

4.2 BIOLOGICAL RESOURCES

The project applicant contracted with Environmental Stewardship & Planning, Inc. to conduct biological surveys for the Phase II Project, which is included as Appendix B. The biological surveys prepared by Environmental Stewardship & Planning, Inc. were reviewed by EDAW for consistency with industry-accepted standards. Based on this review and a site reconnaissance conducted by an EDAW biologist, the biological surveys were deemed to adequately characterize the existing biological resources on the project site and in the project vicinity. The information included in the biological surveys and supplemental biological data provide the basis for the analysis included in this section.

4.2.1 EXISTING CONDITIONS

The project site is located in the secondary management area of the Suisun Marsh. It is a biologically diverse region that supports a varied assemblage of plant and wildlife species. The Potrero Hills are a series of steep, rolling hills that form an island of upland habitat almost completely surrounded by Suisun Marsh. Extensive areas of grazed grassland are located north of the site.

GENERAL BIOLOGICAL RESOURCES

Vegetation

Currently Permitted Landfill

The currently permitted 320-acre landfill is located in the central portion of the interior valley of the Potrero Hills in the secondary management area of the Suisun Marsh. The Potrero Hills are located about 5 miles east of downtown Fairfield, in Solano County, south of State Route (SR) 12.

A large portion of the currently permitted landfill has been disturbed to accommodate existing landfill activities, and the remaining natural areas are dominated by non-native grassland habitat. Disturbed areas either are devoid of vegetation or support weedy vegetation, forming a ruderal habitat. Vegetation in disturbed areas is characterized by non-native grasses and weedy forbs. Common species in disturbed areas include wild oat (*Avena fatua*), slender wild oat (*Avena barbata*), clover (*Trifolium* sp.), hare barley (*Hordium murinum* ssp. *leporinum*), riggut brome (*Bromus diandrus*), and broadleaf filaree (*Erodium macrophyllum*).

Non-native grassland is common both locally and throughout California. Non-native grassland is composed primarily of non-native plant species. Common grass species at the landfill site include wild oat, soft chess (*Bromus hordeareus*), hare barley, and Italian ryegrass (*Lolium multiflorum*). Forbs such as bur clover (*Medicago polymorpha*), blue dicks (*Dichelostemma capitata*), and black mustard (*Brassica nigra*) are scattered throughout.

Proposed Phase II Expansion Area.

The proposed expansion area is located in the Spring Branch Creek valley, the main valley of the Potrero Hills. It is a broad valley bounded on the north, south, and east by rolling, grassy hills. The western end of the valley opens toward the primary area of the Suisun Marsh to the west. The valley is dominated by non-native annual grasslands that are used for cattle grazing.

Dominant species include Italian ryegrass, Mediterranean barley, soft chess, ripgut brome, and wild oat. Purple star-thistle also is abundant throughout the area.

In spite of the dominance by non-native plants, a number of native plant species occur on the project site, including Johnny jump up (*Viola pedunculata*), common lomatium (*Lomatium utriculatum*), soap plant (*Chloragalum pomeridianum* var. *pomeridianum*), clay mariposa lily (*Calochortus argillosus*), harvest brodiaea (*Brodiaea elegans* ssp. *elegans*), blue dicks (*Dichelostemma capitatum* ssp. *capitatum*), white brodiaea (*Triteleia hyacinthina*), Ithuriel's spear (*Triteleia laxa*), common muilla (*Muilla maritima*), California poppy (*Eschscholzia californica*), several tarplants (*Hemizonia congesta* ssp. *luzulifolia*, *H. fitchii*, and *H. parryi* ssp. *parryi*; *Holocarpha heermannii* and *H. virgata*), purple needle grass (*Nasella pulchra*), slender wheatgrass (*Elymus trachycaulus*), purple sanicle (*Sanicula bipinnatifida*), checkerbloom (*Sidalcea malvaeflora* ssp. *malvaeflora*), blue eye grass (*Sisyrinchium bellum*), and narrow leaf mule ears (*Wyethia angustifolia*). A concentration of native plants occurs on the hillside across from the old quarry at the northern edge of the project site.

With few exceptions, trees and shrubs are absent from both the Phase II expansion area and the eastern valley east of the expansion boundaries. Two stands of eucalyptus (*Eucalyptus globulus*) are present in the valley, one in the southwest corner of the expansion area and the other in the northeast corner of the valley near an old barn and spring. One or two willow trees (*Salix* sp.) are present on the banks of two stock ponds located in quarries along the north side of the valley. Elderberry shrubs (*Sambucus* sp.) are scattered in the rock outcrops along the ridges of the south side of the valley.

The area generally drains west through an open valley and toward Spring Branch Creek, which eventually flows into Suisun Slough. Surface runoff flows through several ephemeral drainages, which are somewhat discontinuous within the gently sloped hillsides and better defined within the flatter, valley portion of the site. Ephemeral drainages generally convey water only after a rainfall event and do not support long-term groundwater flows. There are no perennial creeks on the site. A number of small seeps are present along the hillside that forms the southern boundary of the site. The seeps appear to be associated with old slumps or a shallow water table.

Wildlife

Despite the disturbance to wildlife caused by the proximity of the landfill and landfill operations, many common wildlife species forage in the proposed expansion area. Songbird species found in the grasslands include the western kingbird, western meadowlark, cliff and

barn swallows, red-winged blackbird, Brewer's blackbird, and northern mockingbird. The valley is also expected to provide foraging habitat for a variety of common raptor species, particularly northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). In addition, great horned owls have been observed roosting in the barn near Pond 5 and may nest in this structure as well, and golden eagles (*Aquila chrysaetos*) have been observed nesting approximately 1,500 feet south of the landfill in a eucalyptus grove located south of the southern Potrero Hills ridgeline (JSA, 1995) and a golden eagle was observed flying above the site by EDAW staff on April 23, 2003. Additional wildlife species that could use the project site include the turkey vulture, horned lark (*Eremophila alpestris*), California ground squirrel (*Spermophilus beecheyi*), deer mouse (*Peromyscus maniculatus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), gopher snake (*Pituophis melanoleucus*), common kingsnake (*Lampropeltis getulus*), western fence lizard (*Sceloporus occidentalis*), Pacific treefrog (*Pseudacris regilla*), and western toad (*Bufo boreas*).

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources include those that are afforded special protection through the following: CEQA, California Fish and Game Code, the Federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and the federal Clean Water Act (CWA).

Special-Status Species

Special-status species include plants and animals in the following categories:

- ▶ species listed or proposed for listing as Threatened or Endangered under ESA or CESA;
- ▶ species considered as candidates for listing as Threatened or Endangered under ESA or CESA;
- ▶ wildlife species identified by the California Department of Fish and Game (CDFG) as California Species of Special Concern and by U.S. Fish and Wildlife Service (USFWS) as Federal Species of Concern;
- ▶ animals fully protected in California under the California Fish and Game Code; and
- ▶ plants on the California Native Plant Society's (CNPS) List 1B (plants rare, threatened or endangered in California and elsewhere) or List 2 (plants rare, threatened or endangered in California but more common elsewhere).

Special-status species known to occur or with the potential to occur in the vicinity of the proposed expansion area were identified through a search of the California Natural Diversity Database (CNDDDB 2002) (USGS 7.5-minute quadrangles: North Fairfield, South Fairfield, Elmira, and Denverton) and review of prior biological studies conducted in the vicinity of the study area. In this discussion of existing conditions for biological resources, the surveyed area is referred to as "the study area." The two areas surveyed by Environmental Stewardship &

Planning, Inc. were the expansion area proper and the eastern portion of the Spring Branch Creek valley, designated as the “eastern valley survey area” on the maps. Survey areas are shown in Exhibit 4.2-1. The 211-acre expansion area is located directly east of the existing PHLF, placing it in the central portion of the Spring Branch Creek valley. The eastern valley survey area encompasses another approximately 200 acres. Wildlife surveys were conducted in both the expansion area proper and the eastern valley survey area, where additional habitat for special status wildlife exists. One additional aquatic site, a large stock pond, was included in a 2001 survey and is shown as part of the eastern valley survey area. This large stock pond (designated as Pond 7) is located in the hills at the southeast end of the valley.

Following the survey, the special-status species were evaluated for their potential to occur in the study area. Table 4.2-1 includes a list of special-status species known or expected to occur in the study area. Species that are restricted to habitats that are not present in the expansion area (e.g., saltmarsh, freshwater and brackish marsh, riparian) are not included, because of lack of suitable habitat. Exhibit 4.2-2 depicts known occurrences of special-status species in the vicinity of the expansion area, including CNDDDB occurrences.

