

BURKE RANCH CONSERVATION BANK OPERATIONS AND MANAGEMENT PLAN

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1.0 INTRODUCTION

The Burke Ranch Conservation Bank (**Bank** or **Preserve**) will provide long-term habitat conservation of vernal pools and associated grassland communities. The Bank is defined as the area covered by a conservation easement. The conserved resources include federally regulated wetlands and the adjacent uplands which support state and federally-protected threatened and endangered species. This management plan (**Plan**) for the Bank is based upon the U.S. Army Corps of Engineers (**Corps**) Operations and Management Plan Template (May 19, 2003) and incorporates management considerations required by the U.S. Fish and Wildlife Service (**Service**) and California Department of Fish and Game (**CDFG**) (jointly referred to as “**Resource Agencies**”).

1.1 Setting

The Bank is located in an unincorporated portion of eastern Solano County, south of the city of Dixon, CA (**Figure 1**). The Property supporting the Bank is located immediately south of the Hay Road Landfill. Access to the site is off Burke Lane; the nearest major crossroads are Hay Road and Highway 113 (**Figure 2**). The Property is comprised of 6 parcels, each approximately 160 acres in size, identified by assessor parcel numbers 042-020-040, 042-020-070, 042-020-120, 042-020-030, 042-020-110, and 042-020-160. This location corresponds to portions of Sections 2 3, and 10, Township 5N, Range 1E, of the Dozier, California 7.5 minute quadrangle [U.S. Department of the Interior, Geological Survey 1952, photo revised 1968 and 1993] (**Figure 3**).

1.1.1 Project History

The Bank is comprised of 6 parcels, totaling 962.14 acres of rolling grassland and vernal pool complex. Westervelt Ecological Services (**WES**) acquired the property in fee title in January 2007. The location of the Bank occurs within a regional habitat conservation complex, and occurs within the Solano-Colusa Core Area for vernal pools, as defined by the vernal pool recovery plan (USFWS 2005). This site is located just north of Jepson Prairie and adjacent to Campbell Ranch Conservation Bank (Figure 1). Several additional conservation areas, including the Elsie Gridley Conservation Bank and the North Suisun Mitigation Bank, occur within 5 miles of the Bank.

The property is zoned as agricultural under the Solano County General Plan and is currently registered under the California Land Conservation Act of 1965 (Williamson Act). Limited modifications to the topography of the site have occurred; artificial furrows for agricultural purposes were historically created on a northern subset of the property, and USGS map records

