

F. BIOLOGICAL RESOURCES

This section describes: 1) existing biological resources in the Plan Area (project site); 2) sensitive plant and animal communities, including wetlands; 3) potentially occurring special-status species; 4) potential impacts to biological resources associated with implementation of the Draft Specific Plan; and 5) mitigation measures, as appropriate.

1. Setting

a. **Methods.** The methods used to evaluate the site and project are identified below.

(1) **Records Search and Literature Review.** Special-status species databases were reviewed to identify habitat types and species potentially occurring at the project site. The *California Natural Diversity Database*¹ (CNDDDB) and the California Native Plant Society's (CNPS) on-line *Inventory of Rare and Endangered Plants*² were searched to identify potentially occurring special-status species. The CNDDDB and CNPS database search covered occurrences within the Benicia United States Geological Survey (USGS) 7.5-minute quadrangle, in which the site is located, as well as the following adjacent quadrangles: Vine Hill, Cuttings Wharf, Cordelia, Fairfield South, and Mare Island. Other CNDDDB records within 5 miles of the project site were also reviewed.

(2) **Field Survey.** LSA biologists conducted a reconnaissance-level survey of biological resources at the project site on April 24, 2007. The reconnaissance survey focused on characterizing existing plant and animal communities, identifying sensitive habitats, and evaluating the potential for special-status species to occur on the site. Plant and animal species observed during the survey were recorded in field notes.

b. **Regulatory Context.** The regulatory context of biological resources on the project site is described below.

(1) **U.S. Fish and Wildlife Service (USFWS).** USFWS has jurisdiction over species that are formally listed as threatened or endangered under the federal Endangered Species Act. The Endangered Species Act protects listed wildlife species from harm or "take." The term "take" is broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." An activity is defined as a "take" even if it is unintentional or accidental. An endangered plant or wildlife species is one that is considered in danger of becoming extinct throughout all, or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future. In addition to endangered and threatened species, which are legally protected under the federal Endangered Species Act, the USFWS has a list of proposed and candidate species. Proposed species are those for which a proposed rule to list them as endangered or threatened has been published in the Federal Record. A candidate species is one for which the USFWS currently has enough information to support a proposal to list it as a threatened or endangered species. These latter species are not afforded legal protection under the federal Endangered Species Act. However, project-related impacts to federally-listed, proposed, and

¹ California Natural Diversity Data Base (CNDDDB), 2007. *Rarefind*. Version 3.0.5. California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch, Sacramento, CA. Updated April 25.

² California Native Plant Society. (CNPS), 2007. *Inventory of Rare and Endangered Plants*. On-line version 7-06b. Website: cnps.web.aplus.net/cgi-bin/inv/inventory.cgi. May 2.

candidate species or their habitats are considered “significant” under the *CEQA Guidelines* (discussed below).

The City would be required to comply with the federal Endangered Species Act in order to avoid a take of listed species that occur on the site and to avoid adverse modification of habitat that is determined to be essential to the survival and recovery of listed species. In order to ensure compliance with the Endangered Species Act, the USFWS would conduct an independent review of the project if listed species could be affected.

(2) California Department of Fish and Game (CDFG). CDFG has jurisdiction over threatened or endangered species that are formally listed by the State under the California Endangered Species Act. The California Endangered Species Act is similar to the federal Endangered Species Act both in process and substance: it is intended to provide protection to threatened and endangered species in California. The California Endangered Species Act prohibits the “take” of any plant or animal listed or proposed as threatened, endangered, or rare (“rare” applies only to plants). The California Endangered Species Act does not supersede the federal Endangered Species Act, but operates in conjunction with it. Species may be listed as threatened or endangered under both acts (in which case the provisions of both State and federal laws would apply) or under only one act.

CDFG also maintains informal lists of “species of special concern” and rare plants. These species are broadly defined as wildlife and plants that are of concern to CDFG because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California. Project-related impacts to species on the State endangered or threatened lists and lists of species of special concern are considered “significant” under the *CEQA Guidelines* (discussed below). CDFG also exerts jurisdiction over the bed and banks of watercourses according to the provisions of Section 1602 of the Fish and Game Code. The CDFG requires a Streambed Alteration Permit for the fill or removal of any material from a natural drainage. The jurisdiction of CDFG extends to the top of the bank and often includes the outer edge of riparian vegetation canopy cover.

(3) U.S. Army Corps of Engineers (Corps). Under Section 404 of the Clean Water Act, the Corps is responsible for regulating the discharge of fill material into “waters of the U.S.” The lateral limits of waters of the U.S. are defined in 33 Code of Federal Regulations (CFR) Part 328.3(a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed “isolated wetlands” and are not subject to Corps jurisdiction.

In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit required depends on the amount of acreage and the purpose of the proposed fill, and is subject to discretion from the Corps. There are two categories of Corps permits: nationwide (general) permits and individual permits. To qualify for a nationwide permit, a project must demonstrate that it has no more than a minimal adverse effect on an aquatic ecosystem. The Corps typically interprets this condition to mean that there will be no net loss of either habitat acreage or habitat value. This usually results in the need to provide mitigation for project-related fill of any creek or wetland. An individual permit is required where a nationwide permit is not applicable. The consideration of an individual permit includes, but is not limited to, factors such as significant acreage of wetlands or waters of the U.S., areas of high biological or unique value, or length of watercourse affected. Individual permits require review of the project by the public, evidence that wetland impacts

have been avoided or minimized to the extent practicable, and provision of appropriate compensatory mitigation for unavoidable impacts

(4) Regional Water Quality Control Board (RWQCB). Pursuant to Section 401 of the Clean Water Act, projects that apply for a Corps permit for discharge of dredge or fill material into wetlands or other waters of the U.S. and State must also obtain water quality certification from the RWQCB. This certification ensures that the project will uphold State water quality standards. Alternatively, the RWQCB may elect to notify an applicant that the State may issue Waste Discharge Requirements in lieu of a Section 401 certification for a project. Wetlands and waters determined to be isolated and not subject to Corps jurisdiction may be regulated by the RWQCB under the Porter-Cologne Act as waters of the State. Fill of waters of the State requires issuance of a waste discharge permit. It is the policy of the State to have no net loss of wetlands.

(5) CEQA Guidelines Section 15380. 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 the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet other specified criteria. These criteria have been modeled after the definition in the federal Endangered Species Act and the section of the California Fish and Game Code dealing with rare or endangered species. Section 15380(b) was included in the *CEQA Guidelines* primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a plant or animal species that has not yet been listed by either the USFWS or CDFG (and this species is considered to be at risk of population decline). Thus, CEQA provides a lead agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

(6) California Native Plant Society (CNPS). CNPS, a non-governmental conservation organization, has developed lists of plants of special concern in California. A CNPS List 1A plant is a species, subspecies, or variety that is considered to be extinct. A List 1B plant is considered rare, threatened, or endangered in California and elsewhere. A List 2 plant is considered rare, threatened, or endangered in California but is more common elsewhere. A List 3 plant is a species for which CNPS lacks necessary information to determine if it should be assigned to a list or not. A List 4 plant has a limited distribution in California.

All of the plant species on List 1 and List 2 meet the requirements of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the CDFG Code, and are eligible for State listing. Therefore, plants appearing on Lists 1 or 2 are considered to meet the *CEQA Guidelines*' Section 15380 criteria and effects to these species are considered "significant" in this document.

(7) City of Benicia General Plan. Applicable biological resources goals, policies, and implementation programs from the Benicia General Plan are presented below.

Open Space and Conservation of Resources

- *Biotic Resources Goal 3.19:* Preserve and enhance habitat for special-status plants and animals.
 - *Biotic Resources Policy 3.19.1:* Protect essential habitat of special-status plant and animal species.