Special-Status Plants

A total of 13 special-status plants have potential to occur in the expansion area: Alkali milkvetch, heartscale, brittlescale, San Joaquin spearscale, Hispid birds-beak, recurved larkspur, dwarf downingia, adobe lily, Brewer’s western flax, Carquinez goldenbush, Contra Costa goldfields, legenera, and showy Indian clover (Table 4.2-1). Contra Costa goldfields and showy Indian clover are listed as federal Endangered species. All of the special-status plants are on the CNPS 1B list, except for dwarf downingia, which is on the CNPS 2 list. Many of the species are only known from occurrences in the late 1800s, early 1900s, and recent surveys.

All of the special-status plants occur in grasslands or vernal pools, and most of them are restricted to alkaline soils. Focused botanical surveys of the proposed expansion area were conducted in the spring, summer, and fall of 2000 by Environmental Stewardship & Planning, Inc. While a number of plants associated with alkaline soils were identified in the expansion area, these plants were not sufficiently dominant to characterize the area an alkali community type. None of the special-status plants were observed in the expansion area during the botanical surveys. Two subpopulations of San Joaquin spearscale were observed during a 1998 reconnaissance-level survey of the area (Exhibit 4.2-1); however, this species was not observed during the year 2000 surveys or during a subsequent survey conducted in July 2003 (Appendix B).

Special-Status Wildlife

A total of 21 special-status wildlife species are known or have potential to occur in the study area (Table 4.2-1). Of these, seven are listed as state and/or federal Threatened or Endangered species: vernal pool fairy shrimp, conservancy fairy shrimp, vernal pool tadpole

**Table 4.2-1
Special-Status Species Potentially Occurring in the Potrero Hills Landfill Expansion Area**

Species	FWS	CDFG	CNPS	Habitat	Potential for Occurrence
Plants					
Alkali milkvetch <i>Astragalus tener</i> var. <i>tener</i>	--	--	1B	Playas, grasslands (adobe clay), vernal pools (alkaline)	Unlikely to occur; not found during surveys.
Heartscale <i>Atriplex cordulata</i>	--	--	1B	Meadows, grasslands (sandy)/saline or alkaline	Unlikely to occur; not found during surveys.
Brittlescale <i>Atriplex depressa</i>	--	--	1B	Meadows, playas, grasslands, vernal pools/alkaline, clay	Not found during surveys of expansion area, but observed elsewhere in the valley.
San Joaquin spearscale <i>Atriplex joaquiniana</i>	--	--	1B	Meadows, playas, grasslands/ alkaline	Not found during year 2000 or 2003 surveys, however this species was found in 1998 within the proposed project area.
Hispid birds-beak <i>Cordylanthus mollis</i> ssp. <i>Hispidus</i>	--	--	1B	Meadows, playas, grasslands/ alkaline	Unlikely to occur; not found during surveys.
Recurved larkspur <i>Delphinium recurvatum</i>	--	--	1B	Grasslands, vernal pools/ alkaline	Unlikely to occur; not found during surveys.
Dwarf downingia <i>Downingia pusilla</i>	--	--	2	Grasslands (mesic), vernal pools	Unlikely to occur; not found during surveys.
Adobe lily <i>Fritillaria pluriflora</i>	--	--	1B	Grasslands/often adobe	Unlikely to occur; not found during surveys.
Brewer's western flax <i>Hesperolinon breweri</i>	--	--	1B	Grassland, mostly serpentinite	Unlikely to occur; no serpentinite present and not found during surveys.
Carquinez goldenbush <i>Isocoma arguta</i>	--	--	1B	Grasslands, alkaline	Unlikely to occur; not found during surveys.
Contra Costa goldfields <i>Lasthenia conjugens</i>	E	--	1B	Playas (alkaline), grasslands, vernal pools/mesic	Unlikely to occur; not found during surveys.
Legenere <i>Legenere limos</i>	--	--	1B	Vernal pools	Unlikely to occur; not found during surveys.
Showy Indian clover <i>Trifolium amoenum</i>	E	--	1B	Grasslands, sometimes serpentinite	Unlikely to occur; not found during surveys.

**Table 4.2-1
Special-Status Species Potentially Occurring in the Potrero Hills Landfill Expansion Area**

Species	FWS	CDFG	CNPS	Habitat	Potential for Occurrence
Invertebrates					
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T	--	--	Vernal pools and other seasonal wetlands	Could occur; suitable habitat present, but not found during surveys.
Conservancy fairy shrimp <i>Branchinecta conservation</i>	E	--	--	Vernal pools and other seasonal wetlands	Could occur; suitable habitat present, but not found during surveys.
California linderiella <i>Linderiella occidentalis</i>	FSC	--	--	Vernal pools and other seasonal wetlands	Known to occur.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E	--	--	Vernal pools and other seasonal wetlands	Could occur; suitable habitat present, but not found during surveys.
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T	--	--	Elderberry shrubs	Could occur; elderberry shrubs present.
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	E	--	--	Grasslands with hills, nectar plants, and larval food plants (<i>Viola pedunculata</i>)	Unlikely to occur; not found during surveys.
Amphibians					
California tiger salamander <i>Ambystoma californiense</i>	C PT	CSC	--	Vernal pools and small ponds for breeding; seek cover in burrows, rock crevices, and under logs	Known to occur.
California red-legged frog <i>Rana aurora draytonii</i>	T	CSC	--	Deep, still or slow-moving water with dense shrubby riparian and/or emergent vegetation.	Unlikely to occur; not found during surveys.
Reptiles					
Western pond turtle <i>Clemmys marmorata</i>	FSC	CSC	--	Still waters, ponds, slow streams with instream or bank resting sites	Unlikely to occur; not found during surveys.

**Table 4.2-1
Special-Status Species Potentially Occurring in the Potrero Hills Landfill Expansion Area**

Species	FWS	CDFG	CNPS	Habitat	Potential for Occurrence
Birds					
White-tailed kite <i>Elanus leucurus</i>	--	CSC FP	--	Forage in grasslands and agricultural fields; nest in isolated trees or small woodland patches	Could occur; suitable foraging and nesting habitat present.
Northern harrier <i>Circus cyaneus</i>	--	CSC	--	Grasslands and freshwater marsh	Could occur; suitable foraging habitat present, but no suitable nesting habitat present.
Ferruginous hawk <i>Buteo regalis</i>	FSC	CSC	--	Forages in grasslands, agricultural fields, and other open habitats	Could occur; suitable foraging habitat present, but not within breeding range.
Golden eagle <i>Aquila chrysaetos</i>	--	CSC FP	--	Forages in grasslands and other open habitats; nests on cliffs and in tall trees.	Suitable foraging habitat present, known to nest in eucalyptus grove approximately 1,500 feet south of landfill (JSA, 1995).
Merlin <i>Falco columbarius</i>	--	CSC	--	Forages in grasslands, agricultural fields, marshes, and other open habitats	Could occur; suitable foraging habitat present, but not within breeding range.
Prairie falcon <i>Falco mexicanus</i>	--		--	Forages in grasslands, agricultural fields, marshes, and other open habitats	Could occur; suitable foraging habitat present, but not expected to nest nearby.
Peregrine falcon <i>Falco peregrinus</i>	--	E	--	Forages in marshes and grasslands.	Could occur; suitable foraging habitat present, but not expected to nest nearby.
Long-billed curlew <i>Numenius americanus</i>	--	CSC	--	Marshes, grasslands, irrigated, pastures, alfalfa, and fallow fields	Known to occur; suitable foraging habitat present, but not within breeding range.
Short-eared owl <i>Asio flammeus</i>	--	CSC	--	Forages in open habitats; nests in marsh and grasslands	Could occur; suitable foraging habitat present, but no suitable nesting habitat.

**Table 4.2-1
Special-Status Species Potentially Occurring in the Potrero Hills Landfill Expansion Area**

Species	FWS	CDFG	CNPS	Habitat	Potential for Occurrence
Burrowing owl <i>Athene cunicularia</i>	FSC	CSC	--	Grasslands and agricultural fields	Known to occur; suitable foraging and nesting habitat present.
Loggerhead shrike <i>Lanius ludovicianus</i>	FSC	CSC	--	Forages in grasslands, and agricultural fields; nests in scattered shrubs and trees	Known to occur; suitable foraging habitat present, but nesting habitat very limited.
Tricolored blackbird <i>Agelaius tricolor</i>	FSC	CSC	--	Forages in grasslands and agricultural fields; nests in freshwater marsh with dense cattails and tules, and dense riparian scrub	Known to occur; suitable foraging habitat present, but no suitable nesting habitat.

