- All "Basic" control measures listed above.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Optional control measures: The following control measures are strongly encouraged at investigation sites that are large in area, located near sensitive receptors or which for any other reason may warrant additional emissions reductions.

- Install wheel washers for all existing trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- Limit the area subject to excavation, grading and other construction activity at any one time.

4. BIOLOGICAL RESOURCES. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☑	☐	☐

Setting

The proposed project is located in southern Solano County, California. Solano County is located at the intersection of San Francisco Bay and the Sacramento and San Joaquin river delta. The County encompasses a variety of habitat types,

including grasslands and vernal pool complexes in the upland areas; riparian and freshwater marshes; forests; and coastal marshes and wetlands (Solano County, 2008). These natural communities provide habitat for a variety of wildlife and plants including 40 special-status species (Solano County, 2008). The County also includes agricultural land uses such as irrigated agriculture and pasture, as well as urban development (EDAW, 2008).

Land Cover Types and Wildlife Habitats

Six land cover types were identified within the project area, which includes the two work sites at MP 1.38 and MP 4.88. These types include four natural vegetation types and two vegetation/ land cover types that are associated with human activities (Table 2). The classification of the natural vegetation is based primarily on the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986), with additional reference to the series-based system of Sawyer and Keeler-Wolf, as described in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). Human-influenced vegetation types are not included in the Holland system; some of these, however, are included in the series described by Sawyer and Keeler-Wolf (1995). General descriptions of these vegetation types are provided below. Detailed descriptions of the work sites are provided in the following section.

Natural Vegetation	MP 1.38	MP 4.88
California Annual Grassland	0.195	0.202
Northern Claypan Vernal Pool	0.037	--
Other Vegetation		
Developed/Landscaped	--	0.028
Ruderal	--	--
Total	**0.232**	**0.23**

California Annual Grassland

California annual grassland is the current name for Holland's Non-native Grassland (Holland, 1986). This community is an upland vegetation type composed of a dense-to-sparse cover of mainly introduced annual grasses and forbs (wildflowers), usually less than one meter in height. California annual grassland sometimes includes remnant native perennial grasses, and native annual forbs. The equivalent series under the Sawyer and Keeler-Wolf system is the California annual grassland series. The species composition of annual grasses and forbs varies considerably between stands.

California annual grasslands can support a variety of small mammals and provide foraging habitat for raptors and other birds. Birds commonly found foraging in annual grasslands include the red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and turkey vulture (*Cathartes aura*). California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), and meadowlarks (*Sturnella neglecta*) are common seed eaters that use grasslands for nesting. Insect eaters

such as western scrub-jays (*Aphelocoma californica*), barn swallows (*Hirundo rustica*) and northern mockingbirds (*Mimus polyglottos*) use the habitat only for foraging. Common mammals of annual grassland habitats include the California ground squirrel (*Spermophilus beechyi*), Botta's pocket gopher (*Thomomys bottae*), California vole (*Microtus californicus*), broad-footed mole (*Scapanus latimanus*), and black tailed jackrabbit (*Lepus californicus*). These small mammals utilize open grassland for both foraging and nesting opportunities. Burrows of California ground squirrels can provide important refuge sites for other species. Wildflowers in grasslands also provide foraging resources for butterflies, bees and other insects and mule deer (*Odocoileus hemionus*) can use grasslands for grazing and resting at night (Garcia and Associates, 2008).

California annual grassland communities occur on the eastern portion of the project area at work sites MP 1.38 and MP 4.88. The grasslands surrounding both of these locations are used for livestock grazing, and occur within a matrix of vernal pools and seasonal wetlands. The annual grassland at work site MP 1.38 is composed primarily of forbs, dominated by non-native filaree (*Erodium* spp.). There is a significant component of native grassland forbs including hayfield tarweed (*Hemizonia congesta*), narrow tarplant (*Holocarpha virgata*), and Great Valley gum plant (*Grindelia camporum*). The grassland at MP 4.88 is heavily dominated by Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), an exotic annual grass. The seasonal wetlands at MP 4.88 have a lower cover of Mediterranean barley, mixed with filaree species (Garcia and Associates, 2009c).

Northern Claypan Vernal Pool

Northern claypan vernal pools are seasonal wetlands that occupy shallow basins or channels in clay soils in the Central Valley (Sawyer and Keeler-Wolf, 1995; Holland, 1986). These depressions hold water during the rainy season because a subsurface clay hardpan impedes water percolation (Keeley and Zedler, 1996). Pools may be as small as a few square meters or as large as several hectares. Northern claypan vernal pools support a distinctive flora composed mainly of native annual forbs adapted to inundation in the rainy season and hot, desiccated conditions in the dry season. California vernal pools typically have high levels of endemic species and relatively low levels of non-native species because environmental conditions exclude taxa that do not have specialized adaptations to the combined stresses of inundation, drought, and other factors. Many of the characteristic plants germinate in winter before pools fill, persist in rosette form under water, then grow quickly to maturity, flower and set seed as the pools dry. Examples of characteristic genera include goldfields (*Lasthenia* spp.), downingias (*Downingia* spp.), popcorn flowers (*Plagiobothrys* spp.), meadowfoams (*Limnanthes* spp.) and button-celeries (*Eryngium* spp.).

Northern claypan vernal pool complexes provide habitat for unique and often rare species adapted to the seasonal inundation of water during the wet season and desiccation during the dry. During the wet season this habitat provides important foraging and breeding habitat for invertebrates, amphibians, reptiles, birds and mammals (Garcia and Associates, 2008).

