Section 3.3
Biological Resources

This section describes the biological resources that are present, or have the potential to be present, in the project region. For the purpose of this supplemental PEA, biological resources include vegetation; wildlife; and waters of the United States, including wetlands.

Potential impacts on biological resources that are associated with each of the Phase II project components are described, and the applicable APMs are identified to avoid, minimize, or compensate for potential significant impacts on biological resources.

Environmental Setting

Methods

The methods used to identify biological resources in the project area are described below. The biological resources project area is described, followed by a description of the prefield investigation and field surveys that were conducted to support the original PEA and this supplemental PEA.

Prefield Investigation

A prefield investigation was conducted to review existing information and to prepare lists of special-status plant and wildlife species known to occur or with potential to occur in the project region. A Jones & Stokes botanist and wildlife biologist reviewed the following existing information to develop lists of special-status species that could occur in the project region.

- A record search of the Birds Landing and Antioch North 7.5-minute U.S. Geological Survey (USGS) quadrangle maps (quads) and surrounding quads from the California Department of Fish and Game's (DFG's) California Natural Diversity Data Base (CNDDB) (2007);
- California Native Plant Society's (CNPS's) *6th Edition Inventory of Rare and Endangered Plants of California* (2001) and electronic updates available at http://www.cnps.org/programs/Rare_Plant/inventory/changes/index.htm;

- U.S. Fish and Wildlife Service's (USFWS's) lists of endangered and threatened species for selected USGS 7.5-minute quadrangles (2007);
- Previous environmental documents prepared for other projects in the region (i.e., the High Winds Environmental Impact Report [EIR] [Solano County 2001], Shiloh I EIR [Solano County 2005], and the Sacramento Municipal Utility District (SMUD) Wind Farm EIR [2001]);
- Biological Resources Background Report for the Solano County General Plan Update (EDAW, August 9, 2006);
- Knowledgeable individuals (Dr. Ron Kelley. pers. comm.); and
- Jones & Stokes file information from previous biological surveys conducted in the project region for various wind energy projects.

Additional information on species' habitat requirements, blooming periods, and field-identifying characteristics was obtained from various botanical sources (Munz and Keck 1973, Hickman 1993, CNPS 2001). This information was summarized and used to develop lists of special-status species that could occur in the project region (Tables 3.3-1 and 3.3-2 [at the end of this section).

Field Surveys

The biological team, consisting of a wildlife biologist and a botanist/wetlands ecologist, conducted field surveys on May 5, 6, 10, and 15, and on June 22, 2005 to support the Kirby Hills I Facility. Additional surveys were conducted in the Phase II project area on December 15, 2006; March 8, 2007; and April 25, 2007. An additional summer field survey is planned for June 2007 to target late-blooming species.

In general, the purposes of the 2005 and 2007 biological field surveys conducted for the proposed project were to:

- Characterize biological communities and their associated wildlife habitat uses,
- Determine whether suitable habitat exists for common and special-status wildlife species,
- Determine whether the project area contains suitable habitat for early- and late-blooming special-status plants,
- Locate special-status plant occurrences, and
- Delineate areas that may qualify as potential waters of the United States.

Methods used to document special-status species and waters of the United States, including wetlands, within the proposed project area are described below.

Special-Status Species

Special-status species are plant and animal species that are legally protected under the federal Endangered Species Act (ESA), California Endangered Species Act (CESA), or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. Special-status species include the following.

- Species listed or proposed for listing as threatened or endangered under the ESA (*50 CFR 17.12* [listed plants]; *50 CFR 17.11* [listed animals]; and various notices in the *FR* [proposed species]);
- Species that are candidates for possible future listing as threatened or endangered under the ESA (*69 FR 24876*, May 4, 2004);
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5);
- Species that meet the definitions of rare or endangered under the California Environmental Quality Act (CEQA) (State CEQA Guidelines Section 15380);
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.);
- Plants considered by CNPS to be "rare, threatened, or endangered in California" (Lists 1B and 2 [CNPS 2001]);
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 [CNPS 2001]), which may be included as special-status species on the basis of local significance or recent biological information;
- Animal species of special concern to the DFG (Remsen 1978 [birds], Williams 1986 [mammals], Jennings and Hayes 1994 [amphibians and reptiles]); and
- Animals fully protected in California (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], and 5050 [amphibians and reptiles]).

Special-Status Wildlife

A Jones & Stokes wildlife biologist conducted surveys in the Phase II project area in December 2006 and April of 2007 to identify and characterize habitat for special-status wildlife species known to occur in the project region (see Table 3.3-1). No protocol-level surveys (i.e., formal surveys conducted in accordance with DFG and/or USFWS standards) were conducted as part of this project. These surveys typically take longer than the timeframe allotted for this type of project (e.g., multiple years of surveys are required for some special-status invertebrate and amphibian species). In addition, LGS is committed to designing the project in a manner that would avoid habitat for these species; therefore,

protocol-level surveys are generally not required. For these reasons, a habitat assessment for species identified during the prefield investigation as having the potential to occur in the project area was conducted instead of a protocol-level survey.

Special-Status Plants

Jones & Stokes botanists conducted floristic surveys in May and June 2005 and additional floristic surveys in March and April 2007 to identify special-status plants and their habitats in the project area. As stated under *Methods,* the 2005 and 2007 survey timing was determined using the identification periods of plants listed in Table 3.3-2, habitats known to be present in the project area, and Jones & Stokes botanists' observations on other projects in the region (Jones & Stokes has been conducting surveys for several large transportation, development, and energy projects in Solano County).

The botanical surveys employed floristic methods recommended by DFG (2000) and CNPS (2001) guidelines. The guidelines specify that all plants be identified to the level necessary to determine whether they qualify as special-status plants or plant species with unusual or significant range extensions. Floristic surveys were conducted to ensure that special-status plant species were not inadvertently overlooked merely because they were not expected in the region. Depending on the terrain and habitat type, surveys included random meandering and intuitive-controlled transects in areas that contained suitable habitat for special-status plants. Survey intensity varied depending on species richness, habitat type and quality, and the probability that special-status plants would occur in a particular habitat type. The general purposes of the floristic surveys were to locate and map occurrences of special-status plants and to characterize biological communities.

Waters of the United States, Including Wetlands

For the purposes of this document, the term *waters of the United States* is an encompassing term used by the Corps for areas that would qualify for federal regulation under CWA Section 404. Waters of the United States are categorized as *wetlands* or *other waters of the United States*. Each of these categories is described below.

Wetlands. The Corps defines *wetlands* as areas that are inundated or saturated by surface water or groundwater at a frequency and duration that are sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (*33 CFR 328.3[b]*; *40 CFR 230.3*). For a wetland to qualify as a jurisdictional aquatic site, and therefore be subject to regulation under CWA Section 404, it must support a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology.

A relatively recent federal ruling (January 9, 2001; *Solid Waste Agency of Northern Cook County [SWANCC] v. United States Army Corps of Engineers* [121 S.CT. 675, 2001]) may affect whether wetlands in a project area are considered jurisdictional by the Corps. Guidance on nonnavigable, isolated [and] intrastate waters was published on January 19, 2001, and January 15, 2003, by Counsel for the U.S. Environmental Protection Agency and Corps in response to the SWANCC ruling. The guidance results in the determination that nonnavigable isolated waters may not be regulated by the Corps under Section 404 of the CWA.

Based on this preliminary delineation, it appears that all features identified in this delineation are located adjacent to a navigable water body, Nurse Slough, that is tributary to the Sacramento River. These features would be considered adjacent under the SWANCC decision.

Other Waters of the United States. *Other waters of the United States* are sites that typically lack one or more of the three wetland indicators identified above. Other waters of the United States in the project area consist of mudflats and two seasonal drainages. The seasonal drainages were identified as waters of the United States because they possess an ordinary high water mark (OHWM) as defined under *33 CFR 328.3(e)*. The mudflat was identified as an unvegetated area that appeared to be periodically inundated and exposed; mudflats are considered special aquatic sites in the Section 404(b)(1) guidelines.

Jones & Stokes conducted a wetland delineation on March 8, 2007. Wetlands were delineated in accordance with the *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) and the recently released supplement to the 1987 Manual that provides specific guidance for the Arid West Region, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Interim Supplement), which replaces sections of the 1987 Manual (U.S. Army Corps of Engineers 2006). A copy of the wetland delineation report that was submitted to the Corps for verification is included with this supplemental PEA as Exhibit 2 to the CPCN Application for Kirby Hills Phase II (Jones & Stokes 2007).

Biological Communities

The biological communities present in the Phase II project area are described below, followed by a discussion of special-status species known or with potential to occur in the area. Results of detailed field surveys for special-status species are also provided.

The location of sensitive biological resources (special-status plants and waters of the United States) located in the Phase II project area are shown in Figure 3.3-1.

Regional Setting

The project area lies in the Sacramento Valley geographic subregion of the California Floristic Province (Hickman 1993). The project area encompasses rolling hills, with elevations ranging from approximately 50 to 300 feet above mean sea level. The rolling hills are bordered by the Sacramento River to the south and Suisun Marsh to the west and north (north of the Kirby Hills portion of the project area). The climate is hot and dry, with a mean annual precipitation of 16–20 inches falling entirely as rain during winter and spring months.

The general region has been transformed from a native landscape to the current altered landscape, where wildlife abundance and diversity are somewhat limited. The landscape is generally monotypic (i.e., dryland farming and annual grasslands), is mostly treeless, consists of several windfarm operations, and exhibits limited occurrence of wetlands or other distinctive biological communities.