U.S. Fish and Wildlife Service (FWS) Federal Listing Categories:

- E Federal Endangered
- T Federal Threatened
- C Federal Candidate Species
- FSC Federal Species of Concern
- PT Proposed for Listing as Threatened

California Department of Fish and Game (CDFG) State Listing Categories:

- E California Endangered
- T California Threatened
- CSC California Species of Concern

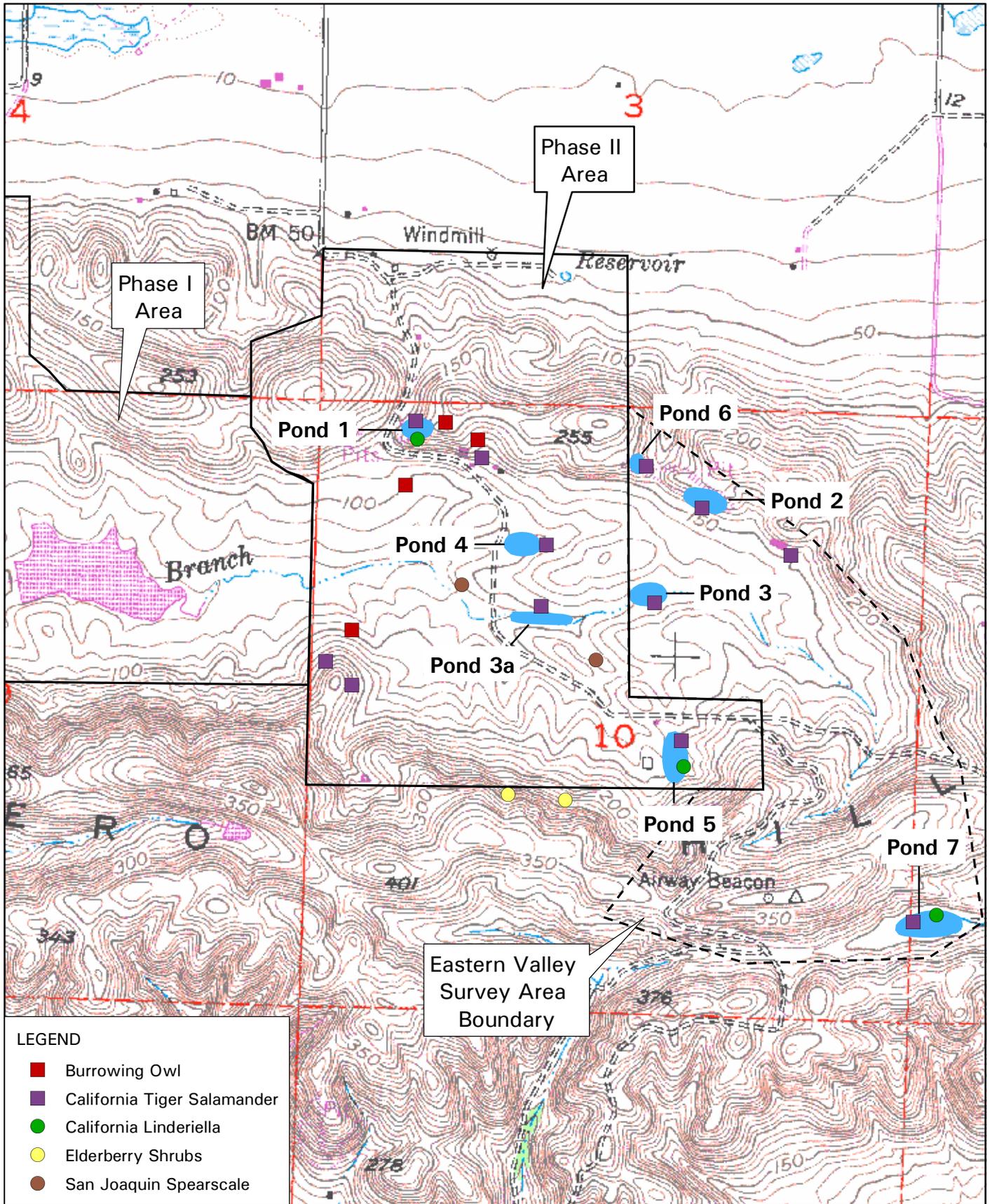
California Native Plant Society (CNPS) Categories:

- 1B Plant rare or endangered in California and elsewhere
- 2 Plant rare or endangered in California, but more common elsewhere

Source: EDAW 2002

shrimp, valley elderberry longhorn beetle, California red-legged frog, Swainson’s hawk, and peregrine falcon. In addition, California tiger salamander is currently considered a Candidate for listing as Threatened or Endangered and has recently been proposed for listing as Threatened by the USFWS. The remaining 14 wildlife species are considered Species of Special Concern by CDFG and/or Federal Species of Concern by USFWS. These special-status wildlife species are discussed in further detail below.

Vernal Pool Crustaceans - Four vernal pool crustacean species could occur in the proposed expansion area: vernal pool fairy shrimp, conservancy fairy shrimp, California linderiella, and vernal pool tadpole shrimp. Conservancy fairy shrimp and vernal pool tadpole shrimp are federally listed as Endangered species, vernal pool fairy shrimp is federally listed as a Threatened species, and California linderiella is a federal Species of Concern. All of these species are freshwater crustaceans that are restricted to vernal pools, swales, and other seasonal pools. Their eggs remain dormant during most of the year in the form of cysts, which are capable of withstanding extreme environmental conditions, such as heat, cold, and prolonged



Source: CNDDDB 2002, LSA 2002

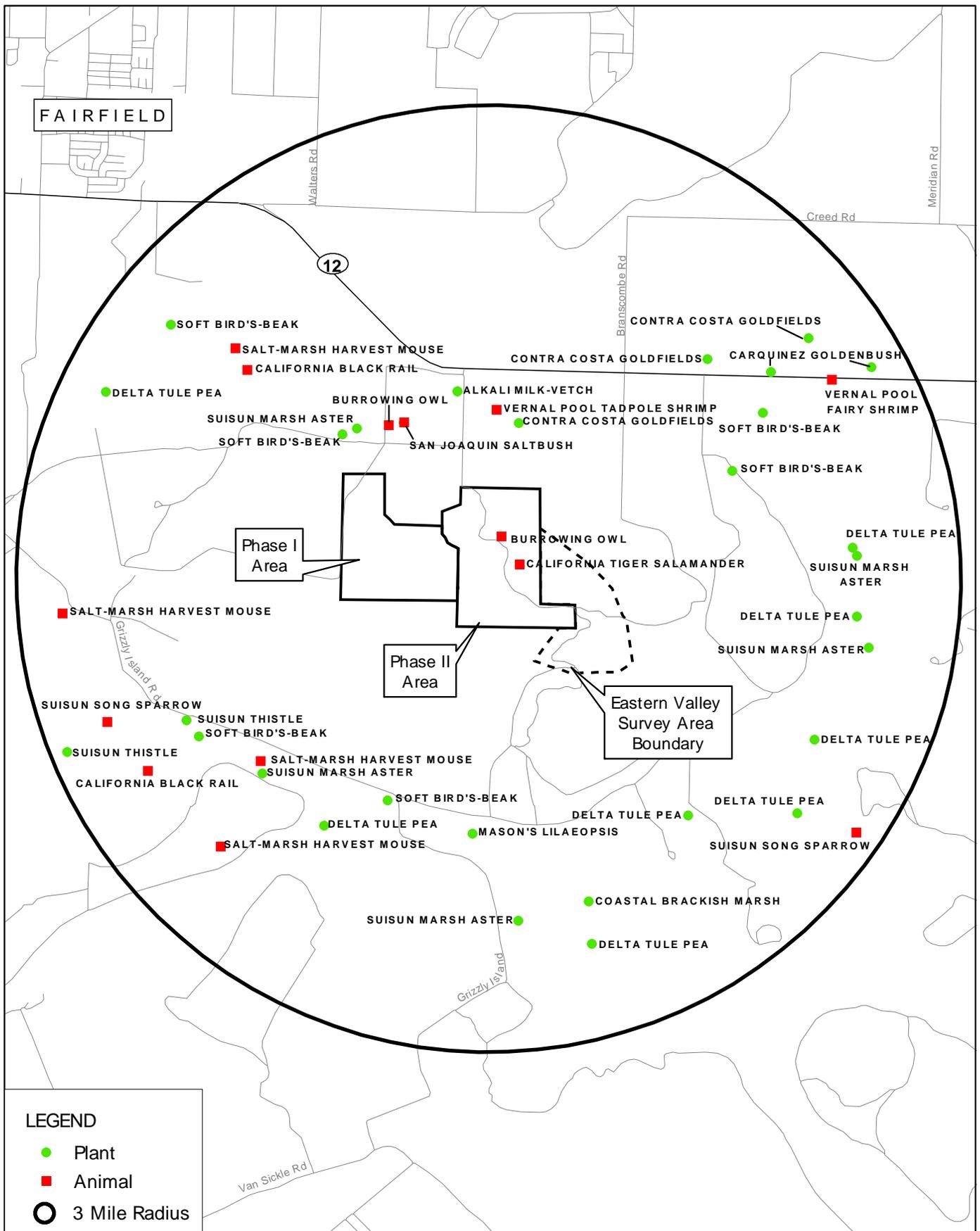
Special-status Species Occurrences

Potrero Hills Landfill Expansion Project

X 27085.00

EXHIBIT 4.2-1





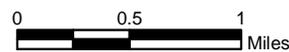
Source: CNDDDB 2002

California Natural Diversity Database Occurrences

EXHIBIT 4.2-2

Potrero Hills Landfill Expansion Project

X 2T085.00



desiccation. The cysts hatch when the pools fill with rainwater, and the young rapidly develop into sexually mature adults. Not all of the cysts hatch with the first rainfall; some remain dormant to hatch during subsequent events or in later years.