One northern claypan vernal pool occurs within the proposed expansion area at work site MP 1.38. A disked firebreak is present in the grassland on the north and east side of the expansion area. A shallow, crescent-shaped vernal pool is situated southwest of the disked firebreak. During botany surveys, the vernal pool was differentiated from a seasonal wetland by the low vegetative cover of upland species, and the presence of pappose tarplant (*Centromadia parryi ssp. parryi*). Pappose tarplant occurs in vernally mesic alkaline grasslands (CNPS, 2008), and has been observed in shallow vernal pools within 4 miles of the project site (Garcia and Associates, 2009c).

Seasonal Wetland

Seasonal wetlands occur in low-lying areas such as ditches, swales and basins, in which the soil is inundated or saturated for part of the growing season. Seasonal wetlands are not described by Holland (1986) and are not included in Sawyer and Keeler-Wolf (1995). Although some seasonal wetlands have physiographic or hydrologic features that are similar to vernal pools, they are differentiated by the absence, or very low cover, of specialized plant taxa that characterize vernal pools. The absence of vernal pool taxa indicates that, in some way, a seasonal wetland is not functioning as a vernal pool.

Seasonal open water areas provide important habitat for several invertebrates, amphibians, reptiles, birds and small mammals. Some wildlife species are adapted to survive in this habitat throughout the year, while others, such as amphibians and aquatic insects, are present only during the winter and spring when open water is present. Seasonal wetlands serve as nesting and foraging habitat for waterfowl and shorebirds and provide food and cover for small mammals and a water source for larger mammals. Typical wildlife species using the seasonal wetlands include the mallard, snowy egret (*Egretta thula*), great egret (*Ardea alba*), great blue heron (*Ardea herodias*), western meadowlark, Pacific treefrog, and gopher snake (*Pituophis melanoleucus*) (Garcia and Associates, 2008).

Seasonal wetlands occur on the project area near work sites MP 1.38 and MP 4.88. At MP 1.38, a seasonal wetland occurs within a roadside ditch beyond the northern edge of the excavation footprint. Vegetation in this roadside ditch is dominated by pappose tarplant. At MP 4.88, two depressions containing seasonal wetland vegetation occur approximately 15 feet north of the temporary construction easement. These seasonal wetlands have lower cover of Mediterranean barley, mixed with filaree species. These depressions were characterized as vernal pools during the wetland delineation survey because of physiographic and hydrologic features; however, during habitat assessments, very few plants characteristic of vernal pools were observed within these depressions (Garcia and Associates, 2009c).

Regulatory Context

Federal

Federal Regulation of Waters of the U.S., including Wetlands

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill materials into waters of the United States, including rivers, streams, natural ponds, and wetlands. The United States Army Corps of Engineers (USACE) is the major regulatory agency involved in wetland regulation under the CWA, and requires a permit before dredged or fill material may be discharged.

The State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) have the primary responsibility of regulating water quality impacts under Section 401 of the CWA and the California Clean Water Act (Porter-Cologne Act). The SWRCB and the RWQCBs are authorized to ensure that actions permitted by USACE under Section 404 also meet federal and state water quality standards.

Endangered Species Act

Under the Federal Endangered Species act (FESA), the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered. Two federal agencies oversee the FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, while the NOAA's National Marine Fisheries Service (NOAA Fisheries Service) has jurisdiction over anadromous fish and marine fish and mammals. Section 7 of the FESA mandates that federal agencies consult with USFWS and/or NOAA Fisheries Service to ensure that their actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The FESA prohibits "take" of listed species, including the destruction of habitat that could hinder species recovery.

Section 10 of the FESA requires the issuance of an "incidental take" permit before any public or private action that would potentially cause take of a listed species. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals that may occur incidental to implementation of the project, by providing for the overall preservation of the affected species through specific mitigation measures.

The federal government also supports a policy of minimizing the "destruction, loss, or degradation of wetlands." Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, hunt, take, capture, or kill any migratory bird without a permit issued by the U.S. Department of the Interior (16 United States Code § 703 Supp. I, 1989). The MBTA also prohibits

the killing, possessing, or trading of migratory birds, bird parts, eggs, and nests, except in accordance with regulations prescribed by the Secretary of the Interior.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof. The USFWS oversees enforcement of this act.

State

California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of species listed as endangered or threatened by the California Department Fish and Game (CDFG). Habitat destruction is not included as take under CESA; however, Section 2090 of the Act requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. CDFG administers the Act and authorizes take through California Fish and Game Code (CFGC) Section 2081 agreements, except for species designated as "fully protected", for which no take can be authorized.

California Native Plant Protection Act

Section 1900-1913 of the CFGC, also known as the Native Plant Protection Act (NPPA), is intended to preserve, protect, and enhance endangered or rare native plants in California. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more cause. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens.

The California Native Plant Society has established categories for vascular plants independent of their federal or state listing status as follows:

- List 1A: Presumed Extinct
- List 1B: Rare, Threatened, or Endangered in California and elsewhere
- List 2: Rare, Threatened, or Endangered in California but more numerous elsewhere
- List 3: Plants about which more information is needed—a Review List
- List 4: Plants of Limited Distribution—a Watch List

In general, plants appearing on CNPS Lists 1A, 1B, or 2 meet the definition of endangered, threatened, or rare under Section 1901 (the Native Plant Protection Act), and Sections 2062 and 2067 (California Endangered Species Act) of the CFGC. Plants on these lists also meet the criteria of CEQA Guidelines Section 15380, and impacts to these species are considered "significant" under CEQA.