- *Biotic Resources Program 3.19.A:* Require biological assessments in sensitive habitat areas as part of environmental review of proposed development.
- *Biotic Resources Program 3.19.B:* Require retention of essential habitat for special-status species. If infeasible, require adequate mitigation for loss of special-status species and/or habitat in compliance with State and federal regulations.
- *Biotic Resources Goal 3.20:* Protect and enhance native vegetation and habitats.
 - *Biotic Resources Policy 3.20.1:* Protect native grasslands, oak woodlands, and riparian habitat.
 - *Biotic Resources Policy 3.20.2:* Restore native vegetation, such as birch grasses and oaks, wherever possible for open spaces of existing developed areas.
 - *Biotic Resources Program 3.20.B:* Limit the loss of native vegetation or require mitigation, or both.
 - *Biotic Resources Program 3.20.C:* Require native and compatible non-native plant species, especially drought-resistant species, to the extent possible in landscaping new development and public areas.
 - *Biotic Resources Policy 3.20.3:* Encourage preservation of existing trees. Especially preserve and protect mature, healthy trees whenever practicable, particularly where such trees are of significant size or are of significant aesthetic value to the immediate vicinity or to the community as a whole.
 - *Biotic Resources Program 3.20.D:* Strive to incorporate existing mature, healthy trees into proposed developments.
 - *Biotic Resources Policy 3.20.4:* Require protection of movement corridors.
- *Biotic Resources Goal 3.21:* Permanently protect and enhance wetlands so that there is no net loss of wetlands within the Benicia Planning Area.
 - *Biotic Resources Policy 3.21.1:* Encourage avoidance and enhancement of sensitive wetlands as part of future development.
 - *Biotic Resources Biotic Resources Program 3.21.A:* Continue to require wetland delineation and mitigation as part of environmental review of proposed development.
 - *Biotic Resources Policy 3.21.2:* Require replacement for wetlands eliminated as a result of development at a higher wetlands value and acreage than the area eliminated. Replacement ratios are initially determined by State and federal agencies. The City desires to take an aggressive approach in promoting wetland enhancement. If the City desires a higher ratio, a nexus must be established between the loss and the desired replacement ratio.
 - *Biotic Resources Program 3.21.B:* Continue to coordinate with the California Department of Fish and Game, United States Fish and Wildlife Service, and the United States Army Corps of Engineers in reviewing proposed wetland modifications.
 - *Biotic Resources Policy 3.21.4:* Restore and increase marshland areas.
 - *Biotic Resources Program 3.21.E:* Identify small wetlands and require their protection, restoration, and enhancement as part of open space dedication in proposed development and in citywide open space improvements.
- *Water Resources Goal 3.22:* Preserve water bodies.
 - *Water Resources Policy 3.22.1:* Avoid development that will degrade existing lakes and streams.
 - *Water Resources Program 3.22.A:* Require that all development in watersheds flowing into lakes and unchannelized streams include features to preserve run-off water quality.
 - *Water Resources Program 3.22.B:* Require a minimum setback of 25 feet from the top of bank of streams and ravines. Do not allow development within the setback
- *Water Resources Goal 3.24:* Protect watersheds.

(8) City of Benicia Tree Ordinance. The City's Zoning Ordinance, Section 17.70.190 (H) requires a Tree Removal Permit from the Parks and Community Services Director for removing,

trimming or altering all trees with a diameter of 12 inches or more at 24 inches above the ground.³ Two 15-gallon trees are generally required for the replacement of each mature tree that is removed. In some cases, one or two 24-inch box trees, or a mature tree, is required for the replacement of one mature tree. In some cases such as where there are dead or dying trees, thinning groups of trees, or removal of one tree in a group of healthy trees, tree replacement is not required.

c. Site Conditions. Figure IV.F-1 shows plant communities, habitat, and seasonal wetlands at the project site. The project site consists of residences, mixed-use development, and historic buildings intermixed with native and non-native trees and shrubs, and ruderal and grassland vegetation. Wetland features present at the project site consist of four seasonal wetlands that are located in the northeastern portion of the site.

Existing conditions at the project site are described below for vegetation communities and wildlife habitats; sensitive plant communities and habitats; and special-status species.

(1) Vegetation Communities and Wildlife Habitats. The following sections describe vegetation communities and habitats on the site based on a review of the Draft Specific Plan and the reconnaissance survey conducted by LSA in 2007. Nomenclature for special-status plant and animal species conforms to the *California Natural Diversity Data Base* (CNDDB).⁴

Ruderal/Non-Native Grassland. Isolated portions of the project site consist of non-native grassland (approximately 7.27 acres). The vast majority of the grassland areas are previously disturbed ruderal fields dispersed throughout the developed area. This plant community is characterized by a cover of non-native annual grasses, though a few native and non-native wildflowers (forbs) occur in the grasslands onsite. The dominant grasses at the project site are rigput brome (*Bromus diandrus*), wild barley (*Hordeum murinum* ssp. *leporinum*, *H. marinum* ssp. *gussoneanum*), wild oats (*Avena* spp.), medusa-head grass (*Taeniatherum caput-medusae*), fountain grass (*Pennisetum* sp.), and Italian wildrye (*Lolium multiflorum*).

Both native and non-native forbs are interspersed throughout the grassland, including California poppy (*Eschscholzia californica*), purple owl's-clover (*Castilleja exserta*), curly dock (*Rumex crispis*), mustard (*Brassica* spp.), mallow (*Malva sylvestris*), English plantain (*Plantago lanceolata*), rose clover (*Trifolium hirtum*), alfalfa (*Medicago sativa*), birdfoot trefoil (*Lotus corniculatus*), sourclover (*Melilotus indica*), gumplant (*Grindelia camporum*), bedstraw (*Galium aparine*), bristly ox tongue (*Picris echioides*), vetch (*Vicia* sp.), and lupine (*Lupinus* sp.). The only shrubs observed within the ruderal/non-native grassland habitat were coyote brush (*Baccharis pilularis*), California blackberry (*Rubus ursinus*), and toyon (*Heteromeles arbutifolia*).

Ruderal (weedy) vegetation occurs in portions of the grassland, within the developed area, and under the blue gum eucalyptus trees (*Eucalyptus globulus*), forming dense stands in some areas. Invasive ruderal plant species present include fennel (*Foeniculum vulgare*), periwinkle (*Vinca major*), yellow

³ City of Benicia, 1999. Benicia Municipal Code, Title 17: Zoning. Chapter 17.70 Site Regulations. 17.70.90 Landscaping, Irrigation and Hydroseeding. H. Preservation of Mature Trees.

⁴ California Natural Diversity Data Base (CNDDB), 2007. *Rarefind*. Version 3.0.5. California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch, Sacramento, CA. Updated April 25.

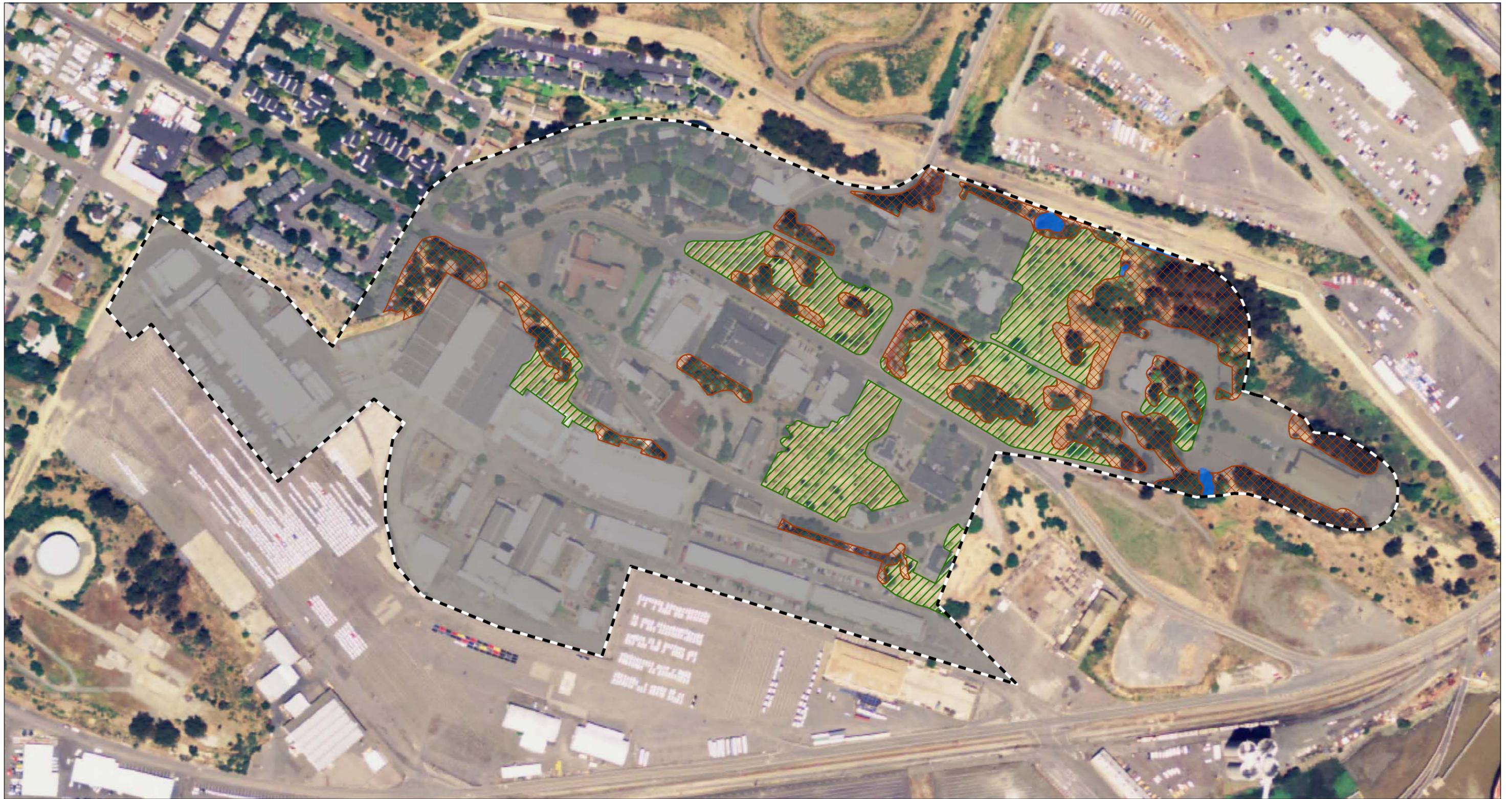
star-thistle (*Centaurea solstitialis*), Harding grass (*Phalaris aquatica*), iceplant (*Carpobrotus chilensis*), and milk thistle (*Silybum marianum*).