Protocol-level vernal pool crustacean surveys were conducted in 2000 and 2001 by Environmental Stewardship & Planning, Inc. under contract to the project applicant. While vernal pool fairy shrimp, Conservancy fairy shrimp, and vernal pool tadpole shrimp have been observed in other areas in this region, none of these species were found in the aquatic habitats of the expansion area or in the eastern portion of the valley. The aquatic habitats in the valley are not contiguous with the other areas where shrimp were observed.

California linderiella was the only one of the species detected during these surveys. This species can be found together with listed vernal pool crustacean species, but it may also occur alone in pools without any other crustaceans. Linderiella was observed consistently during the 2000 surveys in Ponds 1 and 5. In Pond 1, hundreds of individuals were caught in each sample. California linderiella was observed in Pond 5 but was not observed in Pond 1 at anytime during the 2001 season. This observation was unexpected given the extremely large number of linderiella found in Pond 1 in 2000. There is no suitable explanation for this observation. All conditions at Pond 1 appeared to be the same in 2001 as in 2000. During 2001, linderiella also were observed in Pond 7, the pond located in the hills southeast of the main valley. Exhibit 4.2-1 shows the ponds where linderiella occurred (ESP 2002a).

On September 24, 2002, the USFWS published a proposed rule designating critical habitat for vernal pool fairy shrimp, conservancy fairy shrimp, and vernal pool tadpole shrimp. The critical habitat designations for vernal pool fairy shrimp and vernal pool tadpole shrimp includes the Potrero Hills and the proposed landfill expansion site. Critical habitat is protected under the ESA through prohibition of destruction or adverse modification of critical habitat with regard to actions carried out, funded, permitted, or authorized by a federal agency. Section 7 of the ESA requires consultation on such federal actions if they are likely to result in the destruction or adverse modification of critical habitat.

Valley Elderberry Longhorn Beetle - Valley elderberry longhorn beetle is federally listed as threatened; the species spends the majority of its life as a larva in the pith of elderberry trees and shrubs. The adult beetle emerges from the stems, leaving a small round hole as evidence of its past presence in the plant. A number of isolated elderberry shrubs that could provide habitat for this species were observed growing in the rock outcrops on the middle and upper slopes of the hills south of the expansion area (ESP 2002a).

Callippe Silverspot Butterfly - The Callippe silverspot butterfly is federally listed as an Endangered species. This species has four basic habitat requirements: grassland habitat, larval foodplants (*Viola pedunculata*), various nectar plants, and hilltops for mate location. The proposed expansion area provides all of these requirements. In 1998, a survey was conducted under contract to the project applicant to evaluate suitability of habitat for this species in the proposed expansion area. During the survey, a small population of *Viola pedunculata* was found in the northwest corner of the expansion area. A larger population was observed on the

middle and upper slopes of the hills in the southwest corner of the site (ESP 2002a). A few small patches of the larval food plant were also identified during additional surveys conducted during its spring flowering period in 2000 and 2001.

Dr. Richard Arnold, president of Entomological Consulting Services, Ltd. contracted with the project applicant to conduct presence/absence surveys for the silverspot approximately twice weekly throughout the butterfly's 2002 flight season. On all survey dates, Dr. Arnold visited a known location for the butterfly in the Sky Valley area west of I-680 to confirm that the butterfly was active on the days when he visited the project site. No Callippe silverspot butterflies were observed during 14 visits to the project site in 2002. The silverspot was observed at the nearby control site on 12 of the 14 survey dates. Dr. Arnold concluded that the butterfly is absent from the proposed expansion area (ESP 2002a).

California Red-legged Frog - The California red-legged frog is listed as a federally Threatened subspecies. California red-legged frogs occur in ponds and streams. The key to the presence of California red-legged frog is perennial, or nearly perennial, water and the general lack of introduced aquatic predators such as crayfish, bullfrogs, and centrarchid (sunfish) fishes. Aquatic habitats in the proposed expansion area provide potentially suitable habitat for red-legged frogs. However, the nearest known occurrence of the species was approximately 8 miles to the west, on the other side of Suisun Slough and the associated saltmarsh habitat. In addition, no evidence of red-legged frogs was detected during the extensive surveys of the ponds and creek. Therefore, California red-legged frog is unlikely to occur in the valley.

The USFWS designated Critical Habitat for the California red-legged frog in 2001 (USFWS 2001). In 2002, all but 200,000 of the 4 million acres of Critical Habitat were nullified as part of a settlement because the designation did not include an economic analysis as required by ESA. Under the settlement, the USFWS agreed to redraw the boundaries by 2005. No portion of the valley was included in the original designation, and it is not expected to be included in the revised one to be developed by 2005. The USFWS released the Recovery Plan for the California red-legged frog in 2002 (USFWS 2002). Core areas identified in the plan are distributed throughout portions of the historic and current range and represent a system of areas that when protected and managed for California red-legged frogs shall allow for the long-term viability of existing populations and reestablishment of populations within the historic range. The valley is not within any of these core areas.

California Tiger Salamander - The California tiger salamander is a Candidate for federal listing as Threatened or Endangered, and has recently been proposed for listing as Threatened by the USFWS, and is a California Species of Special Concern. The tiger salamander is a cryptic species that spends the majority of its life underground in rodent burrows and cracks in the soil. Adults are typically observable for only a very short time each year as they move to aquatic breeding sites. They typically breed in long-lasting rain ponds but may also use permanent ponds if aquatic predators are absent (Jennings and Hayes 1994). Burrows excavated by small mammals, such as California ground squirrels, provide upland habitat for salamanders during the non-breeding season.

Adult tiger salamanders were observed throughout the expansion area and the eastern portion of the valley during nocturnal surveys conducted in 1999 and 2000 (ESP 2002a). Adult tiger salamanders used refuge sites in and around the old barns and home sites in the valley, as well as in ground squirrel burrow complexes. Adult tiger salamanders were also observed at breeding ponds on a number of occasions during the 2000 and 2001 surveys. Exhibit 4.2-1 shows the locations of adult tiger salamander observations.

Larval surveys were conducted in April 2000 and March 2001 (ESP 2002a). All ponds in the proposed expansion area and eastern portion of the valley were seined. Ponds 1, 3a, 4, and 5 are located within the proposed expansion area. In 2000, tiger salamander larvae were abundant in Ponds 3 and 5, and a single larva was found in each of Ponds 2 and 4. No salamander larvae were observed in Pond 1 or 6, while adult tiger salamanders were observed in both these ponds during the breeding season. A small in-channel pond (3a) in the creek channel downstream from Pond 3 also contained tiger salamander larvae. In 2001, Pond 5 had thousands of tiger salamander larvae, as it did during 2000. Adult tiger salamanders also were observed just west of the barn near Pond 5. No larvae were observed in Pond 3 during 2001, while the pond had supported thousands of tiger salamander larvae during 2000. California tiger salamander eggs were observed in Pond 2 early in the 2001 season, but only a few larvae were found in the pond when it was sampled with a seine net. Larvae were observed in Pond 7 during the 2001 season as well.

Western Pond Turtle - Western pond turtle is a California Species of Special Concern and federal Species of Concern. Pond turtles are found in slow-moving aquatic habitats, such as ponds, marshes, streams, and irrigation ditches. They use submerged or emergent vegetation for foraging and require logs or other objects for basking. During the spring and summer, pond turtles nest in upland habitats adjacent to aquatic sites that provide suitable thermal and hydric environment for incubation of the eggs. Although ponds in the proposed expansion area provide potentially suitable habitat for western pond turtles, no pond turtles were observed during the extensive surveys of ponds in the valley. Therefore, western pond turtle is not expected to occur in the expansion area.

American Peregrine Falcon - The American peregrine falcon is state listed as Endangered. It was formerly federally listed as Endangered but was removed from the list in 1999. Peregrine falcons are found in a wide variety of open habitats; they typically forage in marshes and other wetlands. This species could occasionally forage in the study area. Peregrine falcons nest on natural and artificial cliffs and ledges. No suitable nesting cliffs are present in the valley or surrounding hills.