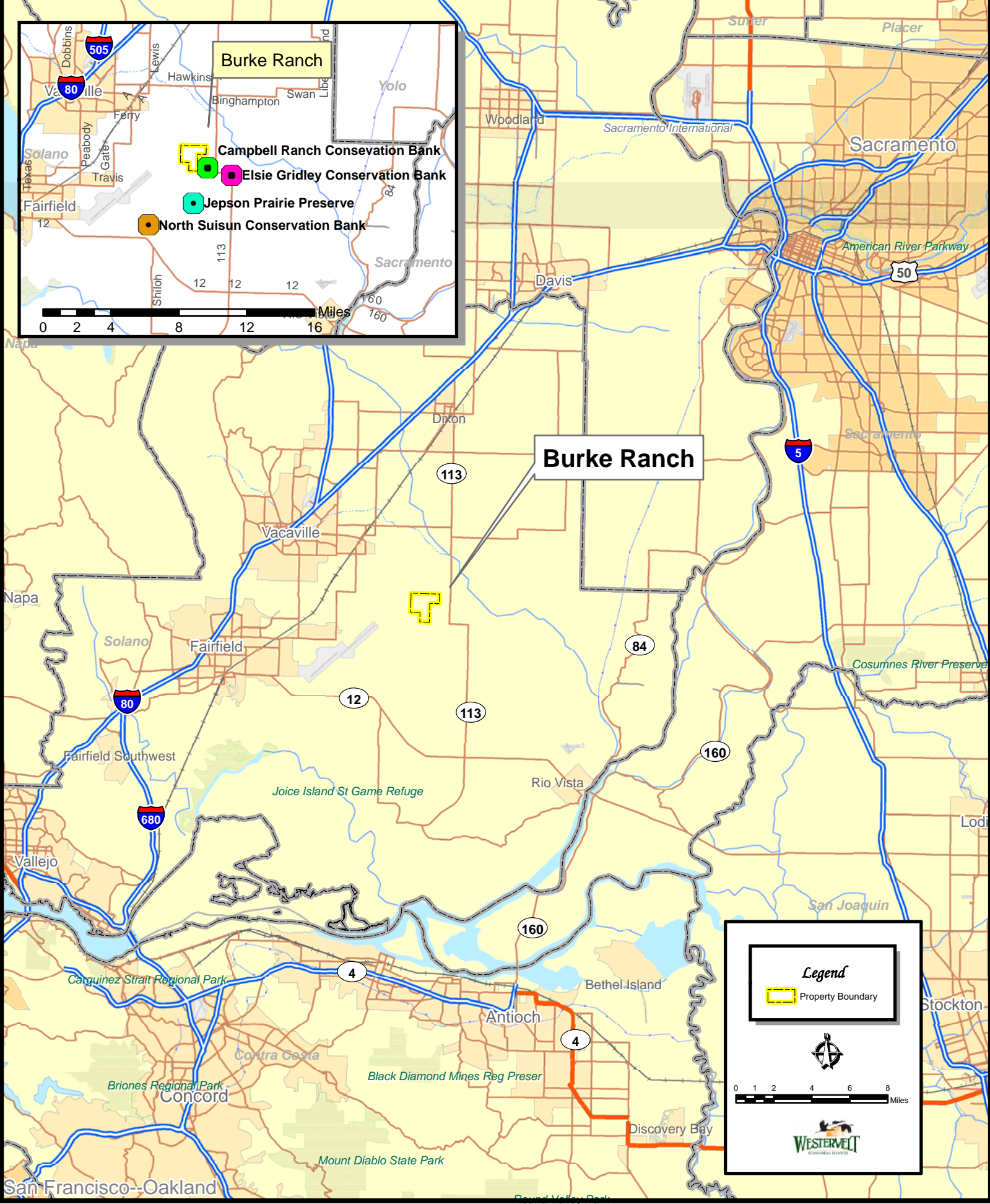


Figure 1: Burke Ranch Location Map

Source: ESRI base shapefiles, Westervelt GIS
GIS\Projects\Burke\MXD

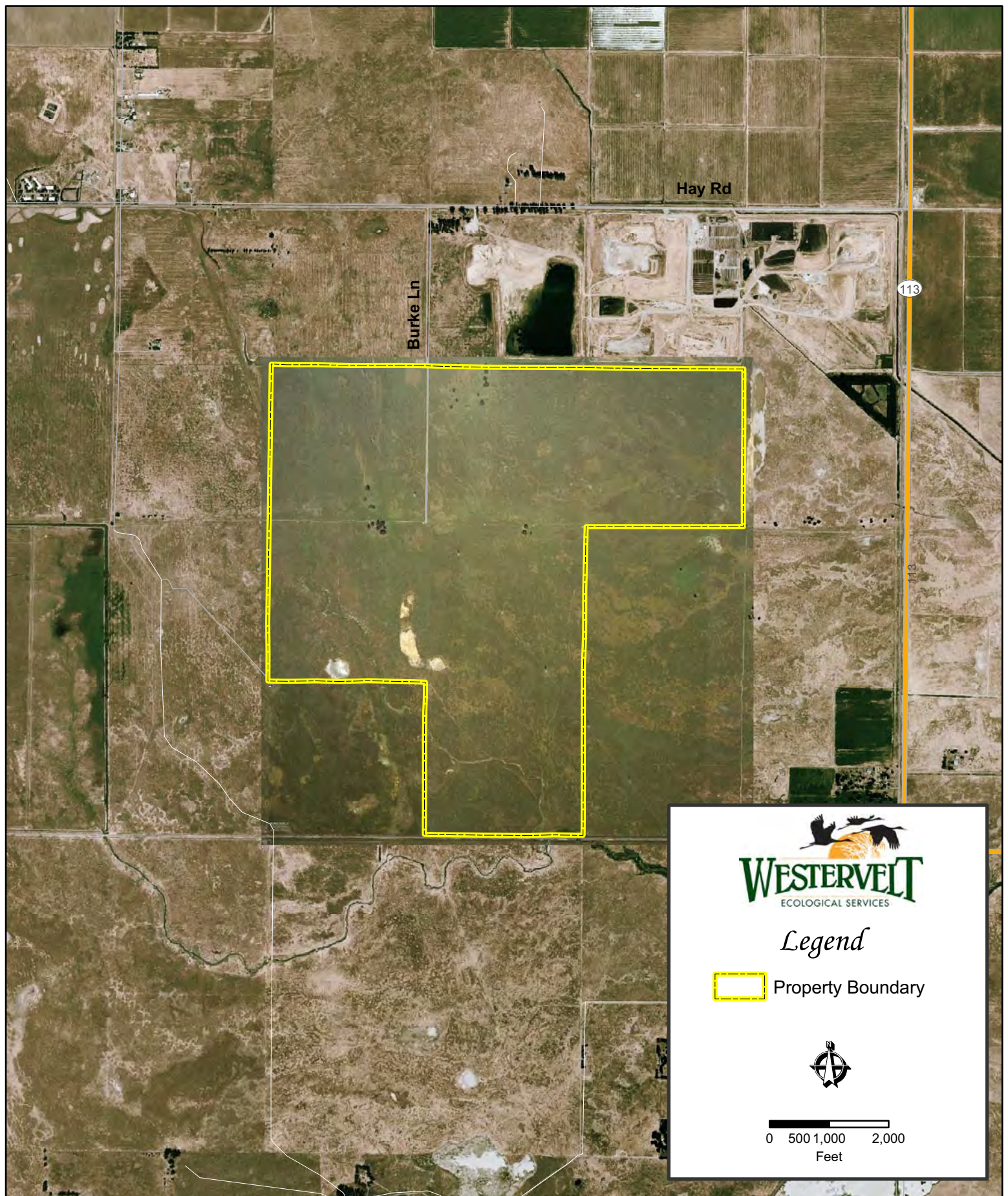


Figure 2: Burke Ranch Site Location Map

Source: Radman Aerial 2007, Westervelt GIS
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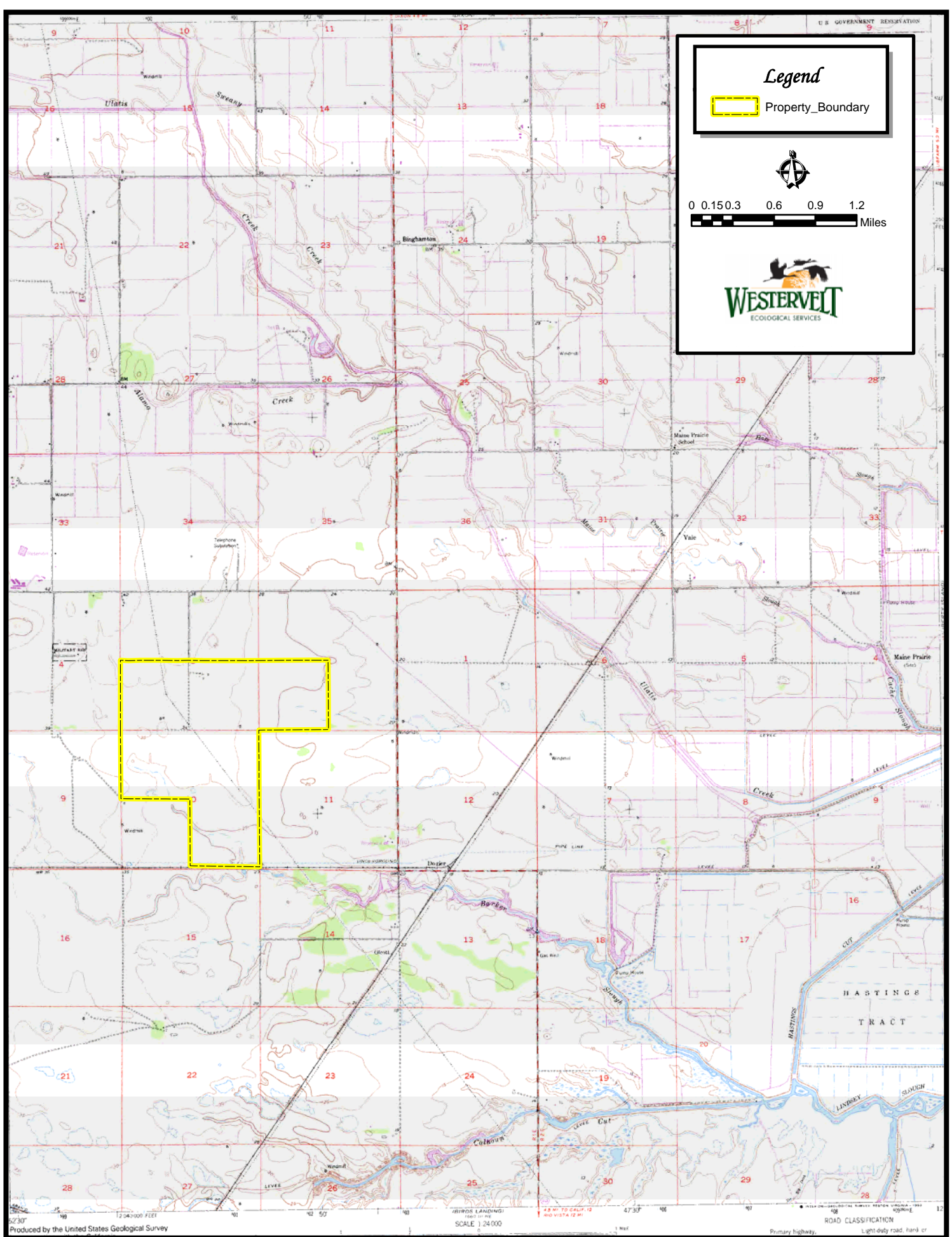


Figure 3: Burke Ranch Quad

Source: USGS Quad (Dozier), Westervelt GIS
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indicate that structural facilities once existed on the property. The site currently exists as a vernal pool/grassland complex. A wetlands delineation was conducted in spring 2007 by the consulting firm Davis Environmental Consulting. The delineation was submitted to the Corps on July 20, 2007. A revised delineation was submitted on August 12, 2010 and a preliminary jurisdictional delineation was issued by the Corps on September 21, 2010.