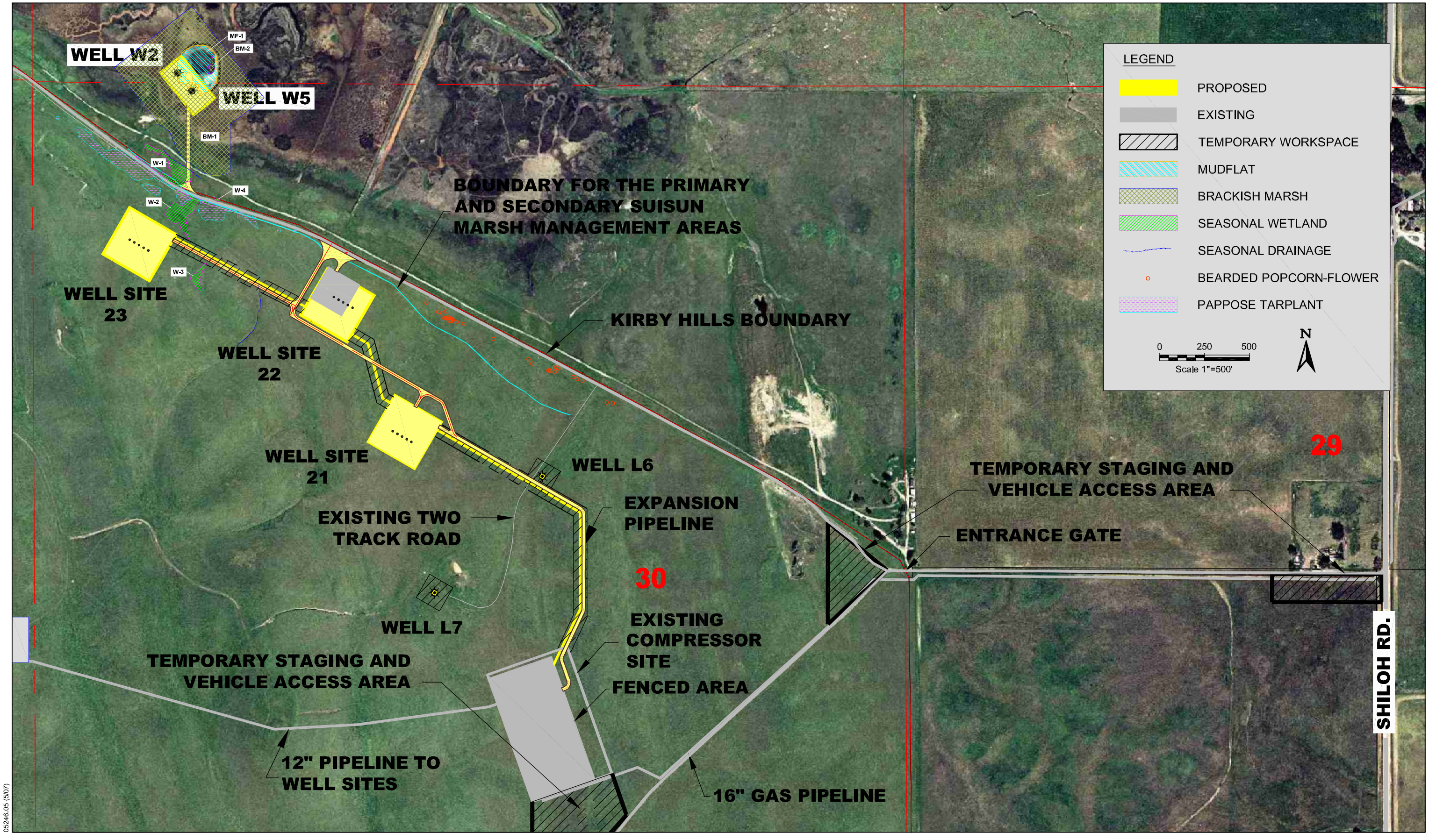
Nonnative Annual Grassland

Nonnative annual grasslands are the most common community in the Phase II project area, occurring at nearly all project components. The species composition of the nonnative annual grasslands varies with grazing intensity, aspect, soil disturbance, and soil type. In general, the annual grassland is characterized by a mix of annual grasses and weedy forbs, including medusa-head, soft chess, hare barley, slender wild oat, ripgut brome, yellow star-thistle, red-stem filaree, tarweed, several species of brodiaea, and dove weed. Native grasses are sparse but include purple needlegrass and fescues. The nonnative annual grasslands in the project area are grazed by cattle for a portion of the year.

The project area provides suitable foraging habitat and cover for some wildlife species, particularly small rodents such as ground squirrels and pocket gophers, grassland-associated passerines such as horned larks, and raptors. Wide-ranging animals, such as turkey vultures, red-tailed hawks, and coyotes, occur in the area. Species observed in grasslands during surveys of the project site include western meadowlark, western kingbird, red-tailed hawk, savannah sparrow, house finch, northern harrier, American kestrel, gopher snake, and western fence lizard.

Brackish Marsh/Mudflats

Two areas of brackish marsh totaling 8.118 acres were mapped in the project area. This wetland type is dominated by plants tolerant of saline and brackish conditions, such as Virginia glasswort, common purslane, brassbuttons, and alkali heath. Wetland hydrology in the brackish marsh was determined by the presence of primary indicators such as sediment deposits, biotic crust, salt crust, and surface soil cracks.



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Jones & Stokes

Figure 3.3-1
Biological Resources Located in the Kirby Hills Phase II Project Area

One unvegetated area within the brackish marsh wetlands (1.016 acres) was mapped as a mudflat in the brackish marsh; this site showed signs of periodic inundation, salt crust, and animal footprints impressed in dried mud.

Brackish marsh habitat within the project area occurs within the Suisun Marsh. In fact, Suisun Marsh is the largest contiguous brackish water wetland in the western United States. It serves as the resting and feeding ground for thousands of waterfowl migrating on the Pacific Flyway. In addition, Suisun Marsh provides essential habitat for more than 221 bird species, 45 mammal species, 16 reptile and amphibian species, and more than 40 fish species. (San Francisco Bay-Delta Science Consortium 2007).

As described in the wetland delineation report (Jones & Stokes 2007), the brackish marsh wetlands have a hydrologic connection to the Suisun Marsh and would therefore most likely be considered jurisdictional wetlands by the Corps and regulated under Section 404 of the CWA. Moreover, they also would be considered wetlands by USFWS and DFG. The mudflats would be considered other waters of the United States because they lack a prevalence of hydrophytic vegetation.

Seasonal Wetlands

Four areas of seasonal wetland totaling 1.073 acres were mapped in the project area. The seasonal wetlands are fed by groundwater seeps, and wetland hydrology was determined by the presence of a primary indicator—the presence of surface water. These seasonal wetland communities occur along the Kirby Hills access road (see Figure 3.3-1). In the project area, seasonal wetlands usually pond or are saturated for short periods and do not remain inundated for very long into the growing season. The species composition in seasonal wetlands in the project area is variable depending on the depth and length of inundation, position on the landscape, soil type, and previous disturbance factors. The hydrophytic plants in seasonal wetlands include Mexican rush, birds-foot trefoil, spiny-fruit buttercup, and hyssop loosestrife.

Several wildlife species use seasonal wetlands. When wetlands are ponding, waterbirds such as mallard, killdeer, black-necked stilt, American avocet, greater yellowlegs, and long-billed curlew commonly forage on floating and emergent vegetation and invertebrates in the wetlands. Some seasonal wetlands in the project area could also provide habitat for special-status invertebrates.

As described in the wetland delineation report (Jones & Stokes 2007), the seasonal wetlands along the Kirby Hills access road have a hydrologic connection to the Suisun Marsh and would therefore most likely be considered jurisdictional wetlands by the Corps and regulated under Section 404 of the CWA. They also would be considered wetlands by USFWS and DFG.

Seasonal Drainage

Two seasonal drainages were mapped in the project area. D-1 is a 1-foot-wide artificial ditch that borders an area of seasonal wetland, and D-2 is a 2-foot-wide natural seasonal drainage within a small valley with a defined bed and bank that ends where it reaches the flat area at the toe of the slope and does not continue to the brackish marsh area.

The seasonal drainages that occur in the project area have the same wildlife habitat value as the adjacent grassland habitats.

Because the seasonal drainages eventually connect to the Suisun Marsh, they are considered as waters of the United States under Section 404 of the CWA.

Stock Pond

One seasonal stock pond occurs in the project area and is found in the Kirby Hills, just north of the compressor station site (see Figure 3.3-1 in the original PEA [Jones & Stokes 2005] for the location of this feature). The pond is an artificially created feature that was excavated in an upland area and is sustained by seasonal rainfall. The vegetation cover is very sparse and consists of scattered upland species. It should be noted that water has not been observed in this pond for the past three years (2005, 2006, and 2007).

Based on Jones & Stokes' wildlife biologists' observations, the stock pond would not likely provide seasonal habitat for amphibian species. The stock pond provides the same habitat values as the surrounding nonnative annual grasslands.

The stock pond does not support wetland characteristics, is isolated, and does not have a hydrologic connection to any waters of the United States. Therefore, it is not likely to be considered as waters of the United States or regulated by the Corps. It also lacks the characteristics required for it to be considered as a water of the State.

Special-Status Species

Special-Status Wildlife

Based on a review of DFG's CNDDB (2005 and 2007), species lists for the project region, and biological communities present in the Phase II project area, a total of 68 special-status wildlife species were identified as potentially occurring within the project region (Table 3.3-1). Three bird species (tricolored blackbird, burrowing owl, and northern harrier) listed in Table 3.3-1 were observed during the 2005 and 2007 field surveys. None of the remaining 65 wildlife species have been previously documented in the project area (CNDDB 2007); however, much of the project area has probably not been surveyed for special-status wildlife.