CEQA Guidelines Section 15380(b)

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(b) provides that a species not listed on a federal or state list of protected species may be considered rare or endangered if the species can be shown to meet specific criteria. This section addresses situations in which an agency is reviewing a project that may have a significant effect on a species that meets the criteria for threatened or endangered but has not yet been listed by CDFG or USFWS.

State Regulation of Waters

The State Water Resources Control Board (SWRCB) regulates waters of the state through the California Clean Water Act (Porter-Cologne Act). The SWRCB and its nine Regional Water Quality Control Boards must certify that a project authorized under a USACOE Section 404 permit also meets federal and state water quality objectives.

CEQA Guidelines Section 15206 specifies that a project shall be deemed to have a significant impact if it would substantially affect sensitive wildlife habitats, including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species as defined by CFGC Section 903.

California Fish and Game Code Bird Protections

Section 3503 of the CFGC prohibits destruction of the nests or eggs of most native resident and migratory bird species. Section 3503.5 of the CFGC specifically prohibits the taking of raptors or destruction of their nests or eggs. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment and/or reproductive failure. Disturbance that causes nest abandonment or reproductive failure is considered "taking" by CDFG Any loss of eggs, nests, or young or any activities resulting in nest abandonment would constitute a significant impact. Project impacts to these species would not be considered significant unless they are known or have high potential to nest in the project area or to rely on it for its primary foraging.

Local

Solano County General Plan

The 2008 Solano County General Plan includes certain goals and policies related to biological resources that fall under the strategic directions of "preserving the county's valued natural, cultural, and scenic resources" and "enhancing and restoring the natural environment and the county's diverse landscapes." Goals and policies relevant to biological resources include:

- RS.G-2: Ensure continued presence and viability of the county's various natural resources.

- RS.G-3: Repair environmental degradation that has occurred, and seek an optimum balance between the economic and social benefits of the county's natural resources.
- RS.G-4: Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety.
- RS.P-1: Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections.
- RS.P-2: Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna.
- RS.P-3: Focus conservation and protection efforts on high-priority habitat areas.
- RS.P-4: Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources.
- RS.P-5: Protect and enhance wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. Preserve contiguous habitat areas to increase habitat value and to lower land management costs.

Solano County Multi-Species Habitat Conservation Plan

The Solano County Multi-Species Habitat Conservation Plan (MSHCP) is an agreement between the Bureau of Reclamation; the Solano County Water Agency; the cities of Vacaville, Fairfield, Suisun City, and Vallejo; the Solano Irrigation District; and the Maine Prairie Water District to implement conservation measures to ensure the protection of federally listed species and their habitat within their service area. Although the MSHCP only applies to projects by these agencies, the priority habitat areas identified in the MSHCP were used in the 2008 Solano County General Plan to create a Resource Conservation Overlay.

Jurisdictional Waters of the U.S., including Wetlands

Wetlands assessments conducted by Garcia and Associates in 2008 identified a total of 0.198 acres of potentially jurisdictional water features within and adjacent to the three project work sites. These included 0.107 acre of wetlands identified at sites, MP 1.38 and 0.091 acres of wetlands identified at MLV 4.88 (Table 3, below).

At work site MP 4.88, two seasonal wetland features (VP-1, VP-2) occur approximately 15 feet north of the temporary construction easement. The low cover of plant species associated with vernal pools indicates that these two features function as seasonal wetlands. Vegetation within these pools consists of Mediterranean barley, mixed with filaree species. The wetland features at this site

drain through a seasonal swale that flows from the north to the south. Historically, this swale was likely connected to Denverton Creek south of Creed Road. However, the construction of Creed Road appears to have impeded the flow of the swale, and connectivity to other features south of this road.

At work site MP 1.38, one vernal pool (VP-3) occurs within the proposed expanded permanent area west of Creed Station. VP-3 was differentiated from a seasonal wetland by the low vegetative cover of upland species, and the presence of pappose tarplant (*Centromadia parryi ssp. parryi*). Several swales adjacent to MP 1.38 drain water to Lindsey Slough to the northeast.

TABLE 3
Summary of Water Features in and Adjacent to the Project Area

Work Site	Wetland or Water Type	Acreage
Wetlands		
Adjacent to MLV 4.88 (VP-1)	Vernal Pool	0.011
Adjacent to MLV 4.88 (VP-2)	Vernal Pool	0.080
MP 1.38 (VP-3)	Vernal Pool	0.107
Total Wetland Types		**0.198**

Special Status Species

Existing information on biological resources in the vicinity of the property was reviewed prior to conducting field surveys. The following sources were reviewed:

- California Natural Diversity Database (CNDDB) records search for the eight U.S. Geological Survey (USGS) 7.5-minute quadrangles surrounding the project area (Mt. George, Cordelia, Fairfield North, Fairfield South, Elmira, Denverton, Dozier, and Bird's Landing) (CDFG, 2008a).
- CNDDB Special Vascular Plants, Bryophytes and Lichens List (CDFG, 2008b).
- California Native Plant Society's *Inventory of Rare and Endangered Plants of California* (CNPS 2008).
- Solano Draft HCP, Solano County Water Agency (2007).
- U.S. Fish and Wildlife Service (USFWS) species list website (USFWS, 2008);

- California Wildlife Habitat Relationships System (CWHR) (CDFG, 2008d); and
- Draft Solano County Multi-Species HCP (SCWA, 2007)

Reconnaissance surveys were conducted in late 2008 to verify vegetation types and to determine whether special-status species and sensitive biological resources are present or could potentially be present within the project area.