Ruderal vegetation and grasslands provide habitat for a relatively small number of wildlife species due to the uniform structure of vegetation. However, the grasslands on the site support populations of small lagomorphs (rabbits) and rodents, including black-tailed jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), and California vole (*Microtus californicus*), which provide an important potential prey base for avian and mammalian predators such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and great horned owl (*Bubo virginianus*).

Wildlife species commonly found in ruderal and grassland habitats that were observed at the project site during the reconnaissance-level survey consist of turkey vulture (*Cathartes aura*), red-tailed hawk, American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), violet-green swallow (*Tachycineta thalassina*), American crow (*Corvus brachyrhynchos*), and European starling (*Sturnus vulgaris*). Mammals and reptiles observed were black-tailed jackrabbit and western fence lizard (*Sceloporus occidentalis*), respectively. The turkey vulture, red-tailed hawk, red-shouldered hawk, and American kestrel are wide-ranging species that would include the project site in their search for food. Although often present in grassland habitat, California ground squirrels (*Spermophilus beecheyi*) were observed only near the Commanding Officer's Quarters.

Seasonal Wetlands. Approximately 0.18 acre of potential jurisdictional seasonal wetlands located at four different locations were mapped within the project site. Two of the seasonal wetlands occur in low-lying depressions most likely caused by past grading and filling, while the other two occur in previously disturbed remnant riparian drainages. Two seasonal wetlands are located in the northeastern portion of the project site, within an undeveloped area just south of an exposed pipeline bordering the project to the north. The first of these areas consist of a shallow depression located at the foot of a fill slope, defined by a patch of iris-leaved rush (*Juncus xiphioides*), perennial pepperweed (*Lepidium latifolium*), and creeping spike rush (*Eleocharis macrostachya*). The second area is a low lying depression, possibly created during the construction of the pipeline, containing dense cattails (*Typha* sp.) and a few arroyo willows (*Salix lasiolepis*). Two additional seasonal wetlands located to the west of the aforementioned sites along the pipeline and in the eastern portion of the project site along the southern boundary contain small stands of arroyo willows with little or no associated wetland vegetation.

Seasonal wetlands provide important breeding habitat for amphibians such as the Pacific treefrog (*Pseudacris regilla*) and western toad (*Bufo boreas*). Some of the grassland species mentioned in the Ruderal/Non-native Grassland section also use seasonal wetlands as foraging habitat. The seasonal wetlands may also be used as a water source, on a seasonal basis, for local wildlife. Species observed during the reconnaissance survey that may utilize the seasonal wetlands consist of great egret (*Ardea alba*) and black phoebe (*Sayornis nigricans*). Various water bird species are attracted to seasonal wetlands and include mallard (*Anas platyrhynchos*), greater yellowlegs (*Tringa melanoleuca*), Wilson's snipe (*Gallinago delicata*), great blue heron (*Ardea herodias*), and red-winged blackbird (*Agelaius phoeniceus*). The Pacific pond turtle (*Actinemys marmorata*) and California red-legged frog (*Rana aurora draytonii*) may occur in aquatic habitats in Solano County, but have not been documented at the project site. The seasonal wetlands onsite do not appear to be too deep enough or too



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-  PROJECT AREA
-  SEASONAL WETLANDS
-  RUDERAL/ NON-NATIVE GRASSLAND
-  NATIVE AND NON-NATIVE TREES
-  DEVELOPED AREAS (INCLUDING TREES AND LANDSCAPING)

FIGURE IV.F-1

Lower Arsenal Mixed-Use Specific Plan EIR
Habitat Types

remain inundated long enough to provide suitable breeding habitat for red-legged frogs. In addition, the project site is isolated from other natural open spaces and therefore does not likely provide habitat for red-legged frogs or western pond turtles. The project site occurs outside of the known ranges of the California tiger salamander (*Ambystoma californiense*) and listed fairy shrimp species.

Native and Non-native Trees. Native and non-native trees are dispersed throughout the undeveloped areas on the site (Figure 1). Species observed include blue gum eucalyptus, cork oak (*Quercus suber*), coast live oak (*Q. agrifolia*), London plane tree (*Platanus acerfolia*), California cottonwood (*Populus fremontii*), pine (*Pinus* sp.), walnut (*Juglans* sp.), and coast redwood (*Sequoia sempervirens*), among others. Ornamental trees are also located on the site within the developed and undeveloped areas and include ornamental pear (*Pyrus calleryana*), almond (*Prunus dulcis*), olive (*Olea* sp.), common juniper (*Juniperus communis*), and Canary Island date palm (*Phoenix canariensis*). The native and non-native trees comprise approximately 8.26 acres within the project site.

The native and non-native trees on the site provide roosting, foraging, and nesting habitat for many birds. The larger trees provide nesting habitat for raptors, owls, and other birds. Species that were observed utilizing the trees onsite during the reconnaissance survey consist of red-shouldered hawk, European starling, mourning dove, northern mockingbird (*Mimus polyglottos*), Nuttall's woodpecker (*Picoides nuttallii*), American kestrel, American crow, western scrub-jay (*Aphelocoma californica*), black phoebe, California towhee (*Pipilo crissalis*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), yellow-rumped warbler (*Dendroica coronata*), cedar waxwing (*Bombycilla cedrorum*), dark-eyed junco (*Junco hyemalis*), Anna's hummingbird (*Calypte anna*), and American goldfinch (*Carduelis tristis*). Special-status birds that could nest in the trees onsite include white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperii*), loggerhead shrike, saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*). Non-native fox squirrels (*Sciurus niger*) were also observed utilizing the trees onsite.

Developed. Developed areas with buildings and other structures are located throughout the project site (Figure IV.F-1). Buildings and structures include commercial and industrial buildings, residences, historic buildings, and parking lots. The historic structures and residences have associated landscaping that includes ornamental and native trees and shrubs, including date palms, pines (*Pinus* spp.), oaks (*Quercus* spp.), (*Arctostaphylos* sp.).

Several old buildings and structures are present on the project site. Many of these buildings have broken windows or have been boarded up with wood boards and some may have holes in their walls or roofs. These buildings could provide nesting habitat for swallows, black phoebe, barn owls (*Tyto alba*), and other birds. European starlings, a non-native bird whose nests are not protected, appear to be nesting in the clocktower building (Figure IV.F-1). Pallid bats (*Antrozous pallidus*), Townsend's western big-eared bats (*Corynorhinus townsendiitownsendii*), and other bat species could also roost in these structures. No bats or bat signs were observed during the reconnaissance survey (but none of the buildings was entered during the survey).

Ornamental trees and shrubs within developed areas provide roosting, foraging, and nesting habitat for many birds. Birds of prey and songbirds could nest in the larger trees, which include oak, willow, cottonwood, eucalyptus, pine, palm, and fruit trees, among others. Species that were observed

utilizing these trees during the reconnaissance survey include European starling, mourning dove, northern mockingbird, American crow, rock pigeon (*Columba livia*), black phoebe, western-scrub-jay, house finch, and house sparrow. Other bird species in the region that utilize these trees include the red-winged blackbird and Brewer's blackbird (*Euphagus cyanocephalus*).

(2) Sensitive Plant Communities and Habitats. The CDFG monitors the status of uncommon and declining plant communities and habitats in California. These communities are denoted with an asterisk in CDFG's *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Data Base*.⁵ No sensitive plant communities other than the small potential wetlands were observed within the Lower Arsenal project site. Sensitive communities/habitats, except for most wetlands, have no formal legal protection but are considered "rare and worthy of protection" by the CNDDDB and may require mitigation for impacts under CEQA.

(3) Special-Status Species. For the purposes of this EIR, special-status species are defined as follows:

- Plants and animals that are listed or proposed for listing as threatened or endangered or rare (for plants) under the California Endangered Species Act (Fish and Game Code 1992 Sections 2050 et seq.; 14 CCR Sections 670.1 et seq.) and/or the Federal Endangered Species Act (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);
- Plants and animals that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for plants; 61 FR 7591, February 28, 1996 for animals);
- Plants and animals that meet the definition of rare or endangered under CEQA (14 CCR Section 15380) but are not included on State or federal Endangered Species lists;
- Plants occurring on List 1A, List 1B, and List 2 of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California*. The CDFG recognizes that Lists 1A, 1B, and 2 of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFG requests their inclusion in EIRs, as necessary;
- Species identified as species of concern in ecosystem-based recovery plans;
- Animals that are designated as "Species of Special Concern" by CDFG; and,
- Animals that are "fully protected" in California (Fish and Game Code, Sections 3511, 4700, 5050 and 5515)

(4) Special-Status Plants. Twenty-seven (27) special-status plant species that occur in the vicinity of the project site were evaluated to determine their potential presence at the project site. Table F-1 lists the 27 species and describes each species' protective status, general habitat requirement, and blooming period, as well as the potential to occur at the project site.