Burrowing Owl - Burrowing owl is a California Species of Special Concern and federal Species of Concern. Burrowing owl habitat is characterized by low-growing vegetation and includes annual and perennial grasslands and arid scrublands. Burrows are the essential component of burrowing owl habitat. Burrowing owls typically use burrows made by burrowing mammals, such as ground squirrels or badgers, but may also use artificial structures such as cement culverts, cement, asphalt, or wood debris piles, and or openings beneath cement or asphalt

pavement. Ground squirrel burrows are present at several locations in the proposed expansion area. The majority of the burrow complexes are located along the hillsides on the southern side of the expansion area, with highest densities in the southwestern area. A few burrows are also present along the northern side of the area but are absent from the central portion (i.e., the valley floor).

In January 2000, a single burrowing owl was observed in the southwestern corner of the site; however, no burrowing owls were observed onsite during a June 2000 focused survey for burrowing owl (ESP 2002A). In addition, no evidence of burrowing owl presence (e.g., fecal droppings, regurgitation pellets, or feathers) was detected near any of the burrow complexes during the June 2000 survey. Additional incidental observations of burrowing owls were made in the vicinity of the old home site located between Ponds 1 and 4. These appeared to be single birds (ESP 2002a). Exhibit 4.2-1 shows the locations where burrowing owls were observed.

In addition to the systematic burrowing owl survey conducted in June 2000, biologists have been conducting various surveys for other species since 1998. The paucity of observations of burrowing owls in the expansion area and valley as a whole suggests that the site is not used extensively by burrowing owls and that they do not nest there. Burrowing owls observed onsite appeared to be wintering or transient birds that did not stay and nest in the valley (ESP 2002a).

Other Raptors - A number of additional special-status raptor species have potential to occur in the proposed expansion area: golden eagle, prairie falcon, white-tailed kite, northern harrier, ferruginous hawk, merlin, and short-eared owl. All of these are California Species of Special Concern and/or federal Species of Concern. They all primarily occur in grasslands, agricultural fields, and other open habitats and could use the valley as foraging habitat. However, white-tailed kite and golden eagle are the only species with potential to nest on the expansion area. Golden eagles have been observed nesting approximately 1,500 feet south of the landfill in a eucalyptus grove located south of the southern Potrero Hills ridgeline (JSA, 1995) and a golden eagle was observed by EDAW staff flying above the site on April 23, 2003. The expansion area is not within the breeding range of ferruginous hawk and merlin. Prairie falcons, which nest on cliffs, could nest on cliffs high on the hills surrounding the valley, but suitable nesting cliffs are not present in or near the expansion area. Harriers and short-eared owls nest in grasslands, but they require relatively tall, dense vegetation, which is not provided by the short, grazed grasslands in the valley.

Long-billed Curlew - Long-billed curlew is a California Species of Special Concern. Curlews use the valley during the winter, and a large flock was observed in the proposed expansion area during a 2003 reconnaissance survey. However, long-billed curlews do not nest in the region.

Loggerhead Shrike - Loggerhead shrike is a California Species of Special Concern and a federal Species of Concern. Shrikes prefer open habitats interspersed with shrubs and trees. Shrikes are likely to forage in the valley, but nesting habitat is extremely limited because of the

lack of trees and shrubs. Therefore, they are not expected to nest in or near the proposed expansion area.

Tricolored Blackbird - Tricolored blackbird is a California Species of Special Concern and a federal Species of Concern. A flock of tricolored blackbirds was observed foraging on the valley floor in spring 2000, and several individuals were present in a mixed blackbird flock observed during a 2003 reconnaissance survey. While breeding habitat is present at ponds in the surrounding hills and marshes to the south, east, and west of the Potrero Hills, no suitable breeding habitat is present in or near the expansion area.

Sensitive Habitats

Sensitive habitats in the proposed expansion area are limited to Spring Branch Creek, stock ponds, and other wetlands, including a northern claypan vernal pool. Based on a wetland delineation conducted by Environmental Stewardship & Planning, Inc. and verified by the U.S. Army Corps of Engineers in 2003, a total of approximately 3.5 acres of these habitats are present in the expansion area. No riparian vegetation is present on the site.

REGULATORY BACKGROUND

Many biological resources in California are protected and impacts to these resources are regulated by a variety of laws and policies. Important regulations that protect biological resources and are applicable to the proposed project are discussed below.

Federal Regulatory Issues

Federal Endangered Species Act

USFWS and National Marine Fisheries Service (NMFS) have authority over projects that may affect the continued existence of a federally listed (Threatened or Endangered) species. Section 9 of ESA prohibits the take of federally listed species; take is defined under ESA, in part, as killing, harming, or harassment. Under federal regulations, take is further defined to include habitat modification or degradation where it actually results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of ESA outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Critical habitat identifies specific areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations or protection. Section 7(a)(2) requires federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain an incidental take permit under Section 10(a) of the

ESA. Section 10(a) of ESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP) that includes components to minimize and mitigate impacts associated with the take.

Clean Water Act

The U.S. Army Corps of Engineers (USACE) regulates the placement of fill into Waters of the U.S. under Section 404 of the CWA. Waters of the U.S. include lakes, rivers, streams, and their tributaries, and wetlands. Wetlands are defined under Section 404 as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions. Activities that require a permit under Section 404 include placing fill or riprap, grading, mechanized land clearing and dredging. Any activity that results in the deposit of dredged or fill material within the Ordinary High Water Mark (OHWM) of Waters of the U.S. usually requires a permit, even if the area is dry at the time the activity takes place.

State Regulatory Issues

California Endangered Species Act

CDFG regulates the take of state-listed Threatened and Endangered species. The take of state-listed species incidental to otherwise lawful activities requires a permit, pursuant to Section 2081(b) of CESA. The state has the authority to issue an incidental take permit under Section 2081 of the Fish and Game Code, or to coordinate with USFWS during the Section 10(a) process to make the federal permit also apply to state-listed species.

Section 1600 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream or lake in California that supports wildlife resources is subject to regulation by CDFG, pursuant to Sections 1600 through 1603 of the California Fish and Game Code. Section 1603 states that it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by CDFG, or use any material from the streambeds, without first notifying CDFG of such activity. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFG's jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. A CDFG Streambed Alteration Agreement must be obtained for any project that would result in impact to a river, stream, or lake.

Section 3503.5 of the California Fish and Game Code

Section 3503.5 of the Fish and Game Code states that it is “unlawful to take, possess, or destroy any birds of prey in the orders Falconiformes or Strigiformes” (i.e., raptors). Destruction of an active raptor nest is considered a violation of Section 3503.5. This statute does not provide for the issuance of any type of incidental take permit.

Local Regulatory Issues

Suisun Marsh Preservation Act

The State of California enacted the Nejedly-Bagley-Z'berg Suisun Marsh Preservation Act (SMPA) of 1974 to preserve unique wildlife resources within the Suisun Marsh for future generations. This Act directed the San Francisco Bay Conservation and Development Commission (BCDC) and the California Department of Fish and Game (CDFG) to prepare the Suisun Marsh Protection Plan (SMPP) "to preserve the integrity and assure continued wildlife use" of the Suisun Marsh.

The project site is located within the Secondary Management Area of the Marsh, and is subject to the requirements of the SMPA listed below.

- ▶ According to Section 29502 (a) of the SMPA, within the Secondary Management Area, a Marsh Development Permit required under Section 29500 shall be obtained from the local government having jurisdiction over the land in which the proposed development is to occur (SMPA 1977).

Suisun Marsh Protection Plan

Under direction of the SMPA, the SMPP was enacted in 1977 to incorporate the findings and policies contained in the SMPA into state law. The objectives of the SMPP are “to preserve and enhance the quality and diversity of the Suisun Marsh aquatic and wildlife habitats and to assure retention of upland areas adjacent to the Marsh in uses compatible with its protection.”

Suisun Marsh Local Protection Program (LPP) and Solano County General Plan

In addition to the SMPP, the SMPA requires local governments and districts with jurisdiction over the Marsh to prepare a Local Protection Program (LPP) for the Marsh. The purpose of the LPP is to ensure that local policies and ordinances conform with the provisions of the SMPA and the policies of the SMPP on a local level.

Adopted in 1980, the County component includes amendments to the Solano County General Plan and other County policies and includes several ordinances and regulations affecting land use in and around the Suisun Marsh. Marsh protection policies were incorporated into the land use, resource conservation and open space, and scenic roadways elements of the County General Plan. In addition to General Plan policies, the County developed ordinances to protect water quality and riparian habitat within and adjacent to the Marsh (JSA 1995). The

proposed project's consistency with these policies is discussed in detail in Section 4.1, Land Use of this document.