Special Status Plants

On November 11, 2008 Garcia and Associates conducted a reconnaissance-level habitat quality assessment for special-status plants in the project area. Habitat that could support rare plants was identified. Rare plant surveys will be conducted in 2009. The potential for special-status plant species to occur on the project is treated on a site-by-site basis below.

MP 1.38

MP 1.38 includes the fenced area around the Creed Station valve lot and a proposed expansion zone to the west of the station. There is high-quality habitat for special-status plants at this site. Land cover within the confines of the station consists of a barren gravel pad. Vegetation types in the 50ft x 190ft expansion zone include California Annual Grassland, Northern Claypan Vernal Pool, and Seasonal Wetland. A disked firebreak is present in the grassland on the north and east side of the expansion area. A shallow, crescent-shaped vernal pool is situated southwest of the disked firebreak. The northern boundary of the work site contains a ditch bordering creed road that supports seasonal wetland vegetation.

Annual grassland at the work site is composed primarily of forbs, dominated by non-native filaree. There is a significant component of native grassland forbs including hayfield tarweed (*Hemizonia congesta*), narrow tarplant (*Holocarpha virgata*), and Great Valley gum plant (*Grindelia camporum*). The vernal pool was differentiated from a seasonal wetland by the low vegetative cover of upland species, and the presence of pappose tarplant (*Centromadia parryi* ssp. *parryi*). Pappose tarplant is a CNPS listed (1B.2) species and occurs in vernally mesic alkaline grasslands (CNPS, 2008). Vegetation evident in the vernal pool habitat at the time of the survey included a sparse cover of the grassland species mentioned above and a population of pappose tarplant, which is further discussed below. Seasonal wetland vegetation in the roadside ditch was also dominated by pappose tarplant.

The quality of the grassland and vernal pool habitats, and close proximity of known occurrences of special-status plant species indicate that there is a good potential for special-status plants to occur in the expansion zone of the work site. Table A-1 in Attachment A lists special-status plant species with moderate to high potential to occur in the project area. There is a high potential for twelve special-status species to occur, including the federally Threatened/State Endangered Colusa grass (*Neostapfia colusana*). There is moderate potential for eight special status species to occur, including federally Endangered Contra Costa goldfields (*Lasthenia conjugens*), showy Indian clover (*Trifolium amoenum*), and Solano grass (*Tuctoria*

mucronata), as well as federally Threatened/State Endangered Orcutt grass (*Orcuttia inaequalis*).

A large population of pappose tarplant was discovered during the reconnaissance survey within the vernal pool and in the roadside ditch. Most plants were far past flowering, but several were still in late bloom, and were identifiable to subspecies. Pappose tarplant is a CNPS 1B.2 designated plant, meaning that it is rare, threatened or endangered in California and elsewhere (CNPS, 2008).

MP 4.88

Work site MP 4.88 is located on the north side of Creed Road. There is medium/low quality habitat for special-status plants at this site. It contains an un-fenced valve lot surrounded by grazed California Annual Grassland vegetation. A firebreak is disked into the grassland just north of the valve lot. North of the disked area the topography of the project site is undulating, with depressions containing seasonal wetland vegetation.

The grassland at the work site is heavily dominated by Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), an exotic annual grass. The seasonal wetlands at the site have lower cover of Mediterranean barley, mixed with filaree species. Habitat quality appears to be low for native grassland species. Habitat quality is also low for vernal pool species, which can occur in seasonal wetlands. Few native species were observed during the reconnaissance-level survey; however, CNDDB records (CDFG, 2008c) indicate many occurrences of special-status grassland and vernal pool plant species in the vicinity of MP 4.88.

The presence of suitable grassland and seasonal wetland habitat, and close proximity of known occurrences of special-status plant species indicate that there is potential for special-status plants to occur at the MP 4.88 work site. Table A-1 lists special status species with moderate to high potential to occur at the project sites. There is a high potential for two special-status (CNPS 1B) species to occur at the work site: alkali milk-vetch (*Astragalus tener* var. *tener*), and pappose tarplant. Both species are known to occur in grassland habitat within 2 miles of the project area. Table A-1 lists seventeen special-status species with moderate potential to occur at the project site including Contra Costa goldfields, as well as Orcutt grass, and Colusa grass.

Special-Status Wildlife

Special-status species are defined in accordance with the CEQA Guidelines, Section 15380, and include species that are:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Listed or candidates for listing as threatened or endangered under the California Endangered Species Act;
- Designated as Species of Special Concern by the CDFG;

- "Special Animals" list (CDFG, 2008e); or
- Species that otherwise meet the definition of rare, threatened or endangered, as described in the CEQA Guidelines, Section 15380.

Suitability for special-status bird species was assessed during reconnaissance-level surveys conducted in late 2008. It was determined that moderate to high potential exists for the following eight special-status bird species within the project area:

- golden eagle *(Aquila chrysaetosi)* **BGEPA**
- loggerhead shrike *(Lanius ludovicianus)* **CSC**
- mountain plover *(Charadrius montanus)* **CSC**
- northern harrier *(Circus cyaneus)* **CSC**
- short-eared owl *(Asio flammeus)* **CSC**
- western burrowing owl (*Athene cunicularia hypugae*) **CSC**
- Suisun song sparrow (*Melospiza melodia maxillaris*) **CSC**
- white-tailed kite *(Elanus leucurus)* **CFP**

Biologists conducted habitat assessment and preliminary wet-season branchiopod surveys in November, 2008 and March, 2009. Federally Threatened vernal pool fairy shrimp (*Branchinecta lynchi*) was observed, and habitat for federally endangered vernal pool tadpole shrimp (*Lepidurus packardi*) was identified. In addition, upland habitat for federally Threatened/State Candidate Species California tiger salamander (*Ambystoma californiense*) was found.