1.1.2 Surrounding Land Use

A majority of the lands surrounding the Bank are zoned agricultural and are actively used for livestock grazing. Except for lands to the northeast of the Bank, the surrounding lands support vernal pool/grassland complexes and have been subjected to limited disturbance. Lands within one half mile to the west, south, and east of the Bank are associated with mitigation or open space preserves. The Campbell Ranch, Elsie Gridley Mitigation Bank, Jepson Prairie, and Seeno Homes mitigation site all occur in close proximity to the Bank. The lands immediately adjacent to the Bank (except to the northeast) are under private ownership. However, the proximity of these lands to a variety of open space preserves, and the identification of these lands in the pending Solano County Habitat Conservation Plan (SCHCP) as preferred open space landscapes, make it unlikely the surrounding land use will change to negatively affect the Bank. In addition, a 100 foot raised railroad easement provides an effective buffer from lands to the south of the Bank.

The Hay Road Landfill occurs on the property immediately north of the eastern half of the Bank. The landfill opened in 1964, and has an operational life of approximately 70 years - closing in approximately 2075. The Hay Road Landfill property is comprised of 640 acres, 256 of which are permitted as a Class II landfill; features on the site include the landfill, biosolid detention ponds and drying areas, a barrow pit, and a future 4 acre waste collection vehicle maintenance yard. The landfill currently accepts up to 2,400 tons of waste daily, including biosolids from waste water treatment facilities. The landfill is lined with double composite clay liners, and wet biosolids are contained in levee protected, lined detention ponds. Runoff from the landfill flows north to a drainage ditch along Hay Road, and thence south in a ditch along Highway 113. An abandoned historic irrigation canal bisects the western third of the landfill property in a north/south direction, and occasionally conveys direct precipitation onto the Bank property. Ongoing groundwater monitoring has detected no contaminants exiting the landfill. During high wind periods, the landfill erects an 8 foot cyclone fence along the property boundary to contain windborne refuse from exiting the site. During periods of activity in modules adjacent to the Bank, the landfill is

required by their Regional Water Quality Control Board permits to erect a 25 foot cyclone fence to contain refuse within the landfill property.

1.1.3 Regulatory Background

The Bank is proposed as a conservation bank focused on vernal pool/grasslands preservation. Vernal pools on the Bank support the lifecycle of several species of crustaceans, including vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), and Conservancy fairy shrimp (*Branchinecta conservatio*). The grassland/pool complex is essential to delta green ground beetle (*Elaphrus viridis*) and California tiger salamander (*Ambystoma californiense*), which require both the wetlands features and surrounding uplands to complete their lifecycle. Uplands on the Bank provide foraging habitat for numerous raptor species including burrowing owl (*Athene cunicularia*) and Swainson's hawk (*Buteo swainsoni*); several raptor species including Swainson's hawk have been documented nesting on site. As such, impacts to sensitive biological resources (such as habitat creation) are not currently proposed as part of this conservation bank. The Bank will serve as a regional mitigation option for projects which directly or indirectly impact vernal pool/swale complexes supporting, or with the potential to support, associated state or federally listed species. The approval process of the Bank will include verification of the extent of wetlands on the Bank by the Corps and approval of the Conservation Bank Agreement (**CBA**), including this Plan, by the Resource Agencies. Independent project approvals by the Corps, Service, CDFG and other related state and federal agencies will be required for project proponents wishing to acquire credits at the Bank.

1.1.4 Bank Description

The Bank is comprised of 962.14 acres of undeveloped property in eastern Solano County. Two acres of the overall property are excluded from the Conservation Bank. There is currently no physical evidence that the site has been leveled, plowed or irrigated in the past. However, historic ditches occur on portions of the northern part of the Bank; these appear to have been constructed to drain the surface water from the property. Wetlands mapping was conducted in 2007 as part of the Bank approval process, and the total credits for each habitat type were defined by this mapping. The delineation was verified by the US Army Corps of Engineers in 2010, resulting in acreage changes to each habitat category and an overall increase in the total acreage. A total of 286.73 acres of waters of the United States, including wetlands, were delineated within the Bank. They occur primarily as complex assemblages but also as isolated features. Three large alkali playa pools occur in the center of the Bank. An artificial berm was historically

constructed around a portion of the largest of these pools to retain supplemental water for grazing purposes, causing two central pools to merge into one pool during periods of high precipitation. An overflow drainage pipe in the berm may currently serve as a nesting location for burrowing owl. In addition to the unique wetland and species occurring on site, a rare soil formation (gilgai soils) on the eastern portion of the Bank has resulted in a complex of micro mima-mounds in a portion of the vernal pools complex.

1.2 Topography and Soils

The topography of the Bank is gently sloping, with small undulations associated with the vernal pools and vernal swales. Elevation ranges from approximately 23 feet in the southeast corner of the property up to approximately 38 feet in the northwest corner of the property. Surface water drains to the south and east, ultimately entering into Barker Slough and the delta.

The Soil Survey of Solano County, California (USDA, Soil Conservation Service 1980) maps five major soil types, and three complexes combining the above soils (**Figure 4**):

- Antioch-San Ysidro Complex, 0-2% slopes
- Capay clay
- Pescadero clay loam
- Pescadero clay
- San Ysidro sandy loam, 0-2% slopes
- San Ysidro sandy loam, thick surface, 0-2% slopes
- Solano loam
- Solano-Pescadero complex

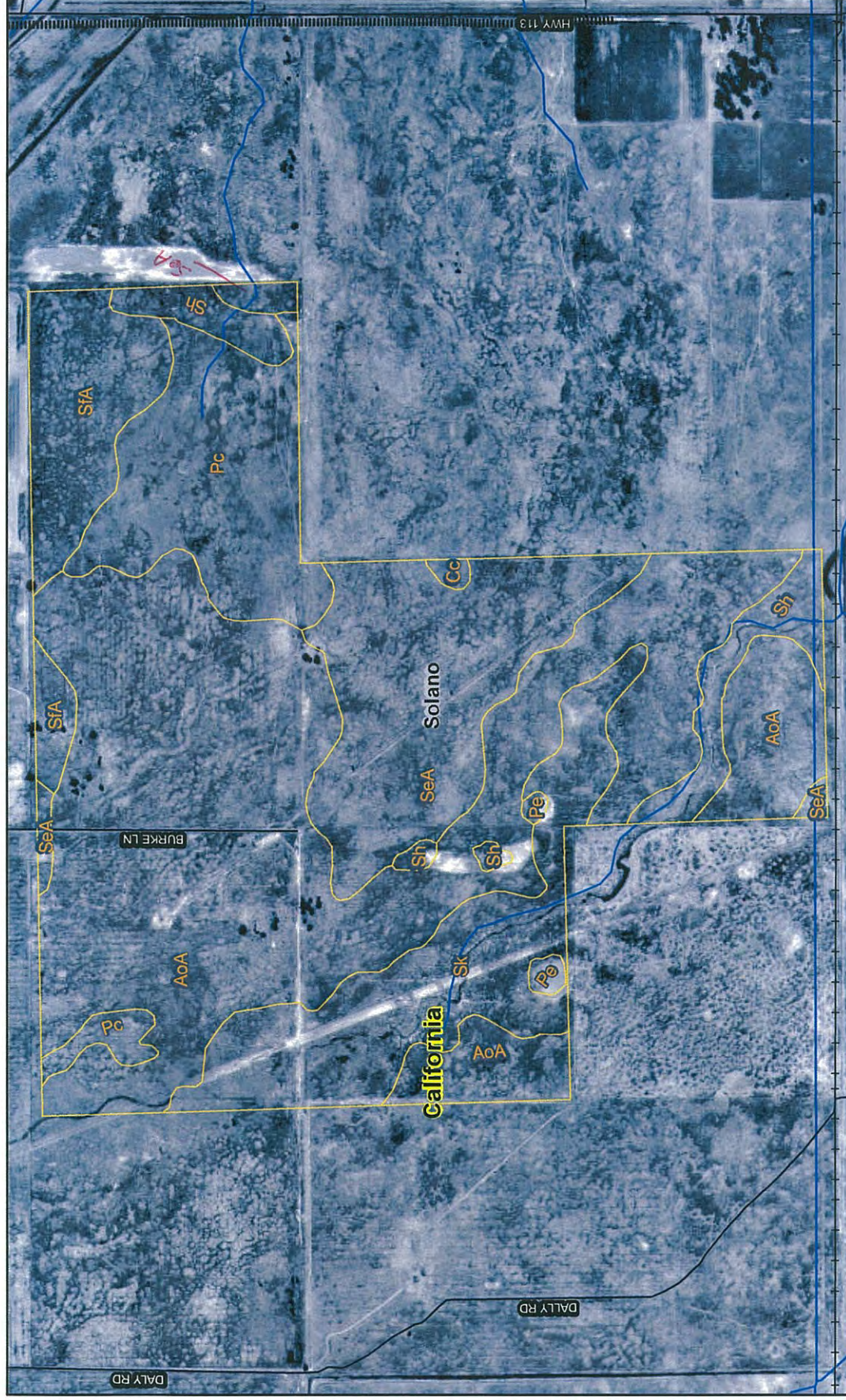
The Antioch-San Ysidro Complex occurs on approximately 50 percent of the site; Pescadero clay loam, San Ysidro sandy loam, and Solano-Pescadero complex occupy a significant portion of the remaining acreage on site. The Capay clay and Pescadero clay soils occurs as small inclusions across the site, totaling less than one percent of the overall acreage of the Bank. All soils on site have a significant clay content, with a heavy clay soils occurring within 4 to 12 inches from the surface. The soils are moderately well drained, and are saturated or perch surface water through a majority of the wet season.