Five of these 27 species have the potential to occur at the project site. Some of these species occur in seasonal wetlands or vernal pools, grasslands, and freshwater marsh habitats. Some species are

⁵ California Department of Fish and Game (CDFG), 2003. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Data Base*.

serpentine endemics and are unlikely to be present at the project site because these soil types are not present on the site. Soils present on the site are Dibble-Los Osos clay loams, 9-30 percent slopes and Dibble-Los Osos clay loams, 2 to 9 percent slopes.

LSA biologists conducted a reconnaissance level survey of biological resources at the project site on April 24, 2007. No special-status plants were observed on the site during the reconnaissance survey, however, protocol-level rare plant surveys were not conducted, and therefore it is not possible to discount all rare plants from the site.

(5) Special-Status Wildlife. A list of special-status wildlife species was compiled based on a CNDDDB⁶ record search, the site reconnaissance survey conducted by LSA, and LSA biologists' knowledge of the wildlife species in the region. Table IV.F-2 summarizes each species' protective status, general habitat requirements, and potential for occurrence in the project site. Five wildlife species reported in the CNDDDB occur in tidal salt marsh habitats in Suisun Marsh, but would not occur at the project site because of the absence of this habitat type onsite. These are California black rail (*Laterallus jamaicensis coturniculus*), California clapper rail (*Rallus longirostris obsoletus*), Suisun song sparrow (*Melospiza melodia maxillaris*), Suisun shrew (*Sorex ornatus sinuosus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*). The big free-tailed bat (*Nyctinomops macrotis*) is another special-status species that has been recorded within 5 miles of the project site, but suitable cliff and rocky crevice habitat for roosting is not present on the site. The site is outside the range of the California tiger salamander, Conservancy fairy shrimp (*Branchinecta conservatio*), and vernal pool fairy shrimp (*B. lynchi*) in Solano County, and no records exist in the vicinity of the site for this species. The draft *Solano Multispecies Habitat Conservation Plan*,⁷ a comprehensive document that lists all occurrences of tiger salamanders and special-status fairy shrimp within the County, lists no records of these species near the project site and does not consider the area around Benicia as habitat for these species. The closest known occurrence of California tiger salamander is in the Potrero Hills, approximately 14.5 miles northeast of the project site. The closest known occurrences of the two fairy shrimp species also are in the Potrero Hills, approximately 14.5 miles northeast of the project site. These species typically occur in vernal pools. No suitable vernal pools occur onsite and these species would not occur in the seasonal wetlands that are found at the project site.

⁶ California Department of Fish and Game (CDFG), 2007. Natural Diversity Data Base (CNDDDB): Special-status Species Occurrences Within 5 miles of the Project Site. Natural Resources Division, Sacramento, California.

⁷ LSA Associates, Inc., 2005. Solano Multispecies Habitat Conservation Plan, Working Draft 2.1. Solano County Water Agency, December.

Table IV.F-1: Special-Status Plant Species Potentially Occurring on or in the Vicinity of the Project Site

Species	Status* (Fed/State/CNPS)	Habitat Requirement	Blooming Period	Potential for Occurrence within the Project Site
Suisun marsh aster <i>Aster lentus</i>	-/-List 1B	Brackish and freshwater marshes. Endemic to the Sacramento/San Joaquin River Delta. Most often observed along sloughs with <i>Phragmites australis</i> , <i>Scirpus</i> spp., <i>Rubus</i> sp., <i>Typha</i> spp., etc. Inhabits elevations of 0-3 meters.	May- November	Unlikely to occur; suitable habitat not present on project site.
Alkali milk vetch <i>Astragalus tener</i> var. <i>tener</i>	-/-List 1B	Low ground, alkali flats, and flooded lands in annual grassland or in playas or vernal pools. Inhabits elevations of 1-170 meters.	March-June	Potential to occur in grasslands within project site. Closest known occurrence is > 5 miles from project site.
San Joaquin saltbush <i>Atriplex joaquiniana</i>	-/-List 1B	In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , <i>Frankenia salina</i> , etc. Within chenopod scrub, alkali meadow, and valley and foothill grassland. Inhabits elevations of 1-250 meters.	April- October	Potential to occur in seasonal wetlands/grasslands within project site. Closest known occurrence is > 5 miles from project site.
Vernal pool smallscale <i>Atriplex persistens</i>	-/-1B	Seasonal alkali wetlands or alkali sink scrub. Inhabits elevations of 10-115 meters.	July-October	Unlikely to occur; suitable habitat not present on project site.
Big-scale balsamroot <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	-/-List 1B	Valley and foothill grassland and cismontane woodland. Sometimes on serpentine. Inhabits elevations of 35-1000 meters.	March-June	Unlikely to occur; suitable habitat not present on project site.
Big tarplant <i>Blepharizonia plumosa</i> ssp. <i>plumosa</i>	-/-List 1B	Valley and foothill grasslands on dry hills and plains in clay to clay-loam soils. Usually on slopes and often in burned areas. Inhabits elevations of 15-455 meters.	July-October	Potential to occur in grasslands within project site. Closest known occurrence is approximately 1 mile from project site; it was last observed in 1917 and is possibly extirpated. There are no other occurrences within a 5 mile radius of the project site or in Solano County.
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	-/-List 1B	On wooded and brushy slopes in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. Primarily from the Mt. Diablo area. Inhabits elevations of 200-800 meters.	April-June	Unlikely to occur; suitable habitat within elevation range not present on project site.

Table IV.F-1 *Continued*

Species	Status* (Fed/State/CNPS)	Habitat Requirement	Blooming Period	Potential for Occurrence within the Project Site
Tiburon Indian paintbrush <i>Castilleja affinis</i> ssp. <i>neglecta</i>	FE/CE/List 1B	Valley and foothill grassland in rocky serpentine sites. Inhabits elevations of 75-400 meters.	April-June	Unlikely to occur; suitable habitat not present on project site.
Holly-leaved ceanothus <i>Ceanothus purpureus</i>	-/-List 1B	Rocky, volcanic slopes in chaparral. Inhabits elevations of 120-640 meters.	February-June	Unlikely to occur; suitable habitat not present on project site.
Congdon's tarplant <i>Centromadia parryi</i> ssp. <i>congdonii</i> [<i>Hemizonia parryi</i> ssp. <i>congdonii</i>]	-/-List 1B	In valley and foothill grassland on alkaline soils, sometimes described as heavy white clay. Inhabits elevations of 1-230 meters.	June-November	Potential to occur in grasslands within project site. Closest known occurrence is approximately 2 miles from project site. There are 2 other occurrences within a 5 mile radius of the project site that are located on the opposite side of the Carquinez Strait.
Pappose tarplant <i>Centromadia</i> (= <i>Hemizonia</i>) <i>parryi</i> ssp. <i>parryi</i>	-/-List 1B	Coastal prairie, meadows and seeps, coastal salt marsh, and valley and foothill grassland in vernal mesic, often alkaline sites. Inhabits elevations of 2-420 meters	May-November	Potential to occur in grasslands within project site. Closest known occurrence is approximately 1 mile from the site; last observed in 1998.
Suisun thistle <i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	FE/-List 1B	Endemic to the Sacramento/San Joaquin Delta; known only from Solano County. Grows with <i>Scirpus</i> spp., <i>Distichlis spicata</i> near small watercourses within saltmarsh. Inhabits elevations of 0-1 meter.	July-September	Unlikely to occur; suitable habitat not present on project site.
Soft bird's-beak <i>Cordylanthus mollis</i> ssp. <i>mollis</i>	FE/CR/List 1B	In coastal saltmarsh with <i>Distichlis spicata</i> , <i>Salicornia virginica</i> , <i>Frankenia salina</i> , etc. Inhabits elevations of 0-3 meters.	July-November	Unlikely to occur; suitable habitat not present on project site.
Western leatherwood <i>Dirca occidentalis</i>	-/-List 1B	On brushy slopes and mesic sites; mostly in mixed evergreen and foothill woodland communities such as broadleaved upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, and riparian woodland. Inhabits elevations of 30-550 meters.	January-April	Unlikely to occur; suitable habitat not present on project site.