4.2.2 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

The potential for the proposed project to result in significant environmental effects was analyzed using information provided in the State CEQA Guidelines. Pursuant to the suggested thresholds in Appendix G, the proposed project would have a significant impact on biological resources if it would:

- ▶ have a substantial adverse effect, either directly or indirectly 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 CDFG or USFWS;
- ▶ have a substantial adverse effect on any riparian or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFG or USFWS;
- ▶ 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 pools, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; or
- ▶ 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.

Impact
4.2-1

Effects on Special-status Plants. *One special-status plant species, San Joaquin spearscale, was identified on the site in 1998. However, during special-status plant surveys conducted in 2000 and 2003, this species was not identified on the site. Based on these subsequent surveys, this plant species is assumed to no longer be present on the site. Therefore, **no impacts** on special-status plant species would be anticipated.*

No special-status plant species were observed in the expansion area during the protocol-level surveys of the site; however, two small populations of San Joaquin spearscale were observed in the proposed expansion area during a 1998 reconnaissance survey. A search for this plant species was conducted during year 2000 surveys and a subsequent survey was conducted in 2003 (Appendix B). The plant was not identified on the site during these subsequent surveys. Because this plant has not been identified on the site since 1998, it is assumed to no longer be present. Therefore, the proposed project is assumed to have no impact on special-status plant species.

Mitigation Measure 4.2-1 Effects on Special-status Plants

No mitigation is necessary for this impact.

Level of Significance after Mitigation

Potential impacts on special-status plants would be considered less than significant.

Impact
4.2-2

Effects on Vernal Pool Crustaceans. *The proposed expansion area provides suitable habitat for vernal pool crustaceans and it is within the proposed Critical Habitat area for vernal pool fairy shrimp and vernal pool tadpole shrimp. Several suitable ponds could be lost as a result of the landfill expansion. This is a **significant** impact.*

Ponds on the project site were surveyed by Environmental Stewardship & Planning, Inc. under contract to the project applicant for two seasons and were found not to support any of the federally listed vernal pool crustaceans (Appendix B). However, observations of large California linderiella populations in Ponds 1, 5, and 7 support the conclusion that the ponds may also provide suitable habitat for the three listed species. California linderiella is known to co-occur with the other species, and both vernal pool tadpole shrimp and vernal pool fairy shrimp have been documented near Potrero Hills Lane approximately 0.9 mile northwest of the proposed expansion area. The fact that linderiella were only detected in one of two years in Pond 1 suggests that cysts of the other species may also be present but conditions were not suitable in either year for hatching to occur. In addition, the expansion area is within proposed Critical Habitat for pool tadpole shrimp and vernal pool fairy shrimp. Ponds 1, 4, and 5 provide suitable habitat and are expected to be lost as a result of landfill expansion. Loss of habitat occupied by federally listed vernal pool crustaceans and proposed Critical Habitat would be considered a significant impact.

Mitigation Measure 4.2-2 Effects on Vernal Pool Crustaceans

- ▶ If impact avoidance is feasible, a 250-foot buffer shall be established around the perimeter of wetlands that provide suitable habitat for vernal pool crustaceans. Suitable habitat and buffer areas shall be clearly identified in the field by staking or flagging, and no project activity shall occur within the marked areas.
- ▶ If complete avoidance of vernal pool crustacean habitat is not feasible, the project applicant and the U.S. Army Corps of Engineers shall initiate consultation with the USFWS under Section 7 of the Endangered Species Act. Mitigation for the loss of these species shall include the following:

Aquatic Habitat: Offsite mitigation in a USFWS-approved mitigation bank or preserve area (e.g., North Suisun Mitigation Bank proposed by Wildlands Inc. located north of Highway 12 and south of the Travis Air Force Base) shall occur at a ratio of 3:1 preservation of large pool/pond habitat areas and 1.5:1 construction/restoration of large pool/pond habitat areas; and 4:1 preservation and 2:1 construction/restoration in other high-quality sites.

Buffer Zones: Buffer zones include the immediate natural contributing watershed to the individual pool/swale/pond plus a minimum of 100 feet from the watershed boundary. Development or loss of upland within contributing watershed/buffer areas

will be mitigated through preservation of vernal pool habitat under the following formula:

Effects to 50 percent or less of the buffer area

Mitigation Area = (buffer impacted/total watershed) x (area of affected wetland habitat)

Effects greater than 50 percent of the buffer area

If greater than 50 percent of the watershed will be permanently affected, a 1:1 mitigation shall be required for the affected wetland.

Level of Significance after Mitigation

With implementation of the identified mitigation measure, potential impacts on Vernal Pool Crustaceans would be considered less than significant.

Impact
4.2-3

Effects on Other Invertebrates. *Valley elderberry longhorn beetle and Callippe silverspot butterfly are not expected to occur in the proposed expansion area and are not expected to be affected by landfill expansion. This is a less-than-significant impact.*

Elderberry shrubs are present on the upper slopes of the hills on the south side of the valley. However, this area is outside the proposed expansion area. Surveys conducted in 1998 and 2002 by Environmental Stewardship & Planning, Inc. under contract to the project applicant indicate that Callippe silverspot butterfly is also absent from the proposed expansion area. Therefore, the landfill expansion is not expected to affect these species. Impacts to these species would be considered less than significant.

Mitigation Measure 4.2-3 Effects on Other Invertebrates

No mitigation measures would be necessary.

Level of Significance after Mitigation

The project's impacts on other invertebrates would be considered less than significant.

Impact
4.2-4

Effects on California Red-legged Frog. California red-legged frog is not expected to occur in the proposed expansion area and would not be affected by landfill expansion. This is a less-than-significant impact.

There is no evidence that California red-legged frogs occur in the valley. No red-legged frogs were observed during the numerous surveys conducted in aquatic habitats and the nearest known occurrence is on the opposite side of Suisun Slough and its associated saltmarsh (ESP 2002b). Therefore, California red-legged frogs are unlikely to occur in the valley and the species would not be affected by landfill expansion. This impact would be considered less than significant.

Mitigation Measure 4.2-4 Effects on California Red-legged Frog

No mitigation measures would be necessary.

Level of Significance after Mitigation

The project's impacts on California Red-legged frogs would be considered less than significant.

Impact
4.2-5

Effects on California Tiger Salamander. *Aquatic and grassland habitats in the proposed expansion area support tiger salamanders. Breeding ponds and wintering habitat would be lost as a result of landfill expansion. This is a **significant** impact.*

Expansion of the landfill would result in the loss of approximately 193.5 acres of habitat for California tiger salamanders, consisting of approximately 190.5 acres of terrestrial habitat, 1 acre of aquatic breeding habitat, and 2 acres of seeps and seasonal wetlands. Additional indirect impacts to breeding and terrestrial habitat in the adjacent eastern portion of the valley could also occur. During surveys of the site, not only were larval tiger salamanders abundant in the aquatic sites but adult salamanders also were observed fairly consistently during the short period of aboveground activity each year. All ponds in the proposed expansion area showed evidence of use as breeding sites either by the presence of larvae in the ponds, the presence of adult salamanders during the breeding season, and/or the presence of egg masses. Adult salamanders were also observed fairly regularly in the uplands during the breeding season, at distances ranging from a few feet to over 2,000 feet from the nearest breeding pond.

In Santa Barbara County, where the California tiger salamander population is federally listed as endangered, the USFWS has concluded that the majority of the adults are presumed to spend the summer months within 1,000 to 2,000 feet from the edge of breeding ponds. Observations in the proposed expansion area also indicates that, while adult salamanders routinely occur within 1,000 feet of the ponds, as evidenced by adult tiger salamanders encountered during the breeding season, they ranged as far away as 2,000 to 2,500 feet from the nearest breeding ponds. These observations demonstrate that the entire expansion area is used by one or the other life stage of this species. Expansion of the landfill would substantially affect this species, either through direct mortality to unseen adult salamanders aestivating underground, to larval salamanders in the breeding ponds, or to post-metamorphic salamanders as they make their way to aestivation sites away from the ponds. This impact is considered significant.

Mitigation Measure 4.2-5 Effects on California Tiger Salamander

Mitigation for tiger salamanders shall include four components that address impacts on the various life stages of this species. The first component mitigates impacts on terrestrial (aestivation) habitat on the project site; the second component mitigates impacts on the aquatic breeding and larval development habitats; the third component compensates for impacts on terrestrial (aestivation) habitat for off-site pools whose watershed/terrestrial buffer would be affected by the proposed project; and the fourth component includes protection measures to minimize mortality of adults and larvae prior to and during construction, as well as during

project operation. The project applicant shall develop a detailed plan for implementing these components; the plan shall be approved by the County, CDFG and USFWS prior to initiation of ground-disturbing activities.