Richard Arnold surveyed and concluded that the project area did not provide suitable habitat for federally Threatened Delta green ground beetle (*Elaphrus viridis*) (Arnold 2009).

All special status wildlife species with potential to occur at project site locations are listed in Table B-1 in Attachment B. The potential for occurrence for each of these species at the three work sites is described below.

MP 1.38

One pool feature within the expansion zone appears to hold 4-6 inches of water when full. This pool could support populations of vernal pool tadpole shrimp and vernal pool fairy shrimp. Preliminary wet season branchiopod habitat surveys identified the presence of midvalley fairy shrimp at this location.

It does not appear to hold enough water to be suitable breeding habitat for California tiger salamander; however, the grassland within the expansion zone could support suitable upland aestivation habitat for this species. A known breeding population of California tiger salamander is located approximately one mile north of this location, and critical habitat for this species is located immediately across Creed Road. California tiger salamander individuals may move as far as 1.2 miles between breeding ponds and upland refuge sites (USFWS 2003).

A ditch exists along Creed Road adjacent to MP 1.38 that could potentially hold water and support populations of vernal pool fairy shrimp and tadpole shrimp, but

provides poor breeding habitat for California tiger salamander. This ditch is outside of the proposed work site. No branchiopods were observed in the ditch during the preliminary wet-season branchiopod habitat surveys.

No suitable habitat for Delta green ground beetle was found at this work site (Arnold, 2009). Suitable foraging habitat exists within the expansion zone for western burrowing owl, but no small mammal burrows that could provide nesting habitat for burrowing owls were observed within the expansion zone.

MP 1.38 is located inside of a recorded occurrence for mountain plover (CDFG, 2008). The expansion zone and surrounding grassland provides suitable foraging habitat for this species. Mountain plover only winters in California and breeds in the Great Plains (Shuford and Gardali, 2008); therefore this species is not expected to breed at any of the work sites.

The matrix of seasonal wetlands and grasslands surrounding MP 1.38, as well as the proposed expansion zone, provide suitable foraging habitat for the following special-status species: golden eagle, loggerhead shrike, northern harrier, short-eared owl, Suisun song sparrow, and white-tailed kite (Garcia and Associates, 2009b).

MP 4.88

Two seasonal wetlands exist approximately 90 feet north of the existing valve lot and immediately north of the disked portion of pasture. These two features provide habitat for vernal pool fairy shrimp and tadpole shrimp. Preliminary wet-season branchiopod habitat surveys identified the presence of vernal pool fairy shrimp at one of these pools, located just northwest of the valve lot. Vernal pool fairy shrimp were also observed in pools of standing water located in the existing valve lot.

The two wetlands north of the value lot also provide marginal breeding habitat for California tiger salamander. The surrounding grassland could provide suitable dry-season aestivation sites for California tiger salamander. A known breeding population of California tiger salamander is located approximately 0.75 mile northeast of this location.

There is no suitable habitat for Delta green ground beetle at this work site (Arnold 2009). Suitable foraging habitat for western burrowing owl exists within and surrounding the valve lot; however, potential burrowing owl use of the site would be limited because no small mammal burrows suitable for owls were observed at this location.

Other special-status species that have a moderate to high potential to occur within and in the vicinity of MP 4.88 include golden eagle, loggerhead shrike, mountain plover, northern harrier, short-eared owl, Suisun song sparrow, and white-tailed kite. For the most part, MP 4.88 provides only foraging habitat for each of these species with the exceptions of the loggerhead shrike and the Suisun song sparrow. One shrike was observed during the habitat assessment surveys and suitable nesting habitat exists for both the loggerhead shrike and the Suisun song sparrow at this work location (Garcia and Associates, 2009b).

Biological Resources Impacts and Mitigation Measures

In order to minimize the potential for the Project to adversely affect sensitive biological resource, PG&E has incorporated protective measures to be implemented during construction.

1. An employee education program will be conducted, consisting of a brief presentation to explain endangered species concerns to contractors, their employees, and any other personnel involved in the project. The program will include the following: a description of special-status species and their habitat needs; a report of the occurrence of these species in the project area; an explanation of the status of these species and their protection under the Federal Endangered Species Act, California Endangered Species Act, and other statutes; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information will be prepared for distribution to the above-mentioned people and anyone else who may enter the project site. Upon completion of training, employees will sign a form stating that they attended the training and understand all the conservation and protection measures. To the extent possible, nighttime construction will be minimized. Construction crews will be informed during the education program meeting that, to the extent possible, travel within the marked project site will be restricted to established roadbeds. Established roadbeds include all pre-existing and project-constructed unimproved, as well as, improved roads.
2. Biological monitors will be onsite during all ground-disturbing work within sensitive biological areas and the seasonal wetlands located adjacent to MP 4.88 and MP 1.38. Temporary work areas will be clearly flagged and marked. To the extent feasible, all work within sensitive biological areas will be conducted during the dry season.
3. Dust control measures will be implemented during construction activities. Work areas and dirt access roads will be watered regularly to minimize airborne dust and soil particles generated by construction.
4. The potential for adverse effects to water quality in seasonal wetlands or habitat within the project footprint will be avoided by implementing temporary Best Management Practices (BMPs) outlined in the California Stormwater Quality Association's Construction Handbook (CASQA, 2003). PG&E's BMPs will be used to minimize any wind- or water-related erosion. Protective measures will include:

    a) No discharge of pollutants from vehicle and equipment cleaning will be allowed into storm drains, wetlands, or water courses.

    b) Vehicle and equipment fueling and maintenance operations must be at least 100 feet from seasonal wetlands and other aquatic habitat.

c) Dust control will be implemented, including the use of water trucks to control dust in disturbed areas, rocking temporary access road entrances and exits, and placement of geotextile mats and rock on access roads.

d) Disturbed work areas will be restored to pre-project conditions and will be reseeded, as appropriate.