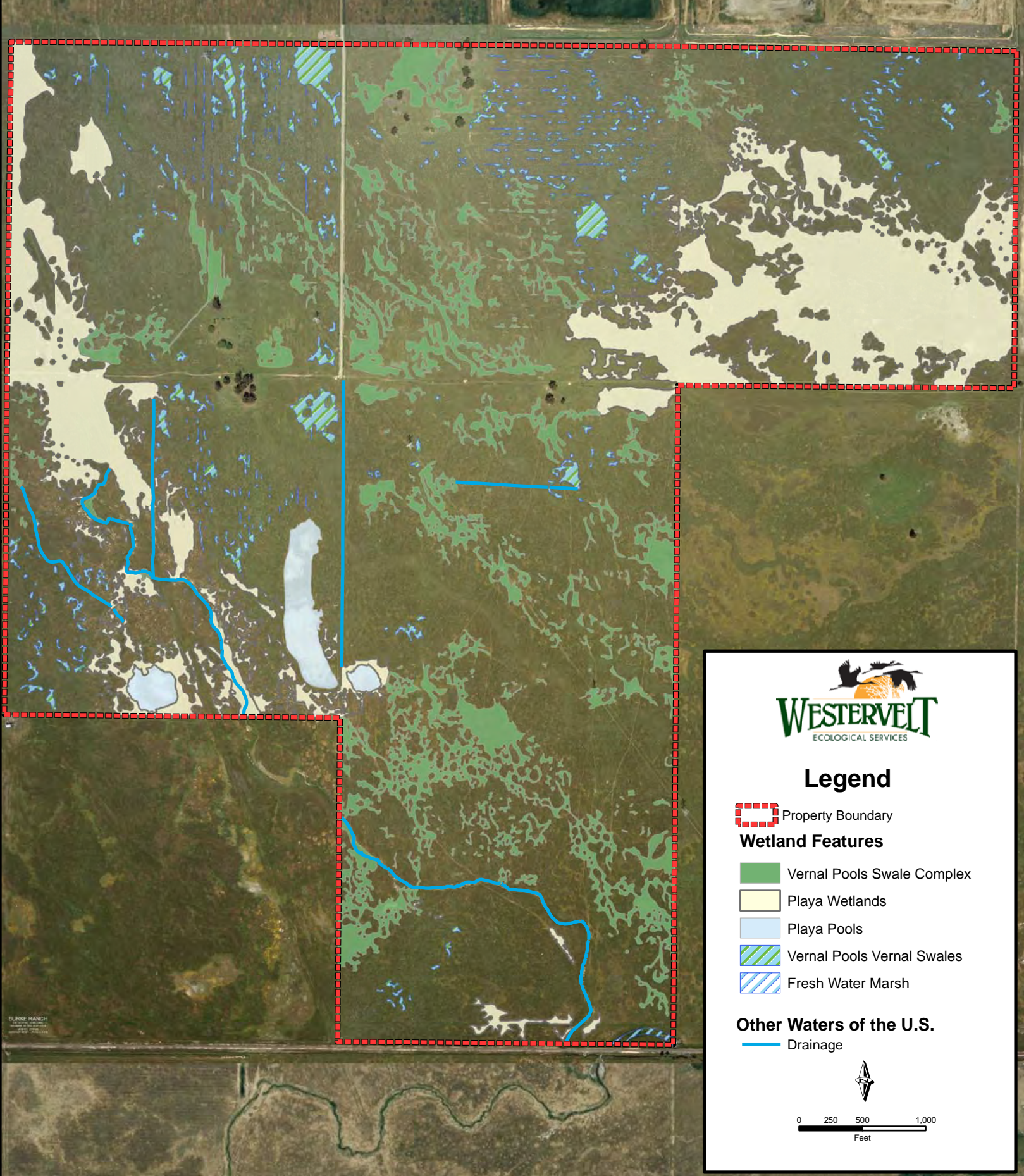
1.3 Biological Resources

The Bank currently supports wetland and upland habitat features. Wetland features include vernal pools and vernal swales, playa pools and playa wetlands, and freshwater marsh (**Figure 5**).

SOIL SURVEY OF SOLANO COUNTY, CALIFORNIA

Soil Survey Map





Legend

 Property Boundary

Wetland Features

-  Vernal Pools Swale Complex
-  Playa Wetlands
-  Playa Pools
-  Vernal Pools Vernal Swales
-  Fresh Water Marsh

Other Waters of the U.S.

 Drainage



0 250 500 1,000
Feet

Vernal Pool-Swale Complex. The vernal pool-swale complex is the most characteristic community on the Burke Ranch site. The vernal pool-swale complexes mapped on Burke Ranch are dominated by Mediterranean barley, perennial ryegrass, tufted hairgrass, semaphoregrass (*Pleuropogon californicus*), popcornflower, coyote thistle, and wooly marbles. The vernal pool-swale complexes at Burke Ranch support the characteristic vernal pool mound/intermound topography that results in a mosaic of wetland habitats interspersed with upland mounds; also known as the “mima mound” landform. What differentiates the vernal pool-swale complex from the vernal pool and seasonal swale habitat type described below is the lack of historic disturbance and maintenance of hydrologic connectivity between the large network of intervening wetlands.