All mitigation sites for California tiger salamanders must be located within the known range of the California tiger salamander in southern Solano County (i.e., roughly between the Potrero Hills area and the Jepson Prairie area to the north).

Component 1 – Terrestrial Habitat

- a. The project applicant shall preserve in perpetuity an off-site parcel as mitigation for impacts on the California tiger salamander and its terrestrial habitat. The entire expansion area encompassing 210 acres provides essential habitat for tiger salamanders; therefore, the minimum size of the mitigation parcel shall be 210 acres.

Minimum criteria for off-site mitigation areas include the following:

- i. The site must be documented to support California tiger salamanders or be within 2,000 feet of a known breeding pond.
- ii. If there is no breeding habitat onsite, there must be no impassable barrier between the mitigation site and the known breeding pond.
- iii. The known breeding pond must be on land that is preserved as open space in perpetuity and managed as native wildlife and plant habitat.

All mitigation sites for California tiger salamanders must be located within the known range of the California tiger salamander in southern Solano County (i.e., the area roughly between the Potrero Hills area and the Jepson Prairie area on the north).

Sites with high potential for enhancement and restoration through activities such as constructing breeding ponds and increasing the carrying capacity of the upland terrestrial habitat (e.g., eliminating ground squirrel control) will adequately mitigate impacts at a 1:1 ratio (210 acres).

Sites with low potential for enhancement and restoration shall require larger ratios to mitigate impacts on tiger salamanders. The increased ratio will range from 1.5:1 to 3:1 and shall be determined by the County, CDFG and USFWS. Some characteristics of sites with low potential for enhancement and restoration may include sites greater than 2,000 feet but less than 3,000 feet from a known breeding pond, sites with a passable barrier to dispersal between the known breeding pond and the mitigation site, sites with minimal opportunities for creation of additional breeding ponds, and sites with permanent water bodies that support non-native predators such as exotic fish and bullfrogs.

CDFG and USFWS must approve the proposed parcel as suitable habitat and acceptable for mitigation. The project applicant shall document the conditions on the site so that the appropriate mitigation ratio can be applied.

- b.* A conservation easement shall be placed on the mitigation parcel or parcels, establishing the land as wildlife habitat in perpetuity. The conservation easement must be completed prior to the initiation of ground-disturbing activities on the proposed project site. A habitat management plan shall be developed for the mitigation area that stipulates allowable activities on the site (e.g., grazing) and details enhancements to be completed on the site to improve the breeding and terrestrial habitat for tiger salamanders. The habitat management plan shall be submitted to CDFG, USFWS and the County for approval. The project applicant shall provide a secure source of funding to ensure completion of the enhancement activities on the site and provide for the long-term maintenance of the site.

Component 2 – Aquatic Breeding Habitat

- a.* Pond 5 shall be avoided during landfill construction. Upstream of the pond (east side of the pond), the extent of the watershed shall be designated as a buffer zone. On the west side of the pond, a 300-foot buffer shall be established. Neither staging nor construction shall occur within the buffer zone, nor shall any ancillary facilities be located or constructed within the buffer zone for the life of the project. The existing dilapidated barn west of Pond 5 provides upland terrestrial habitat for tiger salamanders and shall be avoided (left in disrepair) during landfill expansion and operation. Although this pond will be preserved, impacts on the upland buffer around the pond shall be subject to the compensation terms described in Component 3 below.
- b.* A minimum compensation ratio of 2:1 shall be applied to Ponds 1 and 4 (1.22 acres) that provide aquatic breeding habitat for California tiger salamanders. A minimum of 0.61 acre of aquatic breeding habitat shall be preserved on the off-site mitigation site. An additional 0.61 acre of aquatic breeding habitat designed for tiger salamanders also shall be created on the off-site mitigation site. The combined acreage of Ponds 1 and 4 is 0.61 acre. Ponds 1 and 4 fall within the project footprint and will be removed during landfill development (the berm on Pond 4 was removed in 2000).
- c.* All aquatic habitat either preserved or created must have a hydroperiod sufficient to allow completion of California tiger salamander metamorphosis during an average rainfall year. Ponds must hold water for at least 12 weeks during winter and early to mid-spring. This will require that the watershed of the mitigation site be appropriately sized, as determined through a study of the hydrology on the site, to support all mitigation ponds preserved or created on the mitigation site.

Component 3 – Upland Buffers of Off-Site Ponds

- a. Compensatory mitigation for the permanent loss of terrestrial buffer/watershed habitat for off-site ponds whose terrestrial buffers/watersheds would be affected by the proposed project shall be mitigated in addition to direct losses, as described in Component 2 above.
 - i. For purposes of this EIR, terrestrial buffer zones include the immediate natural contributing watershed to the individual pond or a 1,000-foot radius from the pond, whichever is larger.
 - ii. Development or loss of terrestrial habitat within the terrestrial buffer/contributing watershed shall be mitigated through construction of aquatic breeding habitat. Mitigation acreage shall be determined under the following criteria:
 - Effects to 50 percent or less of the buffer area
 - Mitigation Area = (buffer impacted/total watershed) x (area of affected wetland habitat)
 - Effects to greater than 50 percent of the buffer area
 - If greater than 50 percent of the watershed would be permanently affected, 1:1 mitigation is required for the affected aquatic habitat.

For this project, the buffer zones for Ponds 2, 5, and 6 would be affected by the proposed landfill development. Applying the formula above, an additional 0.16 acre of aquatic breeding habitat shall be preserved on the off-site mitigation areas as compensation for impacts on the adjacent ponds and their terrestrial buffers used for aestivation. The total acreage of aquatic breeding habitat to be preserved and created at the mitigation site shall be 1.38 acres (1.22 acres for the loss of ponds on the project site plus 0.16 acre for impacts on the associated terrestrial buffer of adjacent off-site ponds).

Component 4 – Protection Measures and Avoidance

- a. A salamander-proof barrier (e.g., fence or curb) shall be erected around the perimeter of the landfill expansion site to prevent salamanders from moving onto the expansion area during ground-disturbing activities and operation of the landfill. The barrier also would help direct the salamanders to areas where breeding ponds are preserved. The project applicant shall submit plans for a barrier design with their mitigation plan for approval by the County, USFWS and CDFG.
- b. Pond 1 and the Spring Branch Creek channel are located within the footprint of the expanded landfill and would be affected by landfill construction. To avoid potential

impacts on larval salamanders in these aquatic features, all construction activities in and around Pond 1 and the Spring Branch Creek channel shall occur in late summer or early fall (August 1–October 15) when no standing water is present. Conducting activities at this time of year shall avoid mortality of larval salamanders that could be developing in the pond or creek. Construction activities at Pond 1 and Spring Branch Creek shall be completed prior to the onset of the first rain of the season. The pond and creek shall be backfilled with soil, or excavated and drained to prevent their use as a breeding habitat during the life of the landfill. Once the aquatic habitats have been filled or excavated, additional construction activities can proceed in the vicinity of Pond 1 or Spring Branch Creek at any time of year.

- c. A biological monitor shall conduct an employee training session for all operators and managers involved in ground clearing and landfill cell construction prior to the initiation of ground-disturbing activities. The purpose of the training is to inform the workers of the sensitive resources onsite, the resources that are being avoided, and the measures being implemented to avoid tiger salamanders and other sensitive resources. A biological monitor with appropriate permits from CDFG and USFWS shall be onsite during initial ground-disturbing activities to move or salvage and possibly relocate any adult salamanders unearthed during earth-moving activities. Once the initial ground-disturbing activities are completed, the monitor shall make periodic (monthly) checks of the site to document compliance with the protection measures. Monitoring visits shall continue through the first rainy season after the initial ground disturbance.
- d. The project applicant shall investigate the feasibility of moving adult tiger salamander from the expansion area to the mitigation area prior to ground-disturbing activities. The project applicant shall consult CDFG and USFWS regarding this activity.
- e. Ponds in the eastern valley survey area (Ponds 2, 6, and 7) shall be left intact and shall continue to provide breeding habitat for California tiger salamanders. Upland areas that provide terrestrial habitat also shall be left intact. No borrow areas or ancillary facilities shall be constructed outside the designated expansion area or within areas designated for avoidance.
- f. Ground squirrel control, if required, shall be limited to only the expansion area. No ground squirrel control by poisoning, trapping, shooting, or other methods shall be allowed outside the expansion area or within the buffer around Pond 5.

Level of Significance after Mitigation

With implementation of the identified mitigation measure, potential impacts on California Tiger Salamander would be considered less than significant.