5. To minimize effects of the proposed project on vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and pappose tarplant, PG&E will purchase mitigation credits at a USFWS-approved mitigation bank. Permanent impacts to seasonal wetlands will be mitigated for by the purchase of appropriate Mitigation Bank ratio as dictated by the Draft Solano County HCP.

6. Project-related vehicles shall observe a 15-mile-per-hour speed limit in all project areas, except on county roads and state and federal highways.

7. The limits of the construction area throughout the project will be flagged if not already marked by right-of-way or other fencing, and all activity will be confined within the marked area. A qualified biologist shall be onsite during all activities that could result in the take of a listed species.

8. A Mitigation, Monitoring and Reporting Plan is included as Attachment C and describes how the mitigation measures will be implemented.

In addition, the proposed project will be subject to permit requirements for additional measures to reduce or mitigate project impacts.

Twenty-two special-status plant species were identified to have potential to occur within the project area (Table A-1). During the reconnaissance-level survey pappose tarplant was found on the project at project site MP 1.38.

Eleven special-status wildlife species were identified as occurring or with potential to occur in the project area or in the vicinity.

Potential Impact Bio 1: Construction activities associated with excavation of the gas line and fill associated with the expanded permanent easements could result in temporary or permanent impacts to special-status plants located within the vicinity of the project.

Protocol-level special-status plant surveys will be conducted for this project in 2009. If special-status plant species are found on the project then the implementation of Mitigation Measure Bio 1a and 1b would reduce the potential impact to a less-than-significant level.

Pappose tarplant was found at MP 1.38 and could be impacted by the project; this species was found scattered throughout the grassland at the work site (pers. comm. Eric Wrubel, 2009). Population estimate for this species was not done during the habitat assessment for special status plants on the project. This plant was past blooming when the habitat assessment was conducted, therefore plants that were observed on the work site were mostly senescent. Implementation of Measure Bio 1c would reduce this impact to less than significant.

Mitigation Measure Bio 1a: Surveys for special-status plants shall occur during appropriate blooming periods. Prior to the start of construction activities, a specialist shall establish and flag exclusion zones around the known population(s) and to the extent feasible the exclusion zone will be avoided. These exclusion zones will include known populations and, where practicable, a 50-foot buffer zone. During construction activities near areas of known special-status plant occurrences, daily monitoring by a qualified biological monitor will document observance of exclusion zones and water quality measures.

Mitigation Measure Bio 1b: If avoidance of the special-status plants is not feasible, PG&E shall contract with a specialist to write a rare plant mitigation plan. If translocation is feasible then the PG&E specialist may recommend that plant seeds be harvested and top-soil saved for post-construction restoration or replanting in an appropriate location. Replanting and restoration shall be done in consultation with USFWS and/or CDFG as appropriate.

Mitigation Measure Bio 1c: Pappose tarplant readily transplants from seed and can adapt and survive in disturbed habitats along with natural ones (SCWA, 2007). This species also appears to thrive with some disturbances, such as trampling, grazing, mowing, and light disking (CNPS, 2005). Prior to disturbing areas with pappose tarplant, all top soil shall be removed. Plants that are in bloom shall be removed and dried to collect seeds that have matured. After construction, restoration and planting with top soil and seed shall be implemented by a qualified botanist. Restoration and planting will be done in suitable areas as close as possible to work site MP 1.38.

Potential Impact Bio 2: Construction activities could result in temporary and/or permanent impacts to habitat for vernal pool crustaceans located within the vicinity of the project.

Preliminary wet-season branchiopod habitat surveys confirmed the presence of vernal pool fairy shrimp at MP 1.38 and MP 4.88 and identified potential habitat for vernal pool tadpole shrimp at those sites. The project is expected to permanently fill 0.023 acres of the vernal pool branchiopod habitat at work site MP 1.38 as a result of lot expansion.

Two seasonal wetlands are located just north of the proposed work site location for MP 4.88; these wetlands consist of 0.011 and 0.080 acres, for a total of 0.091 acres. Construction activities are expected to occur outside of these seasonal wetland footprints (approximately 15 feet); however, the project may indirectly impact these wetland habitats by affecting water quality through erosion and sedimentation. Wet season branchiopod habitat surveys also identified the presence of vernal pool fairy shrimp at two locations within MP 4.88 work site. This branchiopod habitat consists of a total 0.016 acres; 0.014 and 0.002 acres for each respective pool. A portion of the 0.014 acres of habitat is located within the proposed permanent graveled and fenced station. The entire 0.002 acres of habitat

occurs within the permanent graveled and fenced station and will be permanently impacted.

Implementation of Mitigation Measure Bio 2a-2c will reduce the impact to vernal pool crustaceans to a less-than-significant level.