Table IV.F-1 *Continued*

Species	Status* (Fed/State/CNPS)	Habitat Requirement	Blooming Period	Potential for Occurrence within the Project Site
Dwarf downingia <i>Downingia pusilla</i>	-/-/List 2	In several types of vernal pools and vernal lakes within valley and foothill grassland along margins with a variety of associates. Inhabits elevations of 1-485 meters	March-May	Unlikely to occur; suitable habitat not present on project site.
Mt. Diablo buckwheat <i>Eriogonum truncatum</i>	-/-/List 1B	Chaparral, coastal scrub, and valley and foothill grassland. Historically known from Alameda, Contra Costa, and Solano Counties. Dry, exposed clay or sandy substrates. Inhabits elevations of 100-600 meters.	April- November	Unlikely to occur; suitable habitat not present on project site.
Fragrant fritillary <i>Fritillaria liliacea</i>	-/-/List 1B	Coastal scrub, valley and foothill grassland, and coastal prairie. Often on serpentine. Various soils reported though usually clay. Inhabits elevations of 3-410 meters	February- April	Unlikely to occur on the site. In the vicinity of the project site, the single CNDDDB occurrence is a historic record from Mare Island from the late 1800s.
Diablo helianthella <i>Helianthella castanea</i>	-/-/List 1B	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. Inhabits elevations of 25-1150 meters.	March-June	Unlikely to occur; suitable habitat not present on project site.
Santa Cruz tarplant <i>Holocarpha macradenia</i>	FT/CE/List 1B	Coastal prairie and valley and foothill grassland in light, sandy soil or sandy clay; often with nonnatives. Elevation 10-260 meters	June- October	Unlikely to occur on the site. In the vicinity of the project site, populations in Solano County are considered extirpated and the only remaining populations in the SF Bay Area occur in Contra Costa County ⁸ .

⁸ California Native Plant Society. (CNPS), 2007. Inventory of Rare and Endangered Plants. On-line version 7-06b, May 9. Website: cnps.web.aplus.net/cgi-bin/inv/inventory.cgi.

Table IV.F-1 *Continued*

Species	Status* (Fed/State/CNPS)	Habitat Requirement	Blooming Period	Potential for Occurrence within the Project Site
Contra Costa goldfields <i>Lasthenia conjugens</i>	FE-/List 1B	In vernal pools, swales, and low depressions, in open grassy areas within valley and foothill grassland and cismontane woodland. Extirpated from most of its range. 1-445 meters.	March-June	Unlikely to occur; suitable habitat not present on project site.
Delta tule-pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	-/List 1B	Freshwater and brackish marshes. Most of distribution restricted to the Sacramento/San Joaquin River Delta. Often found with <i>Typha</i> spp., <i>Aster lentus</i> , <i>Rosa californica</i> , <i>Juncus</i> spp., <i>Scirpus</i> spp., etc. Usually on marsh and slough edges. 0-4 meters.	May-September	Unlikely to occur; suitable habitat not present on project site.
Legenere <i>Legenere limosa</i>	-/List 1B	In beds of vernal pools. Many historical occurrences are extirpated. 1-880 meters.	April-June	Unlikely to occur; suitable habitat not present on project site.
Mason's lilaeopsis <i>Lilaeopsis masonii</i>	-/CR/List 1B	Freshwater and brackish marshes and riparian scrub. Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. 0-10 meters.	April-November	Unlikely to occur; suitable habitat not present on project site.
Robust monardella <i>Monardella villosa</i> ssp. <i>globosa</i>	-/List 1B	Openings in broadleaved upland forest, chaparral, cismontane woodland, and valley and foothill grassland. 30-300 meters	June-July	Unlikely to occur; suitable habitat not present on project site.
Rayless ragwort <i>Senecio aphanactis</i>	-/List 2	Drying alkaline flats in cismontane woodland and coastal scrub. 20-575 meters.	January-April	Unlikely to occur on the site. In the vicinity of the project site, the CNDDDB occurrences are historic record from Mare Island from the late 1800s.
Showy Indian clover <i>Trifolium amoenum</i>	FE-/List 1B	In valley and foothill grassland and coastal bluff scrub in swales in open sunny sites. Most recently sited on roadside and eroding cliff face. Sometimes on serpentine soil, 5-560 meters	April-June	Unlikely to occur; suitable habitat not present on project site.
Saline clover <i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	-/List 1B	In alkaline soils in vernal pools, marshes and mesic grassland. 0-300 meters	April-June	Unlikely to occur; suitable habitat not present on project site.

*Status:

FE	= Federally Endangered
FT	= Federally Threatened
CE	= California Endangered
CT	= California Threatened
CR	= California Rare
List 1A	= California Native Plant Society (CNPS): species presumed extinct.
List 1B	= CNPS: plant considered rare, threatened, or endangered in California and elsewhere.
List 2	= CNPS: plant considered rare, threatened, or endangered in California but more common elsewhere.
-	= No status

^a Nearest records are based on CNDDDB (2007) occurrences unless otherwise noted.

Source: LSA Associates, Inc., 2007.

Of the special-status animal species listed in Table IV.F-2, seven species are of particular concern because they have been observed in the vicinity of the site and/or potentially would be affected by the proposed project: white-tailed kite, Cooper's hawk, western burrowing owl, loggerhead shrike (*Lanius ludovicianus*), California horned lark, pallid bat, and Townsend's western big-eared bat. Each species is discussed briefly below.

- **White-tailed Kite.** The white-tailed kite is a California species of special concern at its nesting site. White-tailed kites are year-round residents, and nest and roost in large groves of dense, broad-leaved trees, located near suitable foraging habitat. They forage for small rodents in grassland and other open habitats. The CNDDDB has no records of white-tailed kite nesting in the vicinity of the project site.⁹ The native and non-native trees onsite could provide nesting habitat for white-tailed kites, and the grasslands provides suitable foraging habitat for white-tailed kites that could nest at the project site vicinity. The closest known nesting occurrence is approximately 7.9 miles from the project site.¹⁰
- **Cooper's Hawk.** Cooper's hawk is a California species of special concern at its nesting site. This species is known to nest in urban settings in the Bay Area that support extensive stands of large shade trees and conifers, but nesting of this raptor has not been recorded within or adjacent to the project site. The Cooper's hawk is a fairly common winter visitor to urban areas and could nest where large dense stands of trees occur.
- **Western Burrowing Owl.** The western burrowing owl is a California species of special concern. These owls inhabit open, dry, level or almost-level grassland, prairie, and desert areas and nest in burrows constructed by larger burrowing mammals, most notably the California ground squirrel.¹¹ The non-native grassland habitat on the site may provide suitable foraging habitat for this species. Culverts, pipes and man-made structures may also provide suitable sheltering habitat for burrowing owls. Burrowing owls were not observed at the project site. The only ground squirrel burrows observed onsite were present near the Commanding Officer's Quarters, near the eastern boundary of the project site. California ground squirrel burrows are not extensive on the grassland habitat onsite, limiting its suitability as nesting habitat for this species. However, the grasslands onsite provide potential foraging habitat for this species.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Grinnel, J. and Miller, A.H., 1944. *The Distribution of the Birds of California*. Artemisia Press. Lee Vining, California. 615 pp.

Table IV.F-2: Special-Status Animal Species Potentially Occurring on or in the Vicinity of the Project Site

Species	*Status (Federal/State)	Habitat	Potential for Occurrence Within Project Site ^a
Invertebrates			
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	FT/-	Found in grasslands, typically along ridgelines where its host plant, Johnny jump-up (<i>Viola pedunculata</i>), is present.	Not likely to occur onsite. Host species, Johnny jump-up, not observed during LSA reconnaissance survey. The small, isolated nature of grasslands on the site and past disturbance of these areas make it unlikely that this species occurs here. Closest known occurrence is approximately 7.5 miles from the project site. ¹²
Amphibians			
California red-legged frog <i>Rana aurora draytonii</i>	FT/CSC	Found in lowlands and foothills in or near permanent ponds and streams with dense, shrubby, or emergent riparian vegetation.	Not likely to occur onsite. Seasonal wetlands onsite are too small and isolated to support this species. Closest known occurrences are approximately 6.5 miles northwest of the site and 2.1 miles south of the project site, on the opposite side of the Carquinez Strait (an impassable barrier to movement).
Reptiles			
Pacific pond turtle <i>Actinemys marmorata</i>	-/CSC	Found in ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and adjacent grasslands or other open habitat for egg-laying.	Not likely to occur onsite. Seasonal wetlands onsite are too small and isolated to support this species. Closest known occurrence is approximately 3.7 miles south of the project site on the opposite side of the Carquinez Strait.
Birds			
White-tailed kite <i>Elanus leucurus</i>	-/CFP	Forages over open landscapes, such as grasslands, pastures, and fields with good populations of voles and other small rodents. Nests in isolated trees and along the edges of woodlands near open areas.	Possibly occurs onsite. Trees on and surrounding site provide potential nesting habitat and grasslands are suitable foraging habitat. Closest known nesting occurrence is approximately 7.9 miles from the project site.
Northern harrier <i>Circus cyaneus</i>	-/CSC	Nests and forages in meadows, grasslands, open rangeland, and fresh or saltwater marshes.	Possibly occurs onsite. May forage onsite. Not likely to nest in grasslands onsite because of close proximity to development. Closest known nesting occurrence is approximately 3 miles northwest of the project site.
Cooper's hawk <i>Accipiter cooperii</i>	-/CSC	Nests and forages in woodlands, often with open areas or open canopy and near water. Also known to forage in open grasslands or shrubland.	Possibly occurs onsite. May occur as a transient and winter visitor and may nest in trees onsite.