Vernal Pool and Vernal Swale. Vernal pools and vernal swales are seasonally flooded landscape depressions that support distinct plant and invertebrate species adapted to inundation during the wet season and the absence of ponded water or wet soil during the dry season. Vernal pools and swales identified on the Burke Ranch property are located where apparently there has been some historical disturbance to the landscape surface. The result is a group of distorted, angular vernal pools and swales that have recovered from surface disturbance and support plant species typical of vernal pool and swale communities.

Common species of the vernal pool and vernal swale habitat include Mediterranean barley, tufted hairgrass, coyote thistle, goldfields (*Lasthenia* spp.), popcorn flower, and wooly marbles.

Playa Pool. Playa pools are very large vernal pools with alkaline waters clouded by suspended clays. Playa pools are the most notable habitat type on Burke Ranch; in part due to the presence of the rare delta green ground beetle and threatened California tiger salamander. There are three playa pools on the Bank: one centrally located (identified as pool #1 and 7.218 acres in size), and two smaller pool to the west (pool #2 measuring 2.433 acres) and east (pool #3 measuring 0.951 acres) of the central pool. The central pool may at one time have been two pools, but a historic berm constructed around the south and western boundaries to increase ponding has resulted in the two halves merging into one pool as precipitation inundates the area. Playa pools on the site encompass approximately 10.60 acres.

Playa pools are characterized by a relatively barren basin that is seasonally inundated with water. In spring, as the water recedes, a few common vernal pool species including downingia, goldfields, and woolly

marbles are sparsely present. During the dry season, the playa pool basins are covered with a salt crust and only sparsely vegetated with halophytic plants such as alkali heath, timothy grass (*Crypsis schoenoides*), and salt grass.

Playa Wetlands. Playa wetlands generally occur in the northeastern and northwestern corners and surround the playa pools on the Burke Ranch property. Playa wetlands are characterized by large, relatively flat terrain that is saturated or sustains shallow standing water for a long duration during the wet season. During very wet years, it is suspected that these playa wetlands can flood water contiguously with vernal pools, vernal swales, and open water channels into the Delta.

At Burke Ranch, large playa wetlands are dominated by three or four wetland grass species: Italian ryegrass, Mediterranean barley, saltgrass, and thintail sicklegrass which are interspersed with vernal pool species such as coyote thistle, goldfields, meadowfoam (*Limnathes douglasii*), and woolly marbles.

Freshwater Marsh. Freshwater marsh habitat is present in the small segment of stream channel located in the southeastern corner of Burke Ranch. Hydrophytic vegetation includes rabbitsfoot grass (*Polypogon monspeliensis*), loosestrife (*Lythrum hyssopifolia*) and cattail (*Typha latifolia*). Wetland hydrology was witnessed by the presence of standing water throughout winter months.

Upland. Annual grasslands comprise the majority of the upland vegetation community in the Survey Area. Common native species found in the annual grassland habitat included Johnny jump-up (*Viola pedunculata*), common muilla (*Muilla maritima*), and saltgrass (*Distichlis spicata*). Non-native grass species mainly dominated the annual grassland community, including Medusa-head (*Taeniatherum caput-medusae*), soft chess (*Bromus hordeaceus*), and meadow barley (*Hordeum branchyantherum* ssp. *branchyantherum*). Ruderal areas occur along roads and dirt paths throughout the property, as well as in eucalyptus stands used by grazing cattle for shade. Species present in the ruderal habit include blue gum eucalyptus (*Eucalyptus globulus*), yellow and purple star-thistles (*Centaurea solstitialis* and *C. calcitrapa*), and bristly ox-tongue (*Picris echioides*). However, invasive species such as star thistle occur in small patches, in extremely low distribution on site.

1.3.2 Restored/Created Habitats

No creation is proposed on the Bank at this time.

1.3.3 Special-Status Species

The following special status species have been documented as occurring on site:

- Vernal pool fairy shrimp;
- Vernal pool tadpole shrimp;
- Conservancy fairy shrimp;
- Delta green ground beetle;
- California tiger salamander;
- Swainson's hawk;
- Burrowing owl; and
- Alkali milk-vetch (*Astragalus tener* var. *tener*)

Vernal Pool Fairy Shrimp.

This species account was adapted from the Service website (Service 2006). The vernal pool fairy shrimp is a small crustacean in the *Branchinectidae* family. It ranges in size from ½ to one inch long. Fairy shrimp feed on algae, bacteria, protozoa, rotifers and bits of detritus.

The vernal pool fairy shrimp occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Although the species has been collected from large vernal pools, it tends to occur in smaller pools. These are most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands. Vernal pool fairy shrimp have been collected from early December to early May.

Female fairy shrimp carry their eggs, which are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks. When the pool dries out, so do the eggs. They remain in the dry pool bed until rains and other environmental stimuli hatch them. Resting fairy shrimp eggs are known as cysts. They are capable of withstanding heat, cold and prolonged desiccation. When the pools refill, some, but not all, of the cysts may hatch. The cyst bank in the soil may contain cysts from several years of breeding.

The vernal pool fairy shrimp is currently known to occur in a wide range of vernal pool habitats in the southern and Central Valley areas of California, and in two vernal pool habitats within the "Agate Desert" area of Jackson County, Oregon. Habitat loss and fragmentation is the largest threat to the survival and recovery of vernal pool species.

Surveys for vernal pool fairy shrimp were conducted in 1999, 2007, 2008, and 2010. This species was detected in all years except 2007 (a very low

rainfall year), in multiple locations including the playa pools, vernal pool/swales, and playa wetlands. Documentation of the location of occupied pools is provided in the annual monitoring reports.

Vernal Pool Tadpole Shrimp.

This species account was adapted from the Service website (Service 2006). The vernal pool tadpole shrimp is a small crustacean in the *Triopsidae* family. It has a large shield-like carapace (shell) that covers most of the body; adults reach a length of 2 inches in length.

Tadpole shrimp climb or scramble over objects, as well as plow along or within bottom sediments. This animal inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the former Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie. Similar to vernal pool fairy shrimp, tadpole shrimp hatch from cysts following inundation of pools with rainwater. Sexually mature adults have been observed in vernal pools three to four weeks after the pools had been filled.

The vernal pool tadpole shrimp is currently distributed across the Central Valley of California and in the San Francisco Bay area. Surveys for this species on the Bank were conducted in 1999, 2007, 2008, and 2010. This species was detected in all years in multiple locations including the playa pools, vernal pool/swales, and playa wetlands. Documentation of the location of occupied pools is provided in the annual monitoring reports.

Conservancy Fairy Shrimp.

This species account was adapted from the Service website (Service 2006). The Conservancy fairy shrimp is a small crustacean in the *Branchinectidae* family. It ranges in size from about ½ to one inch long.

Conservancy fairy shrimp inhabit rather large, cool-water vernal pools with moderately turbid water. The pools generally last until June; however, shrimp are generally present from early November to early April. Similar to vernal pool fairy shrimp, conservancy fairy shrimp hatch from cysts following inundation of pools with rainwater. Hatching can begin within the same week that a pool starts to fill. Average time to maturity is forty-nine days. In warmer pools, it can be as little as nineteen.