Impact
4.2-6

Effects on Burrowing Owl. *Burrowing owls are known to occur in the expansion area and they could nest onsite in the future. Landfill expansion could result in destruction of occupied burrows, including nests, and death of burrowing owls. This is a **potentially significant** impact.*

While no burrowing owls have been observed breeding in the proposed expansion area, it provides suitable burrows and potential nesting sites. Burrowing owls and their nests are protected under Section 3503.5 of California Fish and Game Code. The site also provides wintering habitat and owls are known to use burrows during the non-breeding season. Landfill expansion could result in the destruction of occupied burrows and subsequent death of individuals. In addition, winter foraging habitat for this species would be lost. Loss of a burrowing owl would be considered a significant impact.

Mitigation Measure 4.2-6 Effects on Burrowing Owl

- ▶ Prior to construction activity, focused pre-construction surveys shall be conducted by the project applicant for burrowing owls where suitable habitat is present within 75 meters of the construction areas. Surveys will be conducted no less than 14 days and no more than 30 days prior to commencement of construction activities and surveys will be conducted in accordance with CDFG protocol (CDFG 1995).
- ▶ If no occupied burrows are found in the survey area, a letter report documenting survey methods and findings will be submitted to CDFG for review and approval, and no further mitigation will be necessary.
- ▶ If occupied burrows are found, disturbance to the burrows shall be avoided by providing a buffer of 50 meters during the non-breeding season (September 1 through January 31) or 75 meters during the breeding season (February 1 through August 31). In addition, a minimum of 6.5 acres of foraging habitat shall be preserved contiguous with each occupied burrow (CDFG 1995).
- ▶ If impacts to occupied burrows are unavoidable due to their location within the landfill footprint, onsite passive relocation techniques approved by CDFG shall be used to encourage owls to move to alternative burrows in the local vicinity that are outside of the impact area. However, no occupied burrows shall be disturbed during the nesting season unless a qualified biologist verifies through non-invasive methods that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Mitigation for foraging habitat for relocated pairs will follow guidelines provided in the California Burrowing Owl Consortium Guidelines (1993) which range from 6.5 to 19.5 acres or replacement habitat per pair.

Level of Significance after Mitigation

With implementation of the identified mitigation measure, potential impacts on burrowing owls would be considered less than significant.

Impact
4.2-7

Effects on Other Raptors. *Raptors could nest in the proposed expansion area, and landfill expansion could result in disturbance and loss of active nests. This is a **potentially significant** impact.*

The proposed expansion area provides high-quality foraging habitat for a variety of raptors. Raptors and their nests are protected under Section 3503.5 of California Fish and Game Code. Removal of trees in the expansion area could result in the destruction of active nests. Landfill expansion could also result in disturbance of nearby nests, potentially resulting in abandonment and subsequent loss of eggs and/or chicks. Loss of an active raptor nest would be considered a significant impact.

Mitigation Measure 4.2-7 Effects on Other Raptors

- ▶ If project activity would commence during the raptor nesting season (February 15 to September 15), preconstruction surveys shall be conducted in areas of suitable nesting habitat within 500 feet of project activity. Surveys will be conducted no less than 14 days and no more than 30 days prior to commencement of project activity. If no active nests are found, no further mitigation will be required.
- ▶ If active nests are found, disturbance of the nest shall be avoided by establishment of a 500-foot exclusion buffer. No project activity shall occur within the buffer area until a qualified biologist confirms that the young have fledged from the nest or the adults abandon the nest on their own. Orange construction fencing shall be installed around the buffer area to prohibit access by site personnel and equipment. Weekly monitoring of the nest by a qualified biologist shall be conducted to determine when the young fledge. Daily monitoring will be required to document that a nest has been abandoned. Construction activities can commence once the young have fledged.

Level of Significance after Mitigation

With implementation of the identified mitigation measure, potential impacts on other raptors would be considered less than significant.

Impact
4.2-8

Effects on Other Special-Status Wildlife. *Long-billed curlew, loggerhead shrike, and tricolored blackbird, all designated as special-status species, are not expected to be substantially affected by loss of foraging habitat resulting from landfill expansion. This is a **less-than-significant** impact.*

Long-billed curlew, loggerhead shrike, and tricolored blackbird, all designated as special-status species, are not expected to be substantially affected by landfill expansion. While long-billed curlew, loggerhead shrike, and tricolored blackbird forage in the proposed expansion area, similar foraging habitat is abundant in the region. In addition, the project site is not within the breeding range of the long-billed curlew, nesting habitat for loggerhead shrikes is extremely limited on the site because of the lack of trees and shrubs, and no suitable breeding habitat is present in or near the expansion area for tricolored blackbirds. Therefore, landfill development impacts on these species would be considered less than significant.

Mitigation Measure 4.2-8 Effects on Other Special-Status Wildlife

No mitigation measures would be necessary.

Level of Significance after Mitigation

The project's impacts on other special-status wildlife would be considered less than significant.

Impact
4.2-9

Effects on Sensitive Habitats. *Landfill expansion is anticipated to result in fill of approximately 3.9 acres of sensitive aquatic habitats. This is a **significant** impact.*

Expansion of the landfill is expected to result in the loss of 2.42 acres of jurisdictional habitat, including 1.98 acres of seasonal wetlands and seeps, and 0.44 acre of Waters of the United States. These Waters of the U.S. and other wetlands are subject to the jurisdiction of the USACE, under Section 404 of the Clean Water Act. An additional 1.49 acres of Waters of the State, including 1.41 acres of stock ponds and 0.076 acre of isolated waters, would be lost as a result of the expansion. Loss of waters and other wetlands would be considered a significant impact.

Mitigation Measure 4.2-9 Effects on Sensitive Habitats

The project applicant shall create a minimum of 3.96 acres of seasonal wetlands (2:1 ratio) at a suitable off-site mitigation site to compensate for the loss of seasonal wetlands on the site. In addition, a minimum of 0.88 acre of stream channel (2:1 ratio) shall be preserved and enhanced at an off-site location as mitigation for impacts on waters of the United States. The project applicant shall develop a mitigation and monitoring plan that details the mitigation design, wetland planting design, maintenance and monitoring requirements, reporting requirements, and success criteria for the off-site mitigation area and stream enhancement area. This plan shall be approved by the Corps, RWQCB, and CDFG prior to implementation. The mitigation and monitoring plan must be completed and approved, the off-site wetland creation and enhancement areas purchased, and wetland creation and enhancement activities must be initiated before wetlands on the project site can be disturbed.

The project applicant shall create a minimum of 2.98 acres of waters of the State at an off-site location. This amount represents a 2:1 mitigation ratio for impacts on waters of the State. The applicant shall develop a mitigation and monitoring plan that details the mitigation design, wetland planting design, maintenance and monitoring requirements, reporting requirements, and success criteria for the off-site mitigation area. This plan shall be approved by RWQCB and CDFG prior to implementation. The mitigation and monitoring plan must be completed and approved, the off-site wetland creation area purchased, and wetland creation and enhancement activities must be initiated before wetlands on the project site can be disturbed.

All wetland mitigation sites shall be located within southern Solano County between Potrero Hills and Jepson Prairie.

All created, preserved, and enhanced wetlands shall be monitored annually for a minimum term of 5 years, or as specified in the permits. Annual monitoring of each site shall include (a) observations of existing and developing problems and recommendations for remedial actions, (b) an assessment of creation of wetland habitats, (c) a formal wetland delineation in Year 5, (d) notation of invasive exotic species, and (e) photo-documentation. Monitoring visits shall be made in winter and spring of each year, and quantitative data shall be collected in spring. Annual reports shall be submitted each fall to the Corps and the County for review. At the end of the 5-year monitoring period, the Corps and the County shall review the reports and determine whether the success criteria have been met. If the success criteria have not been achieved at the end of the 5-year monitoring period, remedial measures shall be identified in consultation with the County, Corps, RWQCB, and CDFG.

A conservation easement shall be established on the off-site mitigation areas to preserve these areas in perpetuity. The County or other public resource agency shall hold the easement to ensure retention of this land in perpetuity.

The project applicant shall provide financial assurances of a type (i.e., bond, letter of credit) and amount to be determined by the permitting agencies and the County, to ensure successful implementation of the mitigation and monitoring plan. The bond (or other financial assurance) must be deposited with the appropriate permitting agency prior to initiating ground-disturbing activities on the project site. The applicant also shall provide a long-term funding mechanism for the maintenance of the wetlands in the conservation easements in perpetuity.

As an alternative to creating and preserving wetland and waters, mitigation credits equal to 4.84 acres may be purchased in an approved bank within Solano County as mitigation for impacts on the seasonal wetlands and waters of the United States. Purchase of credits in a mitigation bank shall be subject to approval by permitting agencies and the County. The project applicant shall prepare a mitigation plan that provides detailed information about the bank. Mitigation credits must be verified by the permitting agencies and the County prior to initiation of ground-disturbing activities on the project site.

Level of Significance after Mitigation

With implementation of the identified mitigation measure, potential impacts on sensitive habitats would be considered less than significant.