¹² LSA Associates, Inc., 2005. Solano Multispecies Habitat Conservation Plan, Working Draft 2.1. Solano County Water Agency. December.

Table IV.F-2 *Continued*

Species	*Status (Federal/State)	Habitat	Potential for Occurrence Within Project Site ^a
Ferruginous hawk <i>Buteo regalis</i>	-/CSC (wintering)	Forages in open country and ranch lands. Occurs in California only as a winter visitor.	Not likely to occur. Site could provide winter foraging habitat. Not a breeding bird in this region. The species has been observed wintering in the Potrero Hills, approximately 12 miles northeast of the site.
Golden eagle <i>Aquila chrysaetos</i>	-/CSC	Forages in rolling foothill or coast-range terrain, with open grassland and scattered large trees. Nests in large trees, on cliffs, and occasionally on power line poles.	Not likely to occur onsite. Not likely to nest in trees onsite due to lack of cover and close proximity to development and human disturbance. Grasslands onsite are too small and isolated to provide suitable foraging habitat. Closest known nesting occurrence is approximately 4.1 miles northwest of the project site.
Merlin <i>Falco columbarius</i>	-/CSC (wintering)	Forages in open country, sea coasts, and bay lands. Occurs in California only as a winter visitor and migrant.	Not likely to occur (although could occur temporarily as a migrant or winter visitor). Not a breeding bird in this region.
Prairie falcon <i>Falco mexicanus</i>	-/CSC (nesting)	Forages in open country and deserts. Nests on cliffs.	Not likely to occur onsite. May forage over grasslands onsite. No suitable nesting habitat occurs.
Long-billed curlew <i>Numenius americanus</i>	-/CSC	Forages and nests in marshes, agricultural fields, and grasslands.	Not likely to occur onsite. May forage in grasslands onsite during the winter, but does not breed in the region.
Western burrowing owl <i>Athene cunicularia hypugea</i>	-/CSC	Nests in burrows in grasslands and woodlands; often associated with ground squirrels. Will also nest in artificial structures (culverts, concrete debris piles, etc.).	Possibly occurs onsite. Foraging habitat present. Burrow donors (i.e., California ground squirrels) only observed in a small area onsite, making nesting unlikely. Ground squirrels were observed near the Commanding Officer's Quarters.
Short-eared owl <i>Asio flammeus</i>	-/CSC	Inhabits open, treeless areas with low perches and dense vegetation for roosting and nesting.	Not likely to occur onsite. May forage in grassland onsite during winter, but does not breed in the region. Closest known occurrence is approximately 7.3 miles from the project site.
California horned lark <i>Eremophila alpestris actia</i>	-/CSC	Forages and nests in open grasslands and barren fields.	Possibly occurs onsite. May forage and breed on grasslands onsite.
Loggerhead shrike <i>Lanius ludovicianus</i>	-/CSC	Found in grasslands and open shrub or woodland communities. Nests in dense shrubs or trees and forages in scrub, open woodlands, grasslands, and croplands. Frequently uses fences, posts, and utility lines as hunting perches.	Possibly occurs onsite. May forage onsite and nest in trees onsite.
Yellow warbler <i>Dendroica petechia</i>	-/CSC	Nests in extensive willow riparian woodlands.	Not likely to occur onsite. Suitable nesting habitat not present onsite.

Table IV.F-2 *Continued*

Species	*Status (Federal/State)	Habitat	Potential for Occurrence Within Project Site ^a
Yellow-breasted chat <i>Icteria virens</i>	-/CSC	Nests in extensive willow riparian woodlands with dense understory.	Not likely to occur onsite. Suitable nesting habitat not present onsite. Closest known occurrence is approximately 25 miles north of the project site.
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	-/CSC	Inhabits dense vegetation near freshwater and brackish marshes.	Not likely to occur onsite. Suitable nesting habitat not present onsite. Closest known occurrence is approximately 1.7 mile from the site.
Tricolored blackbird <i>Agelaius tricolor</i>	-/CSC	Nests in dense vegetation near open water, forages in grasslands and agricultural fields.	Not likely to occur onsite. No nesting habitat onsite. Nesting colonies near site may forage onsite in grasslands. Closest known occurrence is approximately 3.2 mile northwest of the project site.
Mammals			
Pallid bat <i>Antrozous pallidus</i>	-/CSC	Roosts in crevices in rock outcrops, in the expansion joints under bridges and occasionally in old buildings; forages on large terrestrial insects in open habitats.	Possibly occurs onsite. May forage and roost onsite. Roosting habitat may occur in the trees and buildings onsite.
Townsend's western big-eared bat <i>Corynorhinus townsendii townsendii</i>	-/CSC	Roosts in caves, mines, and old buildings. Forages for insects in riparian woodlands, wetlands, forest edges, and open woodlands.	Possibly occurs onsite. Could roost in buildings onsite.
American badger <i>Taxidea taxus</i>	-/CSC	Open country, ranch lands, pasture, and open woodlands with friable soils and abundant small mammal populations.	Not likely to occur onsite due to small size of grassland areas, isolation from natural open spaces, and past disturbance of site.

***Status:**

- FE = Federally-listed as an endangered species.
- FT = Federally-listed as a threatened species.
- CE = State-listed as an endangered species.
- CT = State-listed as a threatened species.
- CFP = State-listed as a fully protected.
- CSC = State Species of Special Concern.

^a Nearest records are based on CNDDDB (2007) occurrences unless otherwise noted.

Source: LSA Associates, Inc., 2007.

- **Loggerhead Shrike.** The loggerhead shrike is a California species of special concern and is a common resident and winter visitor in the lowlands throughout California. It prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, and other perches. Loggerhead shrikes feed primarily on large insects and small birds and mammals. The woody vegetation present on and adjacent to the site provides potential nesting habitat for loggerhead shrikes and the onsite grassland provides suitable foraging habitat for this species.
- **California Horned Lark.** The California horned lark is a California species of special concern. These ground nesting birds occupy open habitats with short grasses, plowed fields, deserts, shorelines, and barren areas. Grasslands at the project site provide suitable nesting and foraging habitat for this species. Horned larks are known to occur in the region.
- **Pallid Bat.** The pallid bat is a California species of special concern. These bats prefer open, lowland areas and roost in cliff fissures, abandoned buildings, and under bridges.¹³ They are known to roost with other bat species. Pallid bats feed on large, hard-shelled prey on the ground or in foliage.¹⁴

No bats were observed onsite during the reconnaissance survey of the site, but the interior areas of the buildings were not surveyed. In addition to the buildings, eucalyptus and other trees may contain cavities that provide roosting sites for bats. However, no tree cavities were observed during the reconnaissance.

- **Townsend's Western Big-eared Bat.** Townsend's western big-eared bats live in a variety of habitats including coastal conifer and broadleaf forests, oak woodlands, arid grasslands and deserts, and high elevation forests and meadows. The species is most common in mesic (moderately moist) sites within these communities.¹⁵

Townsend's western big-eared bats feed on insects which are captured in flight. They roost in colonies and form feeding, maternity, and hibernation roosting colonies. They roost in limestone caves, mine tunnels, buildings, and other human-made structures.¹⁶ These roosting sites are used only when free of human disturbance; a single visit by humans can cause the bats to abandon a roost.¹⁷

2. Draft Specific Plan Policies

The following actions in the Draft Specific Plan are applicable to biological resources:

- *Land Use Action 1.6.2.* Maintain specimen trees, mature trees and ornamental landscaping, including lawn, shrubs, street trees, large oak and eucalyptus, and other appropriate plantings that surround key historic structures and act as canopies or boundary edges to historic landscapes.

¹³ Jameson, E.W., Jr. and Peeters, H.J., 2004. *Mammals of California*, Revised Edition. University of California, Berkeley, CA, 429 pp.

¹⁴ California Department of Fish and Game (CDFG), 2005. *California Wildlife Habitat Relationships Version 8.1 Personal Computer Program*. California Department of Fish and Game and California Interagency Wildlife Task Group, Sacramento, California.

¹⁵ Williams, D. F., 1986. *Mammalian species of special concern in California*. California Department of Fish and Game, Sacramento, California. 112 pp.

¹⁶ Ibid.

¹⁷ Ibid.

- *Land Use Action 1.6.3.* Permit removal of large trees only if a property is unduly constrained from development by their retention, and they are replaced at higher ratios elsewhere on the site.
- *Land Use Action 1.6.4.* Establish a formal program to recognize the heritage trees. Develop special permit requirements for removal or alteration.

3. Impacts and Mitigation Measures

The following section presents a discussion of potential impacts to biological resources that could result from implementation of the Draft Specific Plan.

a. Significance Criteria. The project would have a significant impact on biological resources if it would:

- 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.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act 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, including the City's Tree Ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

b. Less-than-Significant Biological Resources Impacts. Because the project site is located in a highly urbanized and industrialized area, and is bordered by development, impacts to wildlife movement corridors would be less than significant.

c. Significant Biological Resources Impacts. Implementation of the Draft Specific Plan could potentially impact special-status plants, animals and wetland resources. The following discussion describes and evaluates significant impacts to biological resources and proposes measures that would mitigate these impacts to a less-than-significant level where appropriate.