Of the 68 special-status wildlife species listed in Table 3.3-1, 30 species were eliminated from further consideration because suitable habitat for these species is not present in the project area or because the species range does not extend into the project area. A brief explanation for the absence of these species and their habitats is provided in Table 3.3-1. As discussed in Table 3.3-1, the Phase II project area provides foraging habitat for many migrating and wintering birds that do not breed in the project area and would not be affected by the proposed project. These species are not discussed further. A detailed description of the species that could occur in the Phase II project area was provided in the original PEA and presented in the Final IS/MND.

Other Non-Special-Status Migratory Birds and Raptors

Based on the presence of suitable nesting habitat, several non-special-status migratory birds (including waterfowl) and raptors could nest in and adjacent to the project area. The breeding season for most birds is generally from March 1 to August 15. The occupied nests and eggs of these birds are protected by federal and state laws, including the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Sections 3503 and 3503.5. DFG is responsible for overseeing compliance with the codes and makes recommendations on nesting bird and raptor protection.

A focused nest survey was not conducted during the 2005 and 2007 field surveys. However, several common migratory birds and raptors—including red-tailed hawk, American kestrel, killdeer, western meadowlark, northern mockingbird, red-winged blackbird, western kingbird, and mourning dove—were observed in the project area during the breeding season (March 1 to August 15). Trees, shrubs, and grasslands in and adjacent to the project area provide potential nesting habitat for migratory birds and raptors.

The Suisun Marsh provides habitat for numerous resident and wintering waterfowl (including mallard, pintail, cinnamon teal, ruddy duck, American wigeon, and northern shoveler). These species are most abundant during winter (October through January) and are actively hunted by the duck clubs located within the Suisun Marsh management area. Brackish marsh and mudflats in the project area provide potential foraging habitat for waterfowl and could support resident breeding species such as mallard.

Special-Status Plants

Based on a review of CNDDB (2007), 33 special-status plant species were identified as having the potential to occur in the project region (Table 3.3-2). Several of the species listed in Table 3.3-2 do not occur in the project area because they have extremely limited ranges (i.e., Antioch Dunes evening-primrose) or are limited to habitats that are not present in the project area (i.e., serpentine soils, brackish marsh, tidal salt marsh, or dunes).

Two special-status plants have been located in the Phase II project area: bearded popcorn-flower and pappose tarweed. Each of these species is discussed below.

Bearded Popcorn-Flower

Bearded popcorn-flower (*Plagiobothrys hystriculus*) is the only special-status plant species located during the 2005 field surveys (see Figure 3.3-1). Bearded popcorn-flower is an annual member of the Borage Family (Boraginaceae). The plants are small, with stems less than 40 centimeters (16 inches) long that are erect to horizontally spreading. The flowering period is in May.

Bearded popcorn-flower was described in 1920 based on two collections from Solano County—the first by Katherine Brandegee from Elmira in 1882 and the second by Willis Jepson from the Montezuma Hills in 1892. Until recently, these were the only known collections, and the CNPS had listed the species as "presumed extinct" (List 1A). Because the species was presumed to be extinct, neither USFWS nor DFG had considered the species for listing as threatened or endangered. In May 2005, Jones & Stokes' botanists rediscovered the species at two locations, one in the Montezuma Hills and one in the Kirby Hills. The extent and number of plants at these locations are relatively small (less than 50 plants in each population in 2005).

The Kirby Hills population is the only occurrence found in the Phase II project area. This population occurs along the south side of the existing access road, just upslope from the seasonal wetland that occurs immediately along the road (see Figure 3.3-1). The March and April 2007 floristic surveys did not locate this population. It appears that the plants did not germinate this year as a result of the low rainfall (2005 was a high rainfall year).

Habitat for bearded popcorn-flower consists of low, moist areas in annual grassland, such as the upper margins of seasonal wetlands. Associated species include Italian ryegrass, coyote thistle, hyssop loosestrife, and harvest brodiaea. Because bearded popcorn-flower plants are small and tend to spread horizontally, they are very difficult to detect in areas of dense ryegrass, which may be one reason the species has been rarely encountered.

Pappose Tarweed

Pappose tarweed (*Centromadia parryi* ssp. *Parryi*) is an annual herb and a CNPS List 1B species. Pappose tarweed has no state or federal status but is a CNPS List 1B species that is considered rare, threatened, or endangered in California and elsewhere (CNPS 2007). Pappose tarweed is known as *Hemizonia parryi* ssp. *parryi* in the Jepson Manual (Hickman 1993).

Pappose tarweed inhabits coastal prairie, meadows and seeps, valley and foothill grassland on mesic soils, alkaline marshes and swamps, and coastal salt marshes

and swamps, typically at elevations below approximately 1,400 feet (CNPS 2007).

The species was located by a Jones & Stokes botanist during the 2005 summer field surveys along the Kirby Hills access road (see Figure 3.3-1). This species occurs in annual grassland habitat in the project region. An additional field survey will be conducted this summer of 2007 to identify the current limits of the population. The population will be mapped using a handheld GPS unit and avoided during 2008 construction activities.

Waters of the United States and Waters of the State

As described previously, Jones & Stokes conducted a wetland delineation to determine the extent of potential waters of the United States and waters of the State (e.g., isolated wetlands and other features) that occur in the project area. In summary, 10.232 acres of waters of the United States were delineated in the project area (see Table 3.3-3). No isolated wetlands were identified during the field delineation.

Table 3.3-3. Summary of Waters of the United States Delineated in the Phase II Project Area

Wetland Feature	Wetland/Waters Type	Jurisdictional Status	Acreage in Project Area
BM-1	Brackish marsh	Wetlands	8.081
BM -2	Brackish marsh	Wetlands	0.037
W-1	Seasonal wetland	Wetlands	0.455
W-2	Seasonal wetland	Wetlands	0.473
W-3	Seasonal wetland	Wetlands	0.135
W-4	Seasonal wetland	Wetlands	0.010
		Total Wetlands	**9.191**
MF-1	Mudflats	Other water of the United States	1.016
D-1 (283 linear feet)	Seasonal drainage	Other water of the United States	0.006
D-2 (405 linear feet)	Seasonal drainage	Other water of the United States	0.019
		Total other waters of the United States	**1.041**
		Total waters of the United States	**10.232**

Regulatory Setting

Federal Regulations

Endangered Species Act

The ESA, enacted in 1973, protects fish and wildlife species and their habitats that have been identified by USFWS or the National Marine Fisheries Service (NOAA Fisheries) as threatened or endangered. *Endangered* refers to species, subspecies, or distinct population segments in danger of extinction through all or a significant portion of their range; *threatened* refers to those species likely to become endangered in the near future. The ESA is administered by USFWS and NOAA Fisheries. In general, NOAA Fisheries is responsible for protection of ESA-listed marine species and anadromous fish species, while other listed species are under USFWS jurisdiction.

The ESA Authorization Process for Federal Actions under Section 7 provides a means for authorizing take of threatened and endangered species by federal agencies. It applies to actions that are conducted, permitted, or funded by a federal agency. Under Section 7, the federal agency conducting, funding, or permitting an action (the lead agency) must consult with USFWS or NOAA Fisheries, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat.

Migratory Bird Treaty Act

The MBTA (*16 USC 703–711*) prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the act, *take* is defined as the action of or attempt to "pursue, hunt, shoot, capture, collect, or kill." This act applies to all persons and agencies in the United States, including federal agencies.

Executive Order 13186 for Conservation of Migratory Birds (January 11, 2001) requires that any project with federal involvement address the impacts of federal actions on migratory birds. The executive order is designed to assist federal agencies in their efforts to comply with the MBTA and does not constitute any legal authorization to take migratory birds. The order also requires federal agencies to work with USFWS to develop a memorandum of understanding. Protocols developed under the memorandum must promote the conservation of migratory bird populations through the following means:

- Avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
- Restore and enhance habitat of migratory birds, as practicable; and

- Prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

Clean Water Act

As discussed in Section 3.7, *Hydrology and Water Quality*, the CWA serves as the primary federal law protecting the quality of the nation's surface waters including lakes, rivers, and coastal wetlands. The relevant sections of the CWA are summarized below and in Section 3.7, *Hydrology and Water Quality*, of this PEA to support this regulatory discussion.

- **Section 404: Permits for Fill Placement in Waters of the United States, Including Wetlands.** Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including:
  - Areas within the OHWM of a stream, including nonperennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned; and
  - Seasonal and perennial wetlands, including coastal wetlands.
- **Section 402: Permits for Stormwater Discharge.** Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES program administered by the U.S. Environmental Protection Agency.
- **Section 401: Water Quality Certification.** Under Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects with a federal component that may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with Section 401.

State Regulations

California Endangered Species Act

CESA, administered by DFG, prohibits the take of endangered and threatened species; however, habitat destruction is not included in the state's definition of *take*. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. DFG administers the act and authorizes take through Section 2081 agreements (except for species designated as fully protected). Regarding rare plant species, CESA defers to the California Native Plant Protection Act of 1977, which

prohibits importing rare and endangered plants into California, taking rare and endangered plants, and selling rare and endangered plants. State-listed plants are protected mainly in cases where state agencies are involved in projects under CEQA. In these cases, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but can be protected under CEQA.