The historical distribution of the Conservancy fairy shrimp is not known. It is likely the Conservancy fairy shrimp once occupied suitable vernal pool habitats throughout a large portion of the Central Valley and southern coastal regions of California. The species is currently known from several disjunct populations: the Vina Plains in Tehama County, south of Chico in Butte County, the Jepson Prairie Preserve and surrounding area in Solano

County, Sacramento National Wildlife Refuge in Glenn County, Mapes Ranch west of Modesto, San Luis National Wildlife Refuge and the Haystack Mountain/Yosemite Lake area in Merced County, and two locations on the Los Padres National Forest in Ventura County. Surveys documented the presence of this species on the Bank in 1999, 2007, 2008, and 2010. Presence is limited and focused primarily on the playa pools.

Delta Green Ground Beetle.

The Delta green ground beetle belongs to the family *Carabidae*. Its size, color and spotting patterns, lack or reduction of circular pits on the elytra (first pair of wings, which in beetles are hardened and act as a protective covering for the flight wings), and degree of hairiness are distinguishing features. Most adults are about 1/4 inch long. They are bright metallic green, generally with bronze spots on the elytra.

The preferred habitat of the delta green ground beetle is not well understood. Some entomologists believe that the species prefers more open habitats in the grassland-playa pool matrix where the beetle is found, such as edges of pools, trails, roads and ditches. However, this may be because denser cover hinders observation of the beetles elsewhere. Adults may also occur in the surrounding grasslands.

Based on the study of similar *Elaphrus* species, researchers believe that Delta green ground beetles are generalized predators. Their primary food may be springtails. Adult females probably produce one generation per year. Adults seem to be active from February until mid-May, after which they enter an inactive phase called a diapause. This allows them to survive the dry Sacramento Valley summer.

Researchers have collected adult beetles around the margins of vernal pools and in bare areas along trails and roadsides in central Solano County. The cryptic coloration of the beetle against the brilliant green of the early spring grass, its small size and habit of hiding under low-growing vegetation such as filaree (*Erodium* spp.) hinder detection of the animal in the field.

Although the historical distribution of the delta green ground beetle is unknown, the widespread disruption of wetland and grassland habitat of the Central Valley since the middle of the last century strongly suggests that the range of the beetle has shrunk and become fragmented. The beetle is protected at the Jepson Prairie Preserve, which is south of Dixon in Solano County. In addition, surveys on the Bank in 1999 and 2007 documented the presence of this species adjacent to the playa pools.

California Tiger Salamander.

The California tiger salamander is an amphibian in the family *Ambystomatidae*. It is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults males are about 8 inches long, females a little less than 7. Coloration consists of white or pale yellow spots or bars on a black background on the back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black.

The species is restricted to grasslands and low (under 1500 foot) foothill regions where lowland aquatic sites are available for breeding. They prefer natural ephemeral pools or ponds that mimic them (stock ponds that are allowed to go dry). Larvae require significantly more time to transform into juvenile adults than other amphibians such as the western spadefoot toad (*Scaphiopus hammondi*) and Pacific tree frog (*Pseudacris regilla*).

California tiger salamanders are poor burrowers. They require refuges provided by ground squirrels and other burrowing mammals in which to enter a dormant state called estivation during the dry months.

This species is restricted to California and does not overlap with any other species of tiger salamander. In the Coastal region, populations are scattered from Sonoma County in the northern San Francisco Bay Area to Santa Barbara County, and in the Central Valley and Sierra Nevada foothills from Yolo to Kern counties. The Sonoma population appears to have been geographically isolated from the remainder of the California tiger salamander population by distance, mountains and major waterway barriers for more than 700,000 years.

California tiger salamander have been documented breeding in all three playa pools (totaling 10.60 acres) on the bank, and the uplands within 0.7 miles of the playa pools (an area totaling 534.67 acres) are considered estivating habitat. Presence of this species on the Bank was initially verified through the discovery of a desiccated California tiger salamander in an open pit adjacent to the large playa pool during a field visit in April 2007. Larval surveys conducted during the 2007 breeding season did not document larvae occurring on the Bank; however, precipitation in 2007 was only 65 percent of normal rainfall levels, and breeding conditions were uncharacteristically poor. Surveys in winter 2008 documented a single individual during dip-net events. Seining methods were employed starting in 2009, with 8 larvae captured in the central and western playa pools, 30 larvae captured between all three playa pools in 2010, and 60

larvae captured between all playa pools in 2011. Details of the survey results can be found in the annual monitoring reports.

Swainson's Hawk

Swainson's hawk is diurnal and similar in size to the more common red-tailed hawk (*Buteo jamaicensis*). Swainson's hawks prefer open habitats. These include: mixed and short grass grasslands with scattered trees or shrubs for perching; dry grasslands; irrigated meadows; and edges between two habitat types (ecotones). Within California, Swainson's hawks favor agricultural areas, (particularly alfalfa fields), juniper-sage flats, riparian areas, and oak savannas. Over 95% of the nesting sites for this species are estimated to be on private lands.

Swainson's hawks primarily eat insects, birds, and small mammals, occasionally taking reptiles, amphibians, and other invertebrates. The hawks appear to exploit the abundance of prey made available due to the effects of certain farming activities.

Within California, Swainson's hawks begin nesting in late March and the young usually leave the nest (fledge) by July. Nests are constructed in trees, shrubs, or on utility poles at heights of 4 to 100 ft. (1.2 to 30.5 m) above the ground. In the Central Valley they nest in riparian areas. This association with riparian habitat is most likely due to the lack of trees in intensively cultivated and industrially-developed areas. Migration of Swainson's hawks south begins in August and lasts through October. In the spring, they begin returning north to California in March. The populations that nest within the Central Valley arrive and depart earlier than those populations in northern California, likely triggered by the summer heat in the Valley.

The populations of Swainson's hawks have declined by 90% since the 1940's due to the loss of nesting habitat. In the 1980's there was an estimated 375 pairs within California. Although it is not an evident threat within California, pesticides and insecticides are a severe threat to the wintering birds in Argentina, killing over 10,000 birds in 1995 alone.

Focused Swainson's hawk surveys on the Bank in 2008 documented occurrences on several occasions, and a nesting individual with a hatchling was observed in a eucalyptus tree on site. Additional surveys have been conducted in each of the subsequent years and no additional nesting occurrences have been detected. Detailed surveys results are available in the annual monitoring reports.

Burrowing Owl

The western burrowing owl is a small ground-dwelling owl with a round head which lacks ear tufts. The owl is sandy colored on the head, back, and upperparts of the wings and white-to-cream with barring on the breast and belly. It has white eyebrows, yellow eyes, and long stilt-like legs.

Burrowing owls are found in open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals. They can be found at elevations ranging from 200 feet below sea level to 9,000 feet. The owl commonly perches on fence posts or on top of mounds outside its burrow. Burrowing owls nest in burrows in the ground, often in old ground squirrel burrows or badger dens. They can dig their own burrows, but prefer deserted excavations of other animals. They are also known to use artificial burrows.

Burrowing owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a large portion of their diet; small mammals are also important food items. The burrowing owl hovers while hunting, similar to an American kestrel (*Falco sparverius*), and after catching its prey it returns to a perch on a fence post or the ground. Burrowing owls are primarily crepuscular (active at dusk and dawn), but will hunt throughout a 24-hour period.

Their nesting season begins in late March or April. Incubation lasts 28-30 days and is performed by only the female; the care of the young while still in the nest is performed by the male. Young become active outside the burrow at 14 day, and leave the nest at about 44 days.

The western burrowing owl is found in western North America from Canada to Mexico, and east to Texas, Louisiana. In certain areas of its range it is migratory. Although the burrowing owls in northern California are thought to migrate, owls within central and southern California are predominantly nonmigratory.