Impact BIO-1: Mature trees that are protected under the City's Tree Ordinance may be removed as part of the development on the project site. (S)

Numerous native and non-native trees occur on the site, including cork oak, coast live oak, blue gum eucalyptus, arroyo willow, palms, pines, walnuts, and ornamental trees, among others. Although certain trees would be permanently protected as part of the Draft Specific Plan (namely large and specimen trees, per Draft Specific Plan Actions 1.6.2, 1.6.3, and 1.6.4) other individuals may be removed as a result of plan implementation. Trees that are greater than 12 inches in diameter at 24

inches above the ground are protected under the City's Tree Ordinance. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

Mitigation Measure BIO-1: Prior to development of individual projects, a tree report shall be prepared by an arborist or biologist to identify the location, size, and health of trees on the site, and to map and identify the trees that would be preserved and removed during construction of the project. The report shall also specify measures to protect all preserved trees during construction, including creation of Tree Protection Zones. The project sponsor shall apply for a Tree Permit for the removal of all protected trees.

As part of the Tree Permit, an arborist or biologist shall develop a tree replacement program in accordance with the City's tree ordinance. Two 15-gallon trees are generally required for the replacement of each mature tree that is removed. In some cases, one or two 24-inch box trees, or a mature tree shall be required for the replacement of one mature tree. (LTS)

Impact BIO-2 (Jefferson Ridge/Officers' Row Zone): Development in the Jefferson Ridge/Officers' Row Zone (including the Clocktower Area) may result in the fill of jurisdictional wetlands that are subject to jurisdiction as waters of the United States under Section 404 of the Clean Water Act and/or are waters of the State subject to jurisdiction under the Porter-Cologne Act . (S)

Four potential wetland areas were identified in the Jefferson Ridge/Officers' Row Zone. A formal delineation has not been completed for the project site, so the status of the wetlands has not been determined. These wetland areas could be filled by project development activities such as new building construction (in particular, construction of a building at the north end of Officers' Square and associated pedestrian features) or roadway and drainage improvements. Fill of waters of the U.S. or waters of the State would be considered a significant impact. Implementation of the following seven-part mitigation measure would reduce impacts to seasonal wetlands to a less-than-significant level:

Mitigation Measure BIO-2a (Jefferson Street/Officers' Row Zone): Prior to approving any development project in the Jefferson Ridge/Officers' Row Zone, a formal wetland delineation will be conducted to determine the extent of jurisdictional waters of the United States and waters of the State on the site. Potential impacts to jurisdictional waters will be avoided where feasible, and unavoidable impacts shall be minimized to the extent that is feasible.

Mitigation Measure BIO-2b (Jefferson Street/Officers' Row Zone): Applicants for individual development projects on the site of any delineated wetlands shall obtain the appropriate federal and State permits authorizing the fill of jurisdictional wetlands and other waters, including waters of the State. The applicant shall provide proof to the City of Benicia of compliance with the terms and conditions of the permits prior to issuance of the grading permit. All work in jurisdictional areas shall be in compliance with the terms and conditions of the federal and State permits.

Mitigation Measure BIO-2c (Jefferson Street/Officers' Row Zone): All waters of the United States or waters of the State that are filled as a result of project development will be mitigated at a minimum 1:1 ratio or the higher of the ratios stipulated in the federal or state permit

authorizing fill of the wetlands or non-wetland waters. Mitigation for impacts to wetlands or other waters may be accomplished by 1) on- or off-site creation of wetlands or non-wetland waters at an appropriate mitigation site, or 2) by purchasing credit at an approved off-site mitigation bank.

Mitigation Measure BIO-2d (Jefferson Street/Officers' Row Zone): The project sponsor will implement a wetland mitigation and monitoring plan as mitigation for impacts to jurisdictional wetlands and waters. The plan will detail the mitigation design, wetland planting design, maintenance and monitoring requirements, reporting requirements, and success criteria. The mitigation wetlands shall be monitored for a minimum of 5 years. This plan shall be approved by the Corps and the City prior to implementation.

Mitigation Measure BIO-2e (Jefferson Street/Officers' Row Zone): During construction of individual development projects, no material shall be allowed to enter or be stored in any wetlands that are to be preserved. Project-related dirt and other material shall be kept sufficiently far away from preserved wetlands and drainages to prevent material from entering these features. If earthmoving activities or material stockpiling occurs upslope from a preserved wetland or drainage, silt fencing shall be installed around the preserved feature to prevent soil from entering the wetland or drainage. Silt fencing shall be installed at the least 5 feet from the edges of preserved wetlands and drainages. Silt fencing shall also be installed around preserved features whenever earthmoving activities or material stockpiling occurs within 20 feet of a preserved feature. All equipment washing shall occur down slope from preserved wetlands to prevent the runoff from entering the preserved wetlands. Berms or other barriers shall be constructed outside of preserved wetlands or drainages to prevent wash water runoff from entering the preserved wetlands.

Mitigation Measure BIO-2f (Jefferson Street/Officers' Row Zone): A conservation easement shall be established over the mitigation wetlands to preserve these wetlands in perpetuity. The City of Benicia or other public resource agency shall hold the easement to ensure retention of this land in perpetuity.

Mitigation Measure BIO-2g (Jefferson Street/Officers' Row Zone): Applicants for individual development projects on the site of any delineated wetlands shall provide financial assurances of a type (i.e., bond, letter of credit) and amount to be determined by the Corps and the City to ensure successful implementation of the wetland mitigation and monitoring plan. The project sponsor shall also provide a long-term funding mechanism for the maintenance of the mitigation wetlands in the conservation easements in perpetuity. (LTS)

Impact BIO-3: Development on the project site may impact special-status plants. (S)

The project site provides potential habitat for special-status plants that could be adversely affected by development activities, as indicated in Figure IV.F-1. Special-status plant species may occur in the areas shown as containing seasonal wetlands, ruderal/non-native grasslands, or native and non-native trees. Undeveloped portions of the project site could support populations of rare plants that require mitigation under CEQA. Implementation of the following multi-part mitigation measure would reduce impacts to special-status plants to a less-than-significant level:

Mitigation Measure BIO-3a: Prior to construction of the project, a rare plant survey according to CNPS, CDFG, and USFWS protocols will be conducted in all potential habitat areas of the site. The survey should be conducted by a qualified botanist familiar with the flora of the Benicia area and with expertise in the identification of the special-status species potentially occurring onsite. Surveys will be conducted as appropriate throughout the growing season to ensure that all target species are observed.

Mitigation Measure BIO-3b: If no special-status plant populations are identified, the botanist shall prepare and submit a report to the City documenting the negative findings of the survey. At a minimum, the report shall include a list of the target species for which surveys were conducted, dates of surveys, names of surveyors, and a list of all plants observed. No additional mitigation shall be required if special-status plants are not found during the protocol-level surveys.

Mitigation Measure BIO-3c: If special-status plant populations are observed, a mitigation and monitoring plan shall be developed by the applicant of individual development projects to avoid and/or compensate for the loss of special-status plant populations. Plants designated as endangered, threatened, candidate, or rare under the federal or State Endangered Species Acts, or listed on the CNPS List 1B or CNPS List 2 shall be mitigated either by avoidance or through compensatory mitigation. The mitigation monitoring and reporting plan shall be prepared in accordance with the following guidelines:

- Whenever feasible, special-status plant populations should be avoided and the populations protected in place. Avoidance measures may include fencing the existing plants with Environmentally Sensitive Area (ESA) fencing prior to construction, establishing a buffer zone of at least 20 feet around rare plant populations, and implementing a training program for construction personnel to ensure avoidance of the preserved plant populations.
- If impacts to special-status plant populations are unavoidable, the project sponsor shall mitigate for the impact by preserving existing plant populations of the same species at an offsite mitigation site at a minimum 2:1 ratio (2 acres of occupied habitat preserved for each acre of occupied habitat impacted).
- The project sponsor shall develop a mitigation and monitoring plan for the plants that are impacted and submit the plan to the City and the appropriate resource agency (CDFG, USFWS) for approval.
- A conservation easement shall be established over the mitigation site to preserve it in perpetuity as rare plant habitat. The City of Benicia or other public resource agency shall hold the easement to ensure retention of this land in perpetuity.
- The project sponsor shall provide financial assurances of a type (i.e., bond, letter of credit) and amount to be determined by the City and CDFG to ensure successful implementation of the rare plant mitigation plan. The project sponsor shall also provide a long-term funding mechanism for the maintenance of the mitigation site in the conservation easements in perpetuity. (LTS)

Impact BIO-4: Development on the project site may result in the loss of nesting habitat for breeding birds, and may result in direct take of special-status bird species through injury or mortality. (S)

The grasslands and trees in the project site provide potential nesting habitat for special-status birds such as white-tailed kite, Cooper's hawk, loggerhead shrike, California horned lark, as well as other common raptors and passerines such as red-tailed hawks and western scrub-jays. Several bird species were observed foraging onsite during the reconnaissance survey, and many of these species could use the site for nesting. The large trees on the project site provide nesting habitat for raptors. A pair of red-shouldered hawks was observed displaying territorial behavior while flying over the project site. This pair may nest in a tree on or in the vicinity of the project site. Grading and construction activities near nests could cause nest abandonment and/or loss of eggs or young, which would be considered a significant impact.