California Environmental Quality Act

CEQA is the regulatory framework by which California public agencies identify and mitigate significant environmental impacts. A project normally is considered to result in a significant environmental impact on biological resources if it would substantially affect a rare or endangered species or the habitat of that species; substantially interfere with the movement of resident or migratory fish or wildlife; or substantially diminish habitat for fish, wildlife, or plants. The State CEQA Guidelines define *rare, threatened, or endangered species* as those listed under CESA and ESA, as well as any other species that meets the criteria of the resource agencies or local agencies (e.g., DFG-designated species of special concern and CNPS-listed species). The State CEQA Guidelines state that the lead agency preparing an EIR must consult with and receive written findings from DFG concerning project impacts on species listed as endangered or threatened. The effects of a proposed project on these resources are important in determining whether the project would result in significant environmental impacts under CEQA.

California Fish and Game Code

Fully Protected Species

The California Fish and Game Code provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists protected amphibians and reptiles. Section 3515 prohibits take of fully protected fish species. Eggs and nests of all birds are protected under Section 3503, nesting birds (including raptors and passerines) under Sections 3503.5 and 3513, birds of prey under Section 3503.5, and fully protected birds under Section 3511. Migratory nongame birds are protected under Section 3800. Mammals are protected under Section 4700. The California Fish and Game Code defines *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Except for take related to scientific research, all take of fully protected species is prohibited.

Sections 3503 and 3503.5

Section 3503 of the California Fish and Game Code prohibits the killing of birds or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests.

Local Regulations

In addition to federal and state jurisdictions, impacts on biological resources are subject to the policies and regulations of the County. The Resource Conservation and Open Space and Land Use and Circulation Elements of the Solano County General Plan established policies for the protection of marsh and wetland habitat. These policies are further discussed in Section 3.7, *Hydrology and Water Quality*.

Several local agencies with primary responsibility for actions in Suisun Marsh (USFWS, NOAA Fisheries, U.S. Bureau of Reclamation, DFG, California Department of Water Resources, California Bay-Delta Authority, and Suisun Resource Conservation District) formed a Charter Group to develop a Habitat Management, Preservation, and Restoration Plan for Suisun Marsh that would protect and enhance Pacific Flyway and existing wildlife values, endangered species, and water-project supply quality. As of 2007, this plan is in the early planning stages.

Impact Analysis

Methodology and Assumptions

This impact analysis is based on the project information and APMs provided in Chapter 2 and information gathered during Jones & Stokes field surveys in 2005 and 2007.

Construction and future operation-related activities associated with the proposed Phase II project could result in temporary or permanent impacts on biological resources. In assessing the magnitude of possible effects, the following assumptions were made regarding project-related impacts on biological resources.

- Construction of the Phase II components will result in the disturbance of nonnative annual grassland. Although the loss or disturbance of nonnative annual grassland may affect special-status wildlife, potential impacts are not considered significant from a botanical perspective; therefore, botanical-related impacts on the grassland are not discussed in this section. Impacts on special-status wildlife species associated with these habitats are discussed in this section.
- The Big Ditch that occurs along Birds Landing Road will not be directly or indirectly affected by construction of the PG&E interconnect pipeline. Therefore, potential impacts on this drainage and associated habitat are not addressed in this section.

- The stock pond that occurs near the Phase II project does not support suitable breeding habitat for California tiger salamander. However, this stock pond will not be directly or indirectly affected by the Phase II project.
- The Phase II project would result in the permanent loss of brackish marsh and mudflat waters, but no seasonal wetlands will be filled.
- All staging areas and access roads will be located in disturbed areas that do not contain sensitive biological resources.
- No trees will be removed or otherwise disturbed because none occur in the Phase II area.

Criteria for Determining Significance

Criteria for determining the significance of biological resources impacts were developed based on questions contained in the environmental checklist form in Appendix G of the State CEQA Guidelines. Based on the checklist questions, a project may have a significant effect on the environment if it would:

- Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFG or USFWS;
- Have a substantial adverse effect on federally protected wetlands, as defined by CWA Section 404 (including marsh, vernal pool, and coastal wetlands) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted habitat conservation plan; natural communities conservation plan; or other approved local, regional, or state habitat conservation plan.

Impacts

IMPACT 3.3-1: POTENTIAL INADVERTENT EFFECTS ON POTENTIAL HABITAT FOR VERNAL POOL FAIRY SHRIMP AND VERNAL POOL TADPOLE SHRIMP DURING CONSTRUCTION OF THE PHASE II FACILITIES

To the extent possible, LGS has designed the proposed Phase II project components to avoid vernal pool fairy shrimp and vernal pool tadpole shrimp habitat (seasonal wetlands along the Kirby Hills access road). The design

features include constructing during the dry season, confining construction activities to a designated work area, and limiting access road improvement activities. Current project design maps indicate that construction of the proposed project will not result in direct loss (filling or degradation) of potential fairy shrimp and tadpole shrimp habitat. However, the potential exists for the contractor to inadvertently affect suitable habitat. Potential effects on fairy shrimp and tadpole shrimp habitat are considered significant. To reduce this impact to a less-than-significant level and avoid take of federally listed fairy shrimp and tadpole shrimp, LGS will implement APM B-1 (discussed in Chapter 2) to ensure that the habitat is avoided.

IMPACT 3.3-2: POTENTIAL EFFECTS ON CALIFORNIA TIGER SALAMANDER AQUATIC AND UPLAND HABITAT AND POTENTIAL MORTALITY OF CALIFORNIA TIGER SALAMANDER ADULTS, LARVAE, OR EGGS DURING CONSTRUCTION OF THE PHASE II FACILITIES

There is no suitable breeding habitat for California tiger salamander in the Phase II project area. Therefore, there will be no impact to this species or its habitat.

IMPACT 3.3-3: POTENTIAL LOSS OR DISTURBANCE OF BREEDING OR WINTERING BURROWING OWL DURING CONSTRUCTION OF THE PHASE II FACILITIES

Construction of the proposed project would result in the permanent removal of approximately 8 acres of nonnative annual grassland associated with the construction of the well pads. These nonnative annual grasslands provide potential burrowing owl nesting and foraging habitat. One burrowing owl was observed in a culvert under the Kirby Hills access road during the December 2006 field visit. If burrowing owls are nesting within the area prior to construction, grading and excavation activities could result in removal of an occupied burrowing owl breeding or wintering burrow site and loss of burrowing owl adults, young, or eggs. As stated in the *Staff Report on Burrowing Owl Mitigation*, published by DFG (1995), a site is considered occupied if at least one burrowing owl has been observed occupying a burrow within the last 3 years.

Impacts on nesting burrowing owls are considered significant. To reduce potential impacts to a less-than-significant level, LGS will implement APMs B-1 and B-5 (discussed in Chapter 2). Implementation of these measures also will ensure compliance with the MBTA and the California Fish and Game Code.

IMPACT 3.3-4: POTENTIAL LOSS OR DISTURBANCE OF SWAINSON'S HAWK, NORTHERN HARRIER, LOGGERHEAD SHRIKE, GRASSHOPPER SPARROW, HORNED LARK, TRICOLORED BLACKBIRD, AND NESTING MIGRATORY BIRDS AND RAPTORS DURING CONSTRUCTION OF THE PHASE II FACILITIES

Gas pipeline construction would result in the disturbance of annual grasslands that could provide potential nesting habitat for ground-nesting birds, such as northern harrier, grasshopper sparrow, and horned lark (all designated by the State as species of special concern). Large trees adjacent to the project area could also provide nesting habitat for raptors, such as Swainson's hawk and red-tailed hawk. Likewise, dense marsh vegetation adjacent to the project area could also provide nesting habitat for tricolored blackbird and loggerhead shrike. Construction activities (e.g., excavation, and grading) in the project area that occur during the breeding season (generally between March 1 and August 15) could disturb or remove occupied nests of special-status and nonlisted migratory birds and raptors. This disturbance could cause nest abandonment and subsequent loss of eggs or developing young at active nests located in or near the project area. All migratory birds and raptors are protected under the MBTA and California Fish and Game Code Sections 3503 and 3503.5.

To reduce potential impacts to a less-than-significant level, LGS will implement APMs B-1 and B-6 (discussed in Chapter 2). Implementation of these measures also will ensure compliance with the MBTA and the California Fish and Game Code.

IMPACT 3.3-5: POTENTIAL DISTURBANCE OF MIGRATING AND WINTERING WATERFOWL DURING CONSTRUCTION OF THE PHASE II FACILITIES

Construction of the Phase II facilities is not expected to displace resident or wintering waterfowl or permanently disrupt established migration corridors. Construction noise associated with grading and excavation activities in Phase II project area could temporarily disrupt normal movement patterns of resident waterfowl flying through the project area because birds might avoid flying through or foraging in an active construction area; however, flight patterns are expected to revert back to normal after construction has been completed. Because the proposed project will be constructed during late spring and summer months (described in Chapter 2), construction activities will not affect migrating waterfowl during the winter season (generally October through February). This impact is considered less than significant. No mitigation is required.

IMPACT 3.3-6: POTENTIAL DISTURBANCE OF SPECIAL-STATUS PLANT POPULATIONS DURING CONSTRUCTION OF THE PHASE II FACILITIES

As described in the *Environmental Setting*, two special-status plant species (bearded popcorn-flower and pappose tarweed) occur along the south of the Kirby Hills access road (see Figure 3.3-1). These populations would not be directly affected by adjacent construction activities but could be indirectly or inadvertently affected by vehicle parking or other equipment during road improvement or construction activities.