Mitigation Measure Bio 2a: PG&E shall contract a specialist to establish and flag an appropriate exclusion zone around the seasonal wetlands at work sites MP 4.88 and MP 1.38 and to the extent feasible the exclusion zones will be avoided. A qualified biological monitor shall inspect construction-related activities at the proposed work sites. The biologist shall be available for monitoring throughout all phases of construction that may result in adverse effects to listed crustaceans.

Mitigation Measure Bio 2b: To mitigate for the loss of habitat for vernal pool crustaceans at work site MP 1.38, PG&E will purchase 0.069 acres of vernal pool preservation credits at a vernal pool conservation bank approved by USFWS prior to the start of earth-moving activities.

To mitigate for the loss of vernal pool crustacean habitat at work site MP 4.88, PG&E will purchase 0.048 acre of vernal pool preservation credits. All credits will be purchased at a vernal pool conservation bank approved by the USFWS prior to the start of earth-moving activities at MP 4.88.

Mitigation Measure Bio 2c: PG&E will include sediment and erosion control measures as outlined in the California Stormwater Quality Association's Construction Handbook (CASQA, 2003). Standard sediment erosion control measures, such as silt fencing, straw bale barriers, sediment traps, or other measures will reduce the off-site transport of sediment from disturbed slopes. Existing vegetation that can be preserved will be identified and flagged or fenced to avoid disturbance. Impacts to seasonal wetlands outside of the work site areas will be minimized through the use of grading operations that eliminate direct routes for conveying runoff to drainage channels and use of soil stabilization Best Management Practices (BMPs), such as mulching, erosion control fabrics, and/or reseeding with grass or other plants where necessary.

Impact Bio 3: The project may result in temporary impacts to California tiger salamander dispersal and upland habitat and/or direct mortality, injury, or harassment of individual juveniles and adults.

Upland habitat for California tiger salamander was identified at work sites MP 4.88 and MP 1.38. The seasonal wetland at work site MP 1.38 does not appear to hold enough water to be suitable breeding habitat for California tiger salamander; however, the suitable breeding habitat exists in the roadside ditches adjacent to the work site. The grassland within the expansion zone could also support suitable upland aestivation habitat for this species. A known breeding population of California tiger salamander is located approximately one mile north of this location, and critical habitat for this species is located immediately across Creed Road. California tiger salamander individuals may move as far as 1.2 miles between

breeding ponds and upland refuge sites (USFWS 2003). The two seasonal wetlands at MP 4.88 provide marginal breeding habitat for California tiger salamander, however the surrounding grassland could provide suitable dry-season aestivation sites for California tiger salamander, and a known breeding population of California tiger salamander is located approximately 0.75 mile northeast of this location.

Implementation of the proposed expanded permanent easements would result in the permanent loss of 0.231 acres and 0.028 acres, respectively, of suitable upland habitat for the salamander at work sites MP 1.38 and MP 4.88. In addition, the proposed activities will temporarily impact 0.202 acres of upland salamander habitat at MP 4.88. No seasonal wetlands or ponds appropriate for salamander breeding will be permanently lost from implementation of the proposed construction actions.

The implementation of Mitigation Measure Bio 3 would reduce the impact to this species to a less-than-significant level.

Mitigation Measure Bio 3a: To mitigate for the permanent loss of upland habitat for California tiger salamander at work sites MP 1.38 and MP 4.88, PG&E will purchase 0.516 acres of upland preservation credits (at a 2:1 ratio) at a CDFG and USFWS-approved California tiger salamander conservation bank prior to the start of earth-moving activities.

Mitigation Measure Bio 3b: To mitigate for the temporary loss of upland habitat for California tiger salamander at work site MP 4.88, PG&E will purchase 0.202 acres of upland preservation credits (at a 1:1 ratio) at a CDFG and USFWS-approved California tiger salamander conservation bank prior to the start of earth-moving activities.

Mitigation Measure Bio 3c: To the extent feasible, all ground disturbing activities within MP 1.38 and MP 4.88 work sites will be conducted during the dry season. Prior to the initiation of ground disturbance at these two work sites, preconstruction surveys shall be conducted by a qualified biologist(s) for burrows and upland habitat within the temporary work easements. These surveys shall consist of walking surveys of the project site and adjacent areas to determine presence of burrows. Burrows will be flagged and avoided to the extent feasible. If salamanders are observed during these surveys, a USFWS-approved biologist(s) will remove the animal from the work site and translocate them under the direction and authorization of the Service. All salamanders captured on the project site during monitoring and inspections conducted during construction shall be removed by a Service-approved biologist(s) and translocated under the direction and authorization of the Service.

A qualified biological monitor shall inspect construction-related activities at the work sites to ensure that no unauthorized take of federally-listed species or destruction of their habitat occurs. The biologist shall be available for monitoring throughout all construction activities that may result in adverse effects to California tiger salamander.

To prevent inadvertent entrapment of salamanders during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered

at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they must be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the USFWS-approved biologist(s) should immediately place escape ramps or other appropriate structures to allow the animal to escape, or the Service and/or California Department of Fish and Game shall be contacted by telephone for guidance. The Service shall be notified of the incident by telephone and electronic mail within one (I) working day.

If requested, before, during, or upon completion of ground breaking and/or construction activities, the project proponents shall allow access by Service and/or California Department of Fish and Game personnel to the project site to inspect project effects to the salamander and associated habitats.