Old buildings in the site may provide roost and nest sites for barn owls. Demolition or modification of buildings while barn owls are nesting in them could result in destruction of the eggs, nests, and possibly individual owls.

Implementation of the following two-part mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-4a: Prior to tree pruning, tree removal, ground disturbing activities, or construction activities associated with individual development projects, a qualified biologist shall conduct raptor and passerine nest surveys to locate any active nests on or immediately adjacent to the site. Preconstruction surveys shall be conducted no more than 14 days prior to the start of pruning, construction, or ground disturbing activities if the activities occur during the nesting season (February 1 and August 31). Preconstruction surveys shall be repeated at 30-day intervals until construction has been initiated in the area. Locations of active nests shall be described and protective measures implemented. Protective measures shall include establishment of clearly delineated (i.e., orange construction fencing) avoidance areas around each nest site that are a minimum of 300 feet from the dripline of the nest tree or nest for raptors and 50 feet for passerines. The active nest sites within an exclusion zone shall be monitored on a weekly basis throughout the nesting season to identify any signs of disturbance. These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active. A report shall be submitted to the City at the end of the construction season documenting the observations made during monitoring.

Mitigation Measure BIO-4b: A preconstruction survey shall be conducted no more than 30 days prior to modification, demolition, or removal of buildings. If no owls are observed, then demolition or removal may proceed. If owls are observed during the preconstruction survey, a determination shall be made on whether birds are roosting or nesting. If a single owl is roosting, demolition or removal of the structure can proceed after the owl has been persuaded to move from the roost area. Non-invasive techniques include light shining into the roost space for one or two nights and days. If barn owls (or other owls species) are found to be actively nesting in the barn, work on or demolition of the structure shall be postponed until one of the following conditions have been met: 1) a qualified biologist monitoring the nest

determines that the owls have abandoned the nest without any outside interference or 2) a qualified biologist monitoring the nest has determined that the young have fledged and are capable of relocating and using another roost site. Under either scenario, the monitor shall ensure that all owls have left the building prior to construction or demolition activities. Once the young have fledged, non-invasive techniques may be used to encourage the owls to leave the barn. The barn owl nesting period is typically between February 15 and July 15. Buildings being used by nesting owls shall be fenced and designated off-limits to prevent entry into the buildings. (LTS)

Impact BIO-5: Development on the project site may result in the loss of western burrowing owl habitat and direct take of this species through injury or mortality. (S)

The grassland and undeveloped areas of the project site (indicated as areas containing seasonal wetland, ruderal/non-native grassland, or native and non-native trees in Figure IV.F-1) provide potential burrowing and foraging habitat for burrowing owls and could be used as habitat by wintering or breeding owls. The loss of nesting and foraging habitat would constitute a significant impact to this species. Implementation of the following two-part mitigation measure would reduce this potential impact to western burrowing owl to a less-than-significant level:

Mitigation Measure BIO-5a: Preconstruction surveys shall be conducted for burrowing owls in all potential habitat areas of the site (i.e., all areas shown as containing seasonal wetlands, ruderal/non-native grasslands, or native and non-native trees on Figure IV.F-1 of the Draft EIR) prior to preparation, grading, and construction of sites for individual development projects. These surveys shall conform to the survey protocol established by the California Burrowing Owl Consortium.¹⁸ Preconstruction surveys shall be conducted no more than 30 days prior to the initiation of construction activities and at 30-day intervals if construction activities have not been initiated in an area. The following measures shall also apply:

- a) If burrowing owls are found onsite, they shall be avoided to the extent practicable. A clearly defined area (i.e., an area demarcated by orange construction fencing) shall be established around each burrowing owl burrow to be avoided. No disturbance shall occur within 160 feet (50 meters) of occupied burrows during the non-breeding season (September 1 through January 31) or within 250 feet (75 meters) of an occupied burrow during the breeding season (February 1 through August 31).
- b) If burrowing owls occur at the development site and construction would begin before February or after the end of August, and the burrows cannot be avoided, then passive relocation techniques may be used to relocate owls from the site. These passive relocation techniques would include excavating all potential burrows after excluding owls from the burrow for the required length of time. Passive relocation shall be undertaken according to the current protocol established by the CDFG. Artificial burrows shall be provided on the mitigation site for each occupied burrow destroyed at the project site at a ratio of 2:1 (two artificial burrows created for each occupied burrow destroyed).

¹⁸ California Burrowing Owl Consortium, 1997. *Burrowing Owl Survey Protocol and Mitigation Guidelines*. Appendix B. pp. 171–177 in Lincer, J.L. and K. Steenhof, eds. *The Burrowing Owl, Its Biology and Management; Including the Proceedings of the First International Burrowing Owl Symposium*. Raptor Research Report No. 9.

- c) If western burrowing owl occurs at the development site and construction would begin during the breeding season (February through August), then a buffer of a radius of 250 feet (75 meters) shall be established around any burrows containing owls.
- d) Removal of burrowing owls at development site shall conform to the requirements of CDFG's *Staff Report on Burrowing Owl Mitigation*.¹⁹ This shall entail establishing 6.5 acres of suitable habitat for each pair of burrowing owls displaced from the project site. These 6.5 acres shall be adjacent to an area already used by burrowing owls. The replacement mitigation site shall be preserved in perpetuity for use as burrowing owl and wildlife habitat through a conservation easement. The project sponsor shall develop a management plan for the mitigation site and submit the plan to the City and CDFG for approval. An endowment in an amount determined by the City and CDFG for management and monitoring the mitigation site shall also be established by the project sponsor.

Mitigation Measure BIO-5b: As an alternative to purchasing land as mitigation for burrowing owls, the project sponsor may purchase credits at a CDFG-approved mitigation bank authorized to sell credits for burrowing owl mitigation. The City of Benicia shall be included in the service area of the mitigation bank. The number of credits to be purchased shall be equivalent to purchasing 6.5 acres per pair or single bird observed on the site. The final mitigation requirement shall be determined following the completion of the protocol-level survey. The sponsor shall provide the City with evidence of completion of the mitigation or purchase of mitigation credits at least 60 days prior to the initiation of construction activities. (LTS)

Impact BIO-6: Development on the project site may result in the loss of foraging and roosting habitat for the pallid bat, Townsend's western big-eared bat, and other bat species, and may result in direct take of these species through injury or mortality. (S)

The development could result in both direct and indirect impacts to the pallid bat, Townsend's western big-eared bat, and other bat species. The buildings onsite could provide special-status bat species as well as common bat species with day roosts or maternity roosts (for adult females and young). Demolition or modification of buildings while the bats are present would result in loss of the roost and impacts to these species.

Implementation of the following five-part mitigation measure would reduce this impact to bats to a less-than-significant level:

Mitigation Measure BIO-6a: Preconstruction surveys for bat roosts shall be conducted in all buildings or trees that will be removed or modified. The survey shall take place no more than 30 days prior to construction/demolition/removal activities. Preconstruction surveys shall be repeated if demolition or construction activities are delayed more than 30 days.

Mitigation Measure BIO-6b: If a bat roost is found in a building or tree cavity, the species of bat using the roost shall be identified and methods to encourage the bats to leave the roost or to prevent them from returning to the roost shall be implemented prior to roost removal. A

¹⁹ California Department of Fish and Game (CDFG), 1995. *Staff Report on Burrowing Owl Mitigation*. California Department of Fish and Game. Sacramento, CA. 8 pp. October 17.

mitigation plan shall be developed to specify the methods to be used and the timing of the activities, and this mitigation plan shall be submitted to the City for review and approval.

Mitigation Measure BIO-6c: Materials from roost sites shall be salvaged, when feasible, to be used in the construction of artificial roosts.

Mitigation Measure BIO-6d: If special-status bats (i.e., pallid bat, Townsend's western big-eared bat) are found onsite, and the roost would be destroyed during development, an artificial roost shall be provided for the bats. The roost shall be constructed and placed onsite prior to removal of the original roost. A mitigation plan specifying the construction details and siting of the structure shall be prepared and approved by the City and CDFG prior to removal of the existing roost. The project sponsor shall provide a secure source of funding for the monitoring of the artificial roost for a period of at least 5 years. A report documenting the implementation of the plan shall be provided to the City within 1 month of completion of the artificial roost. The plan shall be completed and implemented prior to the issuance of the grading permit.

Mitigation Measure BIO-6e: Removal of maternity roosts for special-status bats shall be coordinated with CDFG prior to removal. Maternity roosts for any species of bat, either common or special-status, shall not be demolished until the young are able to fly independently of their mothers. (LTS)