Impacts on these special-status plant populations could result in a substantial reduction in local population size, lowered reproductive success, or habitat fragmentation. This impact is considered significant. Implementation of APM B-1 will reduce this impact to a less-than-significant level and ensure that the population is protected and avoided during construction of the proposed project.

IMPACT 3.3-7: PERMANENT LOSS OR DISTURBANCE OF APPROXIMATELY 1.17 ACRES OF POTENTIAL WATERS OF THE UNITED STATES (BRACKISH MARSH AND MUDFLATS) DURING CONVERSION OF THE FORMER PRODUCTION WELLS W2 AND W5

As described in the project description, four existing abandoned wells are proposed for conversion to observation wells. Two former production wells (W2 and W5) are located in the Suisun Marsh Primary Management Area and are surrounding by brackish marsh and mudflats. These communities would likely be considered waters of the United States and regulated under CWA. Figure 3.3-1 shows the location of the wells and potential waters of the United States.

The Phase II construction activities would result in a disturbance and permanent loss of up to 1.17 acres of potential waters of the United States (including 0.81 acre of brackish marsh and 0.36 acre of mudflats). Permanent fill will be placed within the 1.17 acres of waters of the United States during construction of a permanent well pad (150 feet x 300 feet) and an access road (20 feet x 500 feet) from the Kirby Hills access road to the well pad. To the extent possible, direct and indirect impacts on these waters will be minimized to the extent possible during the final design phase and during construction.

The loss or degradation of the brackish marsh could result in degradation of sensitive plant communities, fragmentation or isolation of important wildlife habitats, or disruption of natural wildlife movement corridors. This impact is considered significant. In addition to the biological resources, geology, hazards and hazardous materials, and site reclamation APMs described in Chapter 2, LGS will implement a new APM (APM B-7: Compensate for Permanent Impacts on Jurisdictional Wetlands) as part of the Phase II project. Implementation of the

existing APMs and this new APM B-7 would reduce this impact to a less-than-significant level.

Applicant-Proposed Measures and Mitigation Measures

LGS will implement the appropriate biological resource APMs to avoid and reduce potential impacts on biological resources. In addition, to the existing APMs that were adopted as part of the Final MND, LGS will also implement the following APM B-7 to compensate for the loss of wetland habitat associated with the Suisun Marsh Primary Management Area.

APM B-7: Compensate for Permanent Impacts on Jurisdictional Wetlands

LGS will be obtaining permits to place fill material into the waters of the United States associated with the Suisun Marsh Primary Management Area. These permits will include a Section 404 permit from the Corps and a Section 401 water quality certification from the Regional Water Quality Control Board (RWQCB). As part of these permit authorizations, LGS will implement measures to minimize the placement of fill material into the wetlands and will compensate for the permanent loss of wetlands at a minimum 1:1 ratio (1 acre for every 1 acre filled). The final compensatory mitigation ratio and implementation plan (e.g., the purchase of mitigation bank credits) will be determined through coordination with the Corps, RWQCB, and BCDC (if necessary).

Table 3.3-1. Special-Status Wildlife Identified During the Prefield Evaluation as Having the Potential to Occur in the Phase II Project Region, Solano County

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Invertebrates				
Lange's metalmark butterfly *Apodemia mormo langei*	E/—	Once found throughout the Antioch Dunes; range now reduced to less than 10 acres of Antioch Dunes in Contra Costa County	Limited to dense to moderately dense patches of food plant, wild buckwheat, in stabilized sand dunes	None – project is not within the known geographic distribution
Conservancy fairy shrimp *Branchinecta conservatio*	E/—	Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, and Glenn Counties	Large, deep vernal pools in annual grasslands	None – seasonal wetlands in the project area are relatively shallow and do not pond water for long periods; these types of wetlands do not provide suitable habitat for Conservancy fairy shrimp
Vernal pool fairy shrimp *Branchinecta lynchi*	T/—	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also occur in Riverside County	Common in vernal pools; also found in sandstone rock outcrop pools	Moderate – suitable habitat (seasonal wetlands) is present in the project area
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/—	Streamside habitats below 3,000 feet throughout the Central Valley	Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant	None – no suitable habitat (i.e., elderberry shrubs) is present in the project area
Delta green ground beetle *Elaphrus viridus*	T/—	Restricted to Olcott Lake and other vernal pools at Jepson Prairie Preserve, Solano County	Sparsely vegetated edges of vernal lakes and pools; occur up to 250 feet from pools	None – project area is outside the known range; restricted to the Jepson Prairie and area immediately surrounding
Vernal pool tadpole shrimp *Lepidurus packardi*	E/—	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds	Moderate – suitable habitat (seasonal wetlands) is present in the project area
California linderiella *Linderiella occidentalis*	FSC/—	Shasta County south to Merced County	Seasonal pools with old alluvial soils underlain by hardpan or sandstone depressions, in grasslands	Moderate – suitable habitat (seasonal wetlands) is present in the project area
Callippe silverspot *Speyeria callippe callippe*	E/—	San Bruno Mountain, San Mateo County, and a single location in Alameda County.	Open hillsides where wild pansy (*Viola pedunculata*) grows; larvae feed on Johnny jump-up plants, whereas adults feed on native mints and non-native thistles.	Low – the project area is likely too isolated for this species to disperse and maintain a population

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Amphibians				
California tiger salamander *Ambystoma californiense (=A. tigrinum c.)*	T/SSC	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet elevation, and coastal region from Butte County south to northeastern San Luis Obispo County	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy	Low – no suitable breeding habitat is present in the project area. The stock pond does not appear to pond water for long durations and no water has been observed in the pond over the past three winter seasons. Additionally, there are no known recorded occurrences in the area for this species.
Foothill yellow-legged frog *Rana boylii*	SC/SSC, P	Occurs in the Klamath, Cascade, north Coast, south Coast, Transverse, and Sierra Nevada Ranges up to approximately 6,000 feet	Creeks or rivers in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along the edge. Usually found near riffles with rocks and sunny banks nearby.	None – no suitable creek habitat is present
California red-legged frog *Rana aurora draytoni*	T/SSC, P	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County	Permanent and semi permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods	None – project area is outside the current range of the species; the closest reported occurrences occur more than 10 miles west from the project area (USFWS 2004)
Western spadefoot *Scaphiopus hammondii*	SC/SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California	Shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands	None – project area does not occur within the current range of the species; the species is not known to occur in Solano County (Jennings and Hayes 1994, CNDDB 2007)
Reptiles				
Silvery legless lizard *Anniella pulchra pulchra*	SC/SSC	Along the Coast, Transverse, and Peninsular Ranges from Contra Costa County to San Diego County with spotty occurrences in the San Joaquin Valley	Habitats with loose soil for burrowing or thick duff or leaf litter; often forages in leaf litter at plant bases; may be found on beaches, sandy washes, and in woodland, chaparral, and riparian areas	Low – thick duff or litter layers are not present in the project area; not known to occur in Solano County (Jennings and Hayes 1994)

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Northwestern pond turtle *Clemmys marmorata marmorata*	SC/SSC	Occurs from the Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests	High – brackish marsh habitat in the project area provides suitable foraging and basking habitat for the species; pond turtles are known to occur in Suisun Marsh
Alameda whipsnake *Masticophis lateralis euryxanthus*	T/T	Restricted to Alameda and Contra Costa Counties; fragmented into 5 disjunct populations throughout its range	Valleys, foothills, and low mountains associated with northern coastal scrub or chaparral habitat; requires rock outcrops for cover and foraging	None – project area does not occur within the current range of the species (Jennings and Hayes 1994)
California horned lizard *Phrynosoma coronatum frontale*	SC/SSC	Sacramento Valley, including foothills, south to southern California; Coast Ranges south of Sonoma County; below 4,000 feet elevation in northern California	Grasslands, brush lands, woodlands, and open coniferous forest with sandy or loose soil; requires abundant ant colonies for foraging	None – project area does not occur within the current range of the species; the species is not known to occur in Solano County (Jennings and Hayes 1994, CNDDB 2007)
Giant garter snake *Thamnophis couchi gigas*	T/T	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno	Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	None – project area does not occur within the current range of the species (USFWS 1999); no known or historic records are known from the Montezuma Hills area (CNDDB 2007)
Birds				
Cooper's hawk *Accipiter cooperii*	—/SSC	Throughout California except high altitudes in the Sierra Nevada. Winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range	Nests in a wide variety of habitat types, from riparian woodlands and digger pine-oak woodlands through mixed conifer forests	Low – potential winter visitor to Suisun Marsh area; could forage in or near the project area; however, no suitable nesting habitat (riparian forest) is present in the project area
Sharp-shinned hawk *Accipiter striatus*	—/SSC	Permanent resident in the Sierra Nevada, Cascade, Klamath, and north Coast Ranges at mid elevations and along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties. Winters over the rest of the state except at very high elevations	Dense canopy ponderosa pine or mixed-conifer forest and riparian habitats	Low – potential winter visitor to Suisun Marsh area; could forage in or near the project area; however, no suitable nesting habitat (riparian forest) is present in the project area
Tricolored blackbird *Agelaius tricolor*	SC/SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony	High – observed in the project area during April 2007 field survey; could forage within brackish marsh and grasslands in the project area; however, no suitable nesting habitat (large areas of dense emergent vegetation) is present in the project area; marginal nesting habitat is present adjacent to the project area

