool Depth: present 23 cm / estimated maximum 38 cm

Surface Area of Pool: present ~~40~~ 60 m x ~~100~~ 20 m / estimated maximum: ~~40~~ 80 m x ~~140~~ 20 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:

Nematocera (mosquito larvae)
Ostracods (seed shrimp)
Daphnia (water fleas)
Cyclopoid copepods
Dytiscidae (predaceous diving beetle)
Stonefly?
Oligochaeta (dero worms)
Gastropoda (snails)
Bull frogs

Pool Sketch:

See sketch from datasheet dated 1-11-13

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This form is being submitted to serve as part of a 90-day report: ___ no X yes

Required color photographs for the Project site are included: ___ no X yes

Project Site: SCARF & Trail Prj. Date: 3/27/13

Collector(s): R. O'Leary & J. Battistoni Permit #: TG-54631A-0.1

County: Fresno USGS Quadrangle: Friant

Township: 11S Range: 21E Section: 7

List pool unique #'s sampled on this date: 3 & 5

Beginning Time: 10:11am Ending Time: 11:15 am

Beginning Air Temperature: 20 °C Ending Air Temperature: 21 °C

Habitat Condition: (circle where appropriate)

- Undisturbed/Disturbed: ~~tire tracks~~ garbage disking/plowing
- ~~Ungrazed~~/Grazed: Type: cattle horses sheep other _____
  Impact: light moderate heavy

- Land use of habitat: hatchery, recreation, wormfarm

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 3 Date: 3-27-13 Time Sampled: 10:20 am

Previously sampled? No/Yes Photo Collected? No/Yes Camera #: 2
collected on 2/15/13
GPS Unit #: _____ GPS Coordinates: lat: 36.98706277 long: -119.7142928 WGS8

Pool Description: stormy creek Water Temperature: 14.4 °C

Pool Depth: present 25 cm / estimated maximum 40 cm

Surface Area of Pool: present 15 m x 80 m / estimated maximum: 40 m x 140 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:
Ostracods (seed shrimp)
worms
Dead horse hair worm
Insect Larvae - not sure type

Pool Sketch:
see sketch from datasheet dated 3-5-13

Vernal Pool Data Sheet, CDFW Central Region
Wet Season Survey

Pool #: 5 Date: 3-27-13 Time Sampled: 11:04 am

Previously sampled? No/(Yes) Photo Collected? No/(Yes) Camera #: 2
collected on 2/15/13
GPS Unit #: _____ GPS Coordinates: lat: 36.9866213 long: -119.7183081 WGS 84

Pool Description: wetland Water Temperature: 13.3 °C

Pool Depth: present 22 cm / estimated maximum 38 cm

Surface Area of Pool: present 60 m x 20 m / estimated maximum: 80 m x 20 m

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g. 10's, 100's, 1000's) and note reproductive status.

Anostracans: total # 0 # mature _____ # juvenile _____
Notostracans: total # 0 # mature _____ # juvenile _____

Voucher Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species	# Individuals	Accession/Catalog #

Notes:
Bull frogs
Ostracods (seed shrimp)
Gastropoda (snails)
Nematocera (mosquito larvae)
Insect larvae
Daphnia (water flea)

Pool Sketch:
See sketch from datasheet dated 1-11-13