The project proponents shall report any information about take or suspected take of listed wildlife species not authorized in this biological opinion. The applicant must notify the Service via electronic mail and telephone within twenty-four (24) hours of receiving such information.

Impact Bio 4: Project construction activities including ground disturbing, staging of equipment, operation of heavy equipment, valve relocation and the expansion of permanent easements, could disturb nesting birds, including raptors.

Project activities within vegetated areas have the potential to destroy active nests, harm individual birds, and/or flush birds from their nests which could result in the loss of eggs or nest abandonment. Nesting birds, including raptors, are protected under the federal Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code. The MBTA protects most birds, including both common and special-status species, from "incidental take." Construction related activates that cause abandonment of an active nest are also considered non-permitted take, protected by the MBTA.

Implementation of Mitigation Measure Bio 4 would reduce the impact to nesting birds to a less than significant level.

Mitigation Measure Bio 4: For project construction activities occurring during the bird nesting season of February 1 through August 31, a qualified ornithologist shall conduct pre-construction surveys for nesting birds no more than two weeks prior to construction. These surveys will cover the three project work sites. Additional pre-construction surveys shall be conducted for each new phase of project implementation that occurs during the nesting season, no more than two weeks prior to construction. For any nests that are found, nest protection zones will be established. For passerine birds, a 50 - 100-foot protection zone shall be established around active nests; for raptors, a 300-foot protection zone and for golden eagles a 500-foot protection zone shall be established around active nests. These protection zones may be modified on a site-specific basis as determined by the biological monitor or in coordination with CDFG. Active nests within the project

area would be monitored for signs of disturbance. If the biological monitor determines that a disturbance is occurring, construction shall be halted, and the agencies shall be contacted as to the measures that shall be implemented.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☑	☐	☐

See discussion of vernal pools under wetlands section.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☑	☐	☐

Wetlands delineation identified potentially jurisdictional features subject to Clean Water Act (CWA) Section 404 and 401 in the vicinities of MP 1.38 and MP 4.88. Preliminary determination of waters of the U.S. identified a total of 0.198 acres of potentially jurisdictional seasonal wetlands and seasonal creek occurring in or near the work sites.

Impact Bio 6: Project construction activities could result in temporary and permanent impacts to wetlands and other Waters of the U.S.

Construction activities as work site MP 1.38 would permanently fill 0.037 acres of seasonal wetlands during the proposed expanded permanent easement at this work site.

Two seasonal wetlands are located just north of MP 4.88 work site; these wetlands consist of 0.011 and 0.080 acres, for a total of 0.091 acres. Construction activities are expected to occur outside of these seasonal wetlands footprints (approximately 15 feet).

Implementation of Mitigation Measure Bio 6a-b would reduce the impact to wetlands and other Waters of the U.S to a less than significant level.

Mitigation Measure Bio 6a: To the extent feasible, buffers to wetlands and creeks will created using signage or exclusion fencing during construction. Areas that are avoided shall be further protected from indirect impacts by using BMPs. PG&E shall implement the following erosion and sediment control and surface water protection methods for each of the work sites:

At MP 1.38, the portion of seasonal wetland to be filled will be clearly delineated and marked with flagging or fencing so that the remaining portion of the seasonal wetland will be avoided. BMPs, such as silt fencing and/or fiber rolls, will be installed around the portion of seasonal wetland to be avoided.

At MP 4.88, BMPs, such as fiber rolls and/or silt fencing, shall be installed between the two seasonal wetlands and the work site.

A qualified biological monitor shall inspect construction-related activities at each work site to assist in the preservation of existing vegetation to the extent possible, ensure avoidance of water features when feasible, and to ensure water quality measures and BMPs are being implemented.

Mitigation Measure Bio 6b: To mitigate for the loss of seasonal habitat at work site MP 1.38, PG&E will purchase 0.074 acres of preservation credits and 0.037 acres of creation credits at a USFWS-approved conservation bank prior to the start of earth-moving activities. This mitigation ratio was determined in accordance the Draft Solano County HCP habitat ratio for a Medium Value Conservation Area. The Draft Solano County HCP credits and habitat value is based on a multiple-species plan and the credits purchased for vernal pool crustaceans may also be applied to this credit purchase for the loss of seasonal wetland habitat. (Solano County HCP, Medium Value Conservation Areas - 2:1 preservation of vernal pool and swale habitats and 1:1 restoration of vernal pool and swale habitat). Mitigation ratios and conservation banks to be used are subject to final results of ESA Section 7 consultation and final approval of the HCP by US Fish and Wildlife Service.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(d) 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?	☐	☑	☐	☐

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑

Regulation RS.I-3 of the 2008 Solano County General Plan directed the County to develop an ordinance to protect oak woodlands and other heritage trees; however, this ordinance has not yet been implemented. Regardless, there are no oak woodlands in the project area, and tree removal is not proposed. No other local policies or ordinances are known. The project will therefore have no impact, and no additional mitigation is necessary or required.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

The two proposed work sites occur within the Solano County Multi-Species Habitat Conservation Plan (SCWA 2007). Work site MP 4.88 is located in a High Value Conservation Areas, while structures MP 1.38 is in a Medium Value Conservation Area.. Although some data from this Habitat Conservation Plan was used by Solano County to develop policies for the 2008 General Plan, the MSHCP itself is an agreement between the Bureau of Reclamation, the Solano County Water Agency, and several local cities and other districts to implement conservation measures to ensure the protection of federally listed species and their habitat within the MSHCP area, and does not apply to this project. The project will therefore have no impact, and no additional mitigation is necessary or required.