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Grasshopper sparrow *Ammodrammus savannarum*	—/SSC	Nests locally in grasslands along the coast and interior valleys throughout much of California	Nests and winters in grasslands	High – potential nesting and foraging habitat is present within annual grasslands in the project area
Golden eagle *Aquila chrysaetos*	SSC/FP	Foothills and mountains throughout California. Uncommon nonbreeding visitor to lowlands such as the Central Valley	Nest on cliffs and escarpments or in tall trees overlooking open country. Forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals	Low – could forage in grasslands in the project area; however, no suitable nesting habitat is present in the project area
Short-eared owl *Asio flammeus*	—/SSC	Permanent resident along the coast from Del Norte County to Monterey County although very rare in summer north of San Francisco Bay, in the Sierra Nevada north of Nevada County, in the plains east of the Cascades, and in Mono County; small, isolated populations	Freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts	Low – may forage in the project area; no suitable nesting habitat is present in the project area
Western burrowing owl *Athene cunicularia hypugea*	SC/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast	Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows	High –one owl was observed during the December 2006 field survey; potential foraging and nesting habitat is present in annual grasslands in the project area
Aleutian Canada goose *Branta canadensis leucopareia*	T/—	The entire population winters in Butte Sink, then moves to Los Banos, Modesto, the Delta, and East Bay reservoirs; stages near Crescent City during spring before migrating to breeding grounds	Roosts in large marshes, flooded fields, stock ponds, and reservoirs; forages in pastures, meadows, and harvested grainfields; corn is especially preferred	Low – does not breed in the project area; could migrate through the project area and may forage in marsh and grasslands in the project area
American bittern *Botarus lentiginosus*	SC/—	Breeds throughout the entire length of the state west of the Sierra Nevada, and in suitable marshes in southern California	Dense marshes and fresh emergent wetlands, rice fields	Low – marginally suitable habitat (brackish marsh) is present in the project area
Ferruginous hawk *Buteo regalis*	SC/SSC	Does not nest in California; winter visitor along the coast from Sonoma County to San Diego County, eastward to the Sierra Nevada foothills and southeastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County	Open terrain in plains and foothills where ground squirrels and other prey are available	Moderate – could forage over grasslands in the project area; however, species does not breed in California
Swainson's hawk *Buteo swainsonii*	—/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields	Moderate –no historic nest sites occur in or near the project area; suitable nesting habitat (eucalyptus trees) and foraging habitat (annual grassland and agricultural lands) are present in the project area

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Vaux's swift *Chaetura vauxi*	—/SSC	Coastal belt from Del Norte County south to Santa Cruz County and in mid elevation forests of the Sierra Nevada and Cascade Range	Nests in hollow, burned-out tree trunks in large conifers	Low – may forage or migrate through the project area; no suitable nesting habitat
Western snowy plover (coastal populations) *Charadrius alexandrinus nivosus* (nesting)	T/SSC	Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent	Low – may forage in the project area during migration or winter; does not nest in the region
Mountain plover *Charadrius montanus*	PT/SSC	Does not breed in California; in winter, found in the Central Valley south of Yuba County, along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties; parts of Imperial, Riverside, Kern, and Los Angeles Counties	Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grainfields	Low – may forage in the project area during migration or winter; suitable nesting habitat not present
Northern harrier *Circus cyaneus*	—/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations	Grasslands, meadows, marshes, and seasonal and agricultural wetlands	High – species was observed foraging in the project area during 2005 and 2007 surveys; potential nesting habitat is present within brackish marsh and annual grasslands in the project area
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	—/E	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers	Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant	None – no foraging or nesting habitat present in the project area
White-tailed kite *Elanus leucurus*	—/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills, to western San Diego County at the Mexico border	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Moderate – could forage in or near the project area; however, no suitable nesting habitat (riparian forest) is present in the project area
California horned lark *Eremophila alpestris actia*	—/SSC	Found throughout much of the state; less common in mountainous areas of the north coast and in conifer and chaparral habitats	Common, abundant resident in a variety of open habitats, usually where large trees and shrubs are absent, ranging from low-elevation grasslands and deserts to dwarf shrub habitats above tree line	High – suitable foraging and nesting habitat is present within grasslands and agricultural lands in the project area

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
American peregrine falcon *Falco peregrinus anatum*	—/E	Permanent resident along the north and south Coast Ranges. May summer in the Cascade and Klamath Ranges and through the Sierra Nevada to Madera County. Winters in the Central Valley south through the Transverse and Peninsular Ranges and the plains east of the Cascade Range	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large prey populations	Moderate – may forage in the project area during winter or migration; species is known to occur in the Suisun Marsh area; no suitable nesting habitat present in the project area
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	SC/SSC	Found only in the San Francisco Bay Area in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda Counties	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover	Moderate - suitable foraging and nesting habitat is present in the brackish marsh habitat in the project area; species is known to occur in the Suisun Marsh area
Bald eagle *Haliaeetus leucocephalus*	T/E	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, stream, or the ocean	None – suitable foraging and nesting habitats are not present
Yellow-breasted chat *Icteria virens*	—/SSC	Nests locally in coastal mountains and Sierra Nevada foothills, east of the Cascades in northern California, along the Colorado river, and very locally inland in southern California	Nests in dense riparian habitats dominated by willows, alders, Oregon ash, tall weeds, blackberry vines, and grapevines	None – suitable foraging and nesting habitat (riparian forest) is not present in the project area
Loggerhead shrike *Lanius ludovicianus*	—/SSC	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	High – species was observed foraging within grasslands in the project area during April 2007 surveys
Black rail *Laterallus jamaicensis coturniculus*	SC/T	Permanent resident in the San Francisco Bay and eastward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations	Low –species is known to occur in the Suisun Marsh area (CNDDB 2007); however, the closest historic nest site is more than one mile from the project area; specie is unlikely to nest in or adjacent to project area because marsh habitat in the project area is not tidally influenced and preferred nesting substrate (pickelweed) is not present
Suisun song sparrow *Melospiza melodia maxillaris*	SC/SSC	Restricted to the extreme western edge of the Sacramento–San Joaquin River Delta, between the cities of Vallejo and Pittsburg near Suisun Bay	Brackish and tidal marshes supporting cattails, tules, various sedges, and pickleweed	Moderate – this species is known to occur in the adjacent Suisun Mmarsh area (CNDDB 20075); marginally suitable habitat (brackish marsh) is present in the project area

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
California clapper rail *Rallus longirostris obsoletus*	E/E	Marshes around the San Francisco Bay and east through the Sacramento–San Joaquin River Delta to Suisun Marsh	Restricted to salt marshes and tidal sloughs; usually associated with heavy growth of pickleweed; feeds on mollusks removed from the mud in sloughs	None – although this species is known to occur in the adjacent Suisun Marsh area (CNDDB 2007); no suitable habitat (salt marsh along tidal sloughs) is present in the project area
Long-billed curlew *Numenius americanus*	—/SSC	Nests in northeastern California in Modoc, Siskiyou, and Lassen Counties. Winters along the coast and in interior valleys west of Sierra Nevada	Nests in high-elevation grasslands adjacent to lakes or marshes. During migration and in winter; frequents coastal beaches and mudflats and interior grasslands and agricultural fields	Moderate – may forage in the project area in winter and during migration; does not nest in the region
Osprey *Pandion haliaetus*	—/SSC	Nests along the north coast from Marin County to Del Norte County, east through the Klamath and Cascade Ranges, and in the upper Sacramento Valley. Important inland breeding populations at Shasta Lake, Eagle Lake, and Lake Almanor and small numbers elsewhere south through the Sierra Nevada. Winters along the coast from San Mateo County to San Diego County	Nests in snags, trees, or utility poles near the ocean, large lakes, or rivers with abundant fish populations	Low – no suitable nesting habitat present; may forage in the project area in winter and during migration
White-faced ibis *Plegadis chihi* (rookery site)	SC/SSC	Both resident and winter populations on the Salton Sea and in isolated areas in Imperial, San Diego, Ventura, and Fresno Counties; breeds at Honey Lake, Lassen County, at Mendota Wildlife Management Area, Fresno County, and near Woodland, Yolo County; win	Prefers freshwater marshes with tules, cattails, and rushes, but may nest in trees and forage in flooded agricultural fields, especially flooded rice fields	Low – may forage in the project area in winter and during migration; does not nest in the region
Bank swallow *Riparia riparia*	—/T	Occurs along the Sacramento River from Tahama County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County	Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam	None – suitable foraging and breeding habitats are not present in the project area
California least tern *Sterna antillarum*	E/E	Nests on beaches along San Francisco Bay and along the southern California coast from southern San Luis Obispo County south to San Diego County	Nests on sandy, upper ocean beaches, and occasionally uses mudflats; forages on adjacent surf line, estuaries, or the open ocean	Low– a small area of suitable habitat (mudflats) is present in the project area; not known to breed near the project area
Costa's hummingbird *Calypte costae*	SC/—	Breeds in southern portion of California, and in the coastal region north to San Joaquin and Stanislaus Counties.	Requires nectar-producing flowers; occurs in arid habitats: desert washes and scrub, also coastal scrub and chaparral	None - no suitable arid habitat is present in the project area