Anecdotal observations of burrowing owls on the bank site occurred during field visits in Fall 2006 and Spring 2007. Locations of wintering owls have been more specifically identified with two birds in 2007 (central and southern portions of the bank), one owl in 2011 (central), and one owl at the outfall pipe of the central playa pool in 2012. Records from the California Natural Diversity Data Base (2005) show four occurrences (likely three pair) adjacent to the southern boundary of the Bank.

Alkali milk-vetch

This species account was adapted from the Solano County Habitat Conservation Plan website. Alkali milk-vetch is a CNPS List 1B species and

a federal Species of Concern. It is a delicate, 4 to 30 cm tall, annual herb in the pea family (Fabaceae). Historically alkali milk-vetch occurred in the Central Valley and coastal foothills from Monterey County in the south to Sonoma County in the north and from San Francisco in the west to Merced and Stanislaus counties in the east; however it is considered extirpated from much of its former range. It is still found in Alameda, Merced, Napa, Solano, and Yolo counties.

Alkali milk-vetch grows in alkaline/saline soils in vernal wet playas, flats, and valley and foothill grassland. It flowers February through June.

In Solano County, populations of alkali milk-vetch are widely distributed, however, most of the populations are centered around Dozier and Jepson Prairie Preserve. Other populations have been found on Travis Air Force Base, in the eastern Fairfield/Tolenas area, south of Davis, the northern edge of the Potrero Hills, and at the western edge of the Montezuma Hills. Where reported, population sizes range from 15 to 650 plants. A large population (several subpopulations) was observed by LSA on Muzzy Ranch, located directly east of Travis Air Force Base, in 2003. The population was estimated to comprise a several thousand plants. This species also occurs on Jepson Prairie Preserve and on Gridley Trust Mitigation Bank lands. Alkali milk-vetch has been found with other special-status species: Contra Costa goldfields (*Lasthenia conjugens*), San Joaquin spearscale (*Atriplex joaquiniana*), dwarf downingia (*Downingia pusilla*), and legenere (*Legenere limosa*).

Rare plant surveys were conducted in Spring 2007. Alkali milk-vetch was detected on site. However, due to significantly lower than average rainfall this year, many species of plants expected to occur on site were not observed. Surveys in 2008 detected several hundred alkali milk vetch plants concentrated within in the northeastern portion of the Bank property.

1.4 Native And Non-Native (Exotic) Plant Species

In several locations throughout this Plan, native and non-native plant species are mentioned. The following definitions of these terms have been included to assist the Bank Manager in determining the status of plant species found on the Bank.

1.4.1 Native Plants

For the purposes of this Plan, plants native to the Bank will be defined as those plants believed by the scientific community to have been present in Solano County prior to the settlement of Europeans. The Jepson Manual can be a reference for determining if a plant is native or non-native. However, references are only specific to subregions. As a result, this reference is not

necessarily specific enough, and therefore the Bank Manager can consult with the Monitoring Biologist, local botanists, or the local chapter of the California Native Plant Society to determine if a plant should be considered native to the Bank.

1.4.2 Non-Native (Exotic) Plants

Using the definition for native plants considered native to the Bank, there are several ways to view what a non-native plant is: there are plants that are not locally native (native to the Sacramento Valley), plants that are not regionally native (native to Northern California), and/or then plants that are not native to California or the U.S.

1.4.3 Exotic Pest Plants

Exotic pest plants are plants that are not native, and additionally are invasive, replacing native vegetation or native habitats. The Monitoring Biologist and the Bank Manager can refer to the species found on the California Invasive Plant Council (**Cal-IPC**) List A, List B, and Red Alert List to assist them in determining if a plant is an exotic plant species of concern. The current lists have been included as **Attachment A**; however, these lists may be updated from time to time by Cal-IPC. The new list will be appended to this Plan as it is updated. The list can be found at <http://www.cal-ipc.org/>.

1.5 Plan Goal

The goal of this Plan is to ensure that the preserved wetland and upland habitats within the Bank are maintained in good condition such that they will continue to support the flora and fauna that the Bank was established to protect (Conservation Values), in perpetuity, and to define the specific methods necessary to meet this goal. Conservation Values are defined as the physical, biological, and environmental processes needed to maintain the Bank. Specific management strategies designed to maintain the Conservation Values are discussed in Section 5.0.

In order to realize the Plan Goal, the following biological goals are established:

- Preserve the diversity and richness of vernal pool species occurring on the Bank.
- Protect the Bank from the effects of adjacent land uses or unauthorized activities that may adversely impact the Bank.
- Manage the Property to minimize the encroachment of invasive, exotic species.
- Maintain conditions to support the life cycle of the special-status species on site.

- Repair or restore any adverse condition within the Bank that may affect or potentially affect the Bank.

It should be noted that while it is the intent of this Plan to comply with conditions in the CBA, if any discrepancies between this Plan and the CBA exist, the CBA overrides the Plan stipulations unless approval is received from the Resource Agencies.

2.0 BANK PERSONNEL

The Bank Manager and qualified personnel/monitoring biologist are primary personnel that will oversee, monitor and coordinate the maintenance of the Bank. They are intended to work together as a team to accomplish the management of the Bank by exchanging information, problem solving and generally having a proactive relationship.

2.1 Bank Manager

The Bank will be managed by WES pursuant to the Conservation Easement and this Plan (the Plan will be referenced in the Conservation Easement and will be available for review at the U.S. Fish and Wildlife Service office located in Sacramento, California). WES will manage and maintain the Bank as outlined in this Plan and will designate a Bank Manager. Funding for the perpetual management and care of the Bank will be provided for by the Endowment Fund as described under Section 10.0.

2.1.1 Bank Manager Responsibilities

The Bank Manager's responsibilities will include but not be limited to:

- Maintaining fencing and signage.
- Coordinating trash removal.
- Conducting thatch (dead vegetative matter)/exotic plant management when necessary with qualified personnel.
- Coordinating grazing of the Bank as described in this Plan.
- Reviewing monitoring data, and recommending to/coordinating with the Resource Agencies for any remedial action.
- Maintaining a log for the Bank. This log will contain a record of all activities, correspondence and determinations regarding the Bank.
- Performing general inspections of the Bank as required by this Plan.
- Coordinating an annual Biological Inspection by a qualified biologist.
- Arranging for any corrective action necessary to ensure the performance of the habitat at the Bank, as required by this Plan.

Duties identified in the plan are the responsibility of the Bank Manager; duties related to oversight and compliance monitoring of the Conservation Easement will be the responsibility of the Conservation Easement grantee (**Grantee**).

2.2 Use of Qualified Personnel/Monitoring Biologist

The Bank Manager will retain professional biologists, botanists or other types of specialists (the **Qualified Personnel**, including the **Monitoring Biologist**) to conduct specialized tasks. The Monitoring Biologist will be familiar with California

flora and fauna, and will have knowledge regarding vernal pools and their ecology. The Monitoring Biologist will maintain a current 10(a) permit from the Service and appropriate authorization from CDFG (including but not necessarily limited to a Scientific Collecting Permit) to survey for targeted species on site (i.e., fairy shrimp species and California tiger salamander), or contract with appropriate personnel to complete these surveys.