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Rufous hummingbird *Selasphorus rufus*	SC/—	Throughout California, more common during migration, less common during breeding season	Requires nectar-producing flowers; occurs in a wide variety of habitat types, especially during migration	Low – could migrate through the project area; suitable nesting habitat (conifer forests) is not present
Allen's hummingbird *Selasphorus sasin*	SC/—	Throughout California, more common during migration, less common during breeding season	Requires nectar-producing flowers; occurs in open woodlands, redwood forest, and scrub habitats	Low – could migrate through the project area; suitable nesting habitat (woodlands and scrublands) is not present
Olive-sided flycatcher *Contopus cooperi*	SC/—	Nests in coniferous forests and montaine woodlands with decadent snags and adjacent open foraging areas. Ocurrs in appropriate habitat the entire length of the State	Usually in montane conifer woodlands, often with large snags and openings	None - no suitable habitat (conifer forests) is present in the project area
Little willow flycatcher *Empidonax traillii brewsteri*	SC/—	Breeds in California from Tulare County north, along the western side of the Sierra Nevada and Cascades, extending to the coast in northern California	Dense thickets of willows around wet meadows, ponds, and streams	None - no suitable habitat (willow thickets) is present in the project area
California thrasher *Toxostoma redivivum*	SC/—	Foothills and lowlands throughout California, generally west of the Sierra Nevada.	Dense to moderately dense chaparral, and thickets in riparian woodland	None - no suitable habitat (chaparral and riparian woodlands) is present in the project area
Lawrence's goldfinch *Carduelis lawrencei*	SC/—	Breeds west of the Cascades and Sierra Nevada and south of the Northern Mountains, and interior through the central Valley	Oak woodlands, riparian woodlands, chaparral, pinyon-juniper woodlands, and ruderal areas near water	Low – suitable foraging habitat is present (grasslands), but nesting habitat is not present in the project area
Mammals				
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SC/SSC	West side of Mount Diablo to coast and San Francisco Bay	Present in chaparral habitat and in forest habitats with a moderate understory	None – no suitable habitat (riparian or scrub) is present in the project area
Riparian (San Joaquin Valley) woodrat *Neotoma fuscipes riparia*	E/SSC, FP	Historical distribution along the San Joaquin, Stanislaus, and Tuolumne Rivers and Caswell State Park in San Joaquin, Stanislaus, and Merced Counties; presently limited to San Joaquin County at Caswell State Park and a possible second population near Vernalis	Riparian habitats with dense shrub cover, willow thickets, and an oak overstory	None – project area does not occur within the current range of the species, and no suitable habitat (riparian forests) is present in the project area
San Joaquin pocket mouse *Perognathus inornatus*	SC/—	Occurs throughout the San Joaquin Valley and in the Salinas Valley	Favors grasslands and scrub habitats with fine textured soils	Moderate – suitable grassland habitat is present in the project area

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Salt marsh harvest mouse *Reithrodontomys raviventris*	E/E, FP	San Francisco, San Pablo, and Suisun Bays; the Sacramento–San Joaquin River Delta	Salt marshes with a dense plant cover of pickleweed and fat hen; adjacent to an upland site	None – although this species is known to occur in the Suisun Marsh area (CNDDB 2007); the project area does not occur within known occupied areas and no suitable microhabitat conditions (dense pickleweed and fat fern) are present within brackish marsh in the project area
Suisun ornate shrew *Sorex ornatus sinuosus*	SC/SSC	Restricted to San Pablo Bay and Suisun Bay, both in Solano County	Tidal, salt, and brackish marshes containing pickleweed, grindelia, bulrushes, or cattails; requires driftwood or other objects for nesting cover	Moderate – species is known to occur in the Suisun Marsh area (CNDDB 2007); brackish marsh and mud flats in the project region provide potential nesting habitat for the species
Riparian brush rabbit *Sylvilagus bachmani riparius*	E/E	Limited to San Joaquin County at Caswell State Park near the confluence of the Stanislaus and San Joaquin Rivers and Paradise Cut area on Union Pacific right-of-way lands	Native valley riparian habitats with large clumps of dense shrubs, low-growing vines, and some tall shrubs and trees	None – project area does not occur within the current range of the species, and no suitable habitat (riparian forests) is present in the project area
Pacific Townsend's (=western) big-eared bat *Corynorhinus townsendii townsendii*	SC/SSC	Coastal regions from Del Norte County south to Santa Barbara County	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings. Very sensitive to disturbances and may abandon a roost after one onsite visit	None – no suitable roosting habitat is present in the project area
Greater western mastiff bat *Eumops perotis californicus*	SC/SSC	Occurs along the western Sierra primarily at low to mid elevations and widely distributed throughout the southern coast ranges. Recent surveys have detected the species north to the Oregon border	Found in a wide variety of habitats from desert scrub to montane conifer. Roosts and breeds in deep, narrow rock crevices, but may also use crevices in trees, buildings, and tunnels	None – no suitable roosting habitat is present in the project area
Small-footed myotis *Myotis ciliolabrum*	SC/—	Occurs in the Sierra Nevada, south Coast, Transverse, and Peninsular Ranges, and in the Great Basin	Open stands in forests and woodlands, as well as shrub lands and desert scrub. Uses caves, crevices, trees, and abandoned buildings	None – no suitable roosting habitat is present in the project area
Long-eared myotis *Myotis evotis*	SC/—	Occurs throughout California except the southeastern deserts and the Central Valley	Occurs primarily in high elevation coniferous forests, but also found in mixed hardwood/conifer, high desert, and humid coastal conifer habitats	None – no suitable roosting habitat is present in the project area
Fringed myotis *Myotis thysanodes*	SC/—	Occurs throughout California except the southeastern deserts and the Central Valley	Found in a wide variety of habitats from low desert scrub to high elevation coniferous forests. Day and night roosts in caves, mines, trees, buildings, and rock crevices	None – no suitable roosting habitat is present in the project area
Long-legged myotis *Myotis volans*	SC/—	Mountains throughout California, including ranges in the Mojave desert	Most common in woodlands and forests above 4,000 feet, but occurs from sea level to 11,000 feet	None – no suitable roosting habitat is present in the project area

Common and Scientific Name	Legal Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Project Area[b]
Yuma myotis *Myotis yumanensis*	SC/—	Common and widespread throughout most of California except the Colorado and Mojave deserts	Found in a wide variety of habitats from sea level to 11,000 ft., but uncommon above 8,000 ft. Optimal habitat is open forests and woodlands near water bodies	None – no suitable roosting habitat is present in the project area

[a]Status explanations:

Federal
E = Listed as endangered under the federal Endangered Species Act (ESA).
T = Listed as threatened under ESA.
SC = Species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.
— = No listing.

State
E = Listed as endangered under the California Endangered Species Act (CESA).
T = Listed as threatened under CESA.
FP = Fully protected under the California Fish and Game Code.
SSC = Species of special concern in California.
— = No listing.

[b]Potential Occurrence in the Project Area

High: Known occurrences of the species within the project area or California Natural Diversity Database (CNNDB) or other documents; records of the occurrence of the species are within a 10-mile radius of the project area. Suitable habitat is present within the project area.

Moderate: CNDDB or other documents record the known occurrence of the species within a 10-mile radius of the project area. Poor-quality suitable habitat is present within the project area.

Low: CNDDB or other documents do not record the occurrence of the species within a 10-mile radius of the project area. Suitable habitat is present within the project area.

Table 3.3-2. Special-Status Plants Identified during the Prefield Evaluation as Having the Potential to Occur in the Phase II Project Region, Solano County

Common and Scientific Name	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
Mt. Diablo manzanita *Arctostaphylos auriculata*	–/–/1B.3	Endemic to Contra Costa County, especially Mt Diablo area, San Francisco Bay Area	Chaparral in canyons and on slopes on sandstone, between 490 and 1,650 feet	January–March	None; no suitable habitat is present
Suisun Marsh aster *Aster lentus*	SC/–/1B.2	Sacramento-San Joaquin Delta; Suisun Marsh; Suisun Bay; Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties	Brackish and freshwater marsh, below 500 feet	August–November	None; no suitable habitat is present
Alkali milk-vetch *Astragalus tener* var. *tener*	–/–/1B.2	Alameda, Merced, Napa, Solano, and Yolo Counties	Alkali playa, valley and foothill grassland, vernal pools; below 200 ft	March–June	Suitable habitat present but no plants found during floristic surveys
Heartscale *Atriplex cordulata*	SC/–/1B.2	Western Central Valley and valleys of adjacent foothills	Alkali grassland, alkali meadow, alkali scrub, below 660 feet	May–October	None; no suitable habitat is present in the project area; however, suitable habitat is present in alkali wetlands located south of the project area
Brittlescale *Atriplex depressa*	–/–/1B.2	Sacramento Valley and valleys of adjacent foothills on west side of San Joaquin Valley	Alkali grassland, alkali meadow, alkali scrub, chenopod scrub, playas, valley and foothill grasslands on alkaline or clay soils, below 660 feet	May–October	None; no suitable habitat is present in the project area; however, suitable habitat is present in alkali wetlands located south of the project area
San Joaquin spearscale *Atriplex joaquiniana*	SC/–/1B.2	Western edge of Central Valley from Glenn County to Tulare County	Alkali grassland, alkali scrub, alkali meadows, saltbush scrub, below 1,000 feet	April–September	None; no suitable habitat is present in the project area; however, suitable habitat is present in alkali wetlands located south of the project area
Big tarplant *Blepharizonia plumosa* ssp. *plumosa*	–/–/1B.1	Interior Coast Ranges foothills; Alameda, Contra Costa, San Joaquin, Stanislaus*, and Solano* Counties	Annual grassland, on dry hills and plains, between 50 and 1,500 feet	July–October	Low; habitat is present although there are no nearby occurrences

Common and Scientific Name	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
Pappose tarweed (spikeweed) *Centromadia parryi ssp. parryi*	–/–/1B.2	Solano County	Meadows and seeps, marshes and swamps, coastal prairie, grassland; moist, alkaline; below 1,000 ft	May–Nov	High; one population was located along the south side of the Kirby Hills access road
Suisun thistle *Cirsium hydrophilum* var. *hydrophilum*	E/–/1B.1	Known only from the Suisun Marsh in Solano County	Salt marshes and swamps, below 3 feet	July–September	None; no suitable habitat is present
Hispid bird's-beak *Cordylanthus mollis* ssp. *hispidus*	–/–/1B.1	Central Valley; Alameda, Kern, Merced, Placer, and Solano Counties	Meadow, grassland, playa, on alkaline soils; below 500 ft	June–September	Suitable habitat present but no plants found during floristic surveys
Soft bird's-beak *Cordylanthus mollis ssp. mollis*	E/R/1B.2	San Francisco Bay region; Suisun Marsh; Contra Costa, Marin*, Napa, Solano, Sacramento*, and Sonoma* Counties	Tidal salt marsh	July–September	None; no suitable habitat present in the project area; species only occurs in tidally influenced salt marsh
Hoover's cryptantha *Cryptantha hooveri*	–/–/1A	Northern and central San Joaquin Valley; Alameda, Contra Costa, Madera, Merced, San Joaquin, and Stanislaus Counties	Coarse, sandy soil in grassland	April–May	Low; habitat is present although there are no nearby occurrences
Dwarf downingia *Downingia pusilla*	–/–/2.2	California's Central Valley and South America	Vernal pools and mesic valley and foothill grasslands, 1,500 feet	March–May	Moderate; known to occur at Jepson Prairie; potential habitat occurs in vernal pools and other seasonal wetlands located in the region
Round-leaved filaree *Erodium macrophyllum*	–/–/1B.1	Sacramento Valley, northern San Joaquin Valley, central western California, South Coast Ranges, and northern Channel Islands (Santa Cruz Island)	Open sites, dry grasslands, and shrublands below 4,000 feet	March–May	Low; habitat is present although there are no nearby occurrences
Contra Costa wallflower *Erysimum capitatum* ssp. *angustatum*	E/E/1B.1	Contra Costa County	Inland dunes	March–July	None; no suitable habitat is present

Common and Scientific Name	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
Diamond-petaled California poppy *Eschscholzia rhombipetala*	SC/–/1B.1	Interior foothills of South Coast Ranges from Contra Costa County to Stanislaus County, Carrizo Plain in San Luis Obispo County	Grassland, chenopod scrub, on clay soils, where grass cover is sparse enough to allow growth of low annuals	March–April	Low; habitat is present although there are no nearby occurrences
Fragrant fritillary *Fritillaria liliacea*	SC/–/1B.2	Coast Ranges from Marin County to San Benito County	Adobe soils of interior foothills, coastal prairie, coastal scrub, annual grassland, often on serpentinite, below 1,350 feet	February–April	Moderate; known to occur at Jepson Prairie
Brewer's western flax *Hesperolinon breweri*	SC/–/1B.2	Southern north inner coast; northeast San Francisco Bay region, especially Mt. Diablo; known only from Contra Costa, Napa, and Solano Counties	Serpentine slopes in chaparral, and grasslands, 100–2,300 feet	May–July	None; no suitable habitat is present
Carquinez goldenbush *Isocoma arguta*	SC/–/1B.1	Deltaic Sacramento Valley, Suisun Slough, Contra Costa and Solano Counties	Annual grassland on alkaline soils and flats, generally below 70 feet	August–December	Moderate; one population occurs north of the gas pipeline project area
Contra Costa goldfields *Lasthenia conjugens*	E/–/1B.1	Scattered occurrences in Coast Ranges valleys and southwest edge of Sacramento Valley; Alameda, Contra Costa, Mendocino, Napa, Santa Barbara*, Santa Clara*, and Solano Counties. Historically distributed through the North Coast, southern Sacramento Valley, San Francisco Bay region, and the South Coast.	Alkaline or saline vernal pools and swales, below 700 feet	March–June	Moderate; potential habitat occurs along the Kirby Hills access road
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	SC/–/1B.2	Central Valley, especially the San Francisco Bay region; Alameda, Contra Costa, Fresno, Marin, Napa, Sacramento, San Benito, Santa Clara*, San Joaquin, and Solano Counties	Coastal and estuarine marshes, below 1,000 feet	May–September	None; no suitable habitat is present

Common and Scientific Name	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
Legenere *Legenere limosa*	SC/–/1B.1	Primarily located in the lower Sacramento Valley; also from North Coast Ranges, northern San Joaquin Valley, and the Santa Cruz Mountains	Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and riverbanks, below 500 feet	May–June	Moderate; known to occur at Jepson Prairie
Heckard's pepper-grass *Lepidium latipes* var. *heckardii*	–/–/1B.2	Southern Sacramento Valley; Glenn, Solano, and Yolo Counties	Annual grassland on margins of alkali scalds, below 660 feet	April–May	Low; habitat is present although there are no nearby occurrences
Woolly-headed lessingia *Lessingia hololeuca*	–/–/3	Southern North Coast Ranges; southern Sacramento Valley; northern San Francisco Bay region; Alameda, Monterey, Marin, Napa, Santa Clara, San Mateo, Solano, Sonoma, and Yolo Counties	Clay or serpentinite soils of coastal scrub, lower montane coniferous forest, valley and foothill grassland, below 1,000 feet	June–October	None; no suitable habitat is present
Mason's lilaeopsis *Lilaeopsis masonii*	SC/R/1B.1	Southern Sacramento Valley; Sacramento–San Joaquin River Delta; northeast San Francisco Bay area; Alameda, Contra Costa, Marin*, Napa, Sacramento, San Joaquin, and Solano Counties	Freshwater and intertidal marshes, streambanks in riparian scrub, generally at sea level	April–November	None; no suitable habitat is present
Showy madia *Madia radiata*	–/–/1B.1	Scattered populations in the interior foothills of the South Coast Ranges; Contra Costa, Fresno, Kings, Kern, Monterey, Santa Barbara, San Benito, San Joaquin, and San Luis Obispo Counties	Oak woodland, grassland, slopes below 3,000 feet	March–May	Low; habitat is present although there are no nearby occurrences
Robust monardella *Monardella villosa* ssp. *globosa*	–/–/1B.2	North Coast Ranges and Eastern San Francisco Bay Area; Alameda, Contra Costa, Humboldt, Lake, Marin, Napa, San Mateo, and Sonoma Counties	Oak woodland and grassy openings in chaparral	June–July	None; no suitable habitat is present

Common and Scientific Name	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
Little mousetail *Myosurus minimus* ssp. *apus*	SC/–/3.1	Central Valley, San Francisco Bay region, outer Southern Coast Ranges, South Coast. Alameda, Butte, Contra Costa, Colusa, Kern, Riverside, San Bernardino, San Diego, Solano, and Stanislaus Counties	Alkaline vernal pools and marshes, below 5,000 feet	March–June	Low; habitat is present although there are no nearby occurrences
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	–/–/1B.1	Inner North Coast Ranges, western Sacramento Valley; Colusa, Lake, Mendocino, Marin, Napa, Solano, Sonoma, and Tehama Counties	Vernal pools and swales in woodland, lower montane coniferous forest, mesic meadows, and grassland, generally below 5,600 feet	May–July	None; no suitable habitat is present
Antioch Dunes evening-primrose *Oenothera deltoides* ssp. *howellii*	E/E/1B.1	Northeast San Francisco Bay region, known from three native occurrences; Contra Costa and Sacramento Counties	Inland dunes generally below 330 feet	March–September	None; no suitable habitat is present
Gairdner's yampah *Perideridia gairdneri ssp. gairdneri*	–/–/4.2	Kern, Los Angeles*, Mendocino, Monterey, Marin, Napa, Orange*, San Benito, Santa Clara, Santa Cruz, San Diego*, San Luis Obispo, San Mateo*, Solano, and Sonoma Counties	Broadleaved upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools, in mesic areas	June–October	Suitable habitat present but no plants found during floristic surveys
Bearded popcorn-flower *Plagiobothrys hystriculus*	–/–/1B.1	Endemic to Solano* County, presumed extinct	Mesic grassland, vernal pools	April–May	High; one population was located along the south side of the Kirby Hills access road
Blue skullcap *Scutellaria lateriflora*	–/–/2.2	Northern San Joaquin Valley; east of the Sierra Nevada; Inyo and San Joaquin Counties; New Mexico, Oregon	Mesic meadows, marshes and swamps, generally below 1,640 feet	July–September	None; no suitable habitat is present

[a] **Status explanations:**

Federal
E = listed as endangered under the federal Endangered Species Act.
SC = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.
– = no listing.

State
E = listed as endangered under the California Endangered Species Act.
R = listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.
– = no listing.

California Native Plant Society
1A = List 1A species: presumed extinct in California.
1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
3 = List 3 species: plants about which more information is needed to determine their status.
4 = List 4 species: plants of limited distribution.
0.1 = seriously endangered in California
0.2 = fairly endangered in California
0.3 = not very endangered in California
– = No listing.
* = Known populations believed extirpated from that county.
? = Population location within county uncertain.

[b]Potential Occurrence in the Project Area

High: Known occurrence of plant in region from California Natural Diversity Database (CNNDB) or other documents in the vicinity of the project, or presence of suitable habitat conditions and suitable microhabitat conditions.

Moderate: Known occurrence of plant in region from CNNDB or other documents in the vicinity of the project, or presence of suitable habitat conditions but suitable microhabitat conditions are not present.

Low: Plant not known to occur in the region from the CNNDB or other documents in the vicinity of the project; or habitat conditions are of poor quality.

None: Plant not known to occur in the region from the CNNDB or other documents in the vicinity of the project, or suitable habitat is not present in any condition.