2.2.1 Qualified Personnel/Monitoring Biologist Potential Responsibilities

Overall, duties of the Qualified Personnel may include but are not limited to:

- Monitoring wetland function and erosion control.
- Evaluating the accumulation of thatch and recommending removal if needed.
- Evaluating the presence of newly introduced non-native (exotic) plant species and recommending management, if needed.
- Conducting the Biological Inspection, collecting data on the Bank and preparing reports required by this Plan.
- Evaluating site conditions and recommending remedial action to the Bank Manager.
- Assisting in the review of or planning of restoration activities, use of the Bank for education, or other tasks such as grant proposals.

2.3 Changes in Personnel

If the Bank Manager or the Qualified Personnel are changed, the outgoing and incoming personnel will tour the Bank together, and the former will advise the latter of trends, problem areas, and any administrative difficulties.

2.4 Conservation Easement Holder

The Center for Natural Lands Management (**CNLM**) will be the Conservation Easement holder (or **Grantee**). CNLM is a non-profit organization, authorized to hold easements pursuant to CA civil code §815.3. As the Grantee, CNLM will monitor the Bank to ensure compliance with the terms and conditions of the Conservation Easement. Primary responsibilities will include:

- Prepare a baseline report documenting the condition of the Bank, land use and modifications from the natural conditions on site, and presence of roads, structures, or other man-made features on the property;
- Conduct a minimum of one site visit annually to document any readily observable changes from the conditions in the baseline report;
- Notify the land owner and Resource Agencies of any conditions that may be violations of the prohibited uses of the Conservation Easement; and
- Prepare an annual monitoring report submitted to the Resource Agencies by Jan. 31st each year.

3.0 RECREATION, EDUCATION, AND HABITAT RESTORATION

3.1 Educational Activities in the Bank

The Bank represents an opportunity to encourage a sense of ownership and respect for open space and wildlife habitat in local students and the community as a whole. Individuals or groups using the Bank for educational purposes will coordinate their use with the Bank Manager. If the educational activities will be passive in nature, such as an occasional walk through the Bank to discuss plants and animals of the Bank habitats, then the consent of the Bank Manager is sufficient. If active use (other than restoration activities) of the Bank is proposed, or regular, but passive use of the Bank is proposed, review and approval by the Resource Agencies is required. To avoid repeated inquiries with the Resource Agencies, a use plan could be developed by the interested organization for a one-time approval. See Section 3.4, below, for review and notification information on restoration activities.

3.2 Recreation

Recreation activities are not currently proposed to occur on the Bank. However, certain occasional passive activities such as birding, photography, or walking are allowed. Bird hunting is allowed upon the consent of the Bank Manager, and per all applicable state and federal laws, so long as spent shells are removed from the Bank. No motorized vehicles will be ridden, brought, used, or permitted on any portion of the Bank except as described in Section 7.9.

3.3 Community Clean-Up Days

As the Bank does not contain a named creek or waterway, and the property will remain in private ownership, community clean-up activities are not proposed on the Bank. The endowment funds will provide sufficient funds for the trash removal required on the Bank. Community involvement through educational utilization of the Bank is welcome, as described in Section 3.1.

3.4 Habitat Restoration/Enhancement

In the future, the Bank Manager or another group/organization may want to conduct habitat restoration or enhancement within the Bank. As discussed with the Resource Agencies during a field visit to Burke Ranch on April 27, 2007, creation of additional playa pools on site could expand the amount of available habitat for extremely rare species, including: conservancy fairy shrimp, delta green ground beetle, and breeding habitat for California tiger salamander. Other activities with the potential to occur on the site would include the removal of non-native (exotic) plant species (see Section 5.3.3), planting native plants (see Section 1.4.1), or other restoration activities. Prior to initiating any restoration or habitat enhancement program on the Bank, WES

would coordinate with all appropriate resource agencies to assess the viability and appropriateness of such actions.

Restoration activities that involve work in wetlands or waters of the U.S. may require a permit under Section 404 of the Clean Water Act, and/or a Streambed Alteration Agreement from the CDFG. Nationwide Permit (NWP) 27, *Stream and Wetland Restoration Activities*, is available from the Corps for these types of activities. Coordination and permitting from the Resource Agencies may be necessary if direct or indirect impacts could occur to the vernal pools. The Bank Manager will not need to notify the Resource Agencies if restoration activities do not require a permit; however, these activities will be reviewed by the Monitoring Biologist and will be described in the Annual Report. If there is a question regarding whether a restoration activity will require a permit, the Bank Manager will seek guidance from the Resource Agencies.

4.0 RESOURCE AGENCY NOTIFICATION

Per this Plan, the Resource Agencies will be notified when certain management and maintenance activities are undertaken within the Bank. It is also recognized that the Bank Manager needs to be able to carry out management and maintenance activities in a timely and responsive manner. Therefore the following notification requirements have been defined:

4.1 No Notification Required

If an activity in this Plan does not have a specific requirement for notification, is not a Prohibited Activity (see Section 7.0), or review and approval or a permit is not required, then no notification is required. If an activity was not anticipated by this Plan, and therefore is not mentioned, Resource Agency review and approval is required.

4.2 Notification

For those activities noted in this Plan as requiring Resource Agency notification, the following action will be taken. All efforts will be made to outline the activities for the coming year in the annual letter report, which is submitted by December 31st of each calendar year. If this is not possible, then the Bank Manager will submit a separate letter to the Resource Agencies. Either will include a written description of the activity, including when the activity will take place and what methodology will be used, as well as a map showing what areas will be targeted. The Resource Agencies will have 30 days to contact the Bank Manager in response to the written letter to discuss the activities. Notification will be made either by fax, email, registered mail, or overnight transmittal. For activities requiring notification from the Resource Agencies, the Grantee will be provided notification, in the same format as the Resource Agencies (i.e., annual report or separate letter), within 5 (five) days of notification of the Resource Agencies. The Grantee will have the right to provide comments to the Resource Agencies and the Property Manager as to the potential effects the proposed action may have on the Conservation Easement and on the Grantee's ability to monitor the conditions of the Conservation Easement area. The Grantee will be provided notification of the Resource Agencies' decision.

4.3 Review and Approval

For those activities noted in this Plan as requiring review and approval from the Resource Agencies, the following action will be taken. All efforts will be made to outline the activities for the coming year in the annual letter report, which is submitted by December 31st of each calendar year. If this is not possible, then the Bank Manager will submit a separate letter to the Resource Agencies. Either will include a written description of the activity, including when the activity will

take place and what methodology will be used, as well as a map showing what areas will be targeted. The Resource Agencies will have 60 days to review, discuss, and approve the activity. For these activities, the approval from the Resource Agencies must be written. Submittal of activities for review and approval as well as written approval back from the Resource Agencies will be made either by fax, email, registered mail, or overnight transmittal. For activities requiring review and approval from the Resource Agencies, the Grantee will be provided notification, in the same format as the Resource Agencies (i.e., annual report or separate letter), within 5 (five) days of notification of the Resource Agencies. The Grantee will have the right to provide comments to the Resource Agencies and the Property Manager as to the potential effects the proposed action may have on the Conservation Easement and on the Grantee's ability to monitor the conditions of the Conservation Easement area. The Grantee will be provided notification of the Resource Agencies' decision.

4.4 Activities Requiring a Permit

Some of the activities mentioned in this plan have the potential to "impact" wetlands or waters of the U.S. The term "loss of waters of the U.S.", which is the closest term defined in the Federal Register to "impact" is defined on page 2094 of the Federal Register, Volume 67, No. 10/Tuesday, January 15, 2002/Notices, as follows:

Waters of the U.S. that include the filled area and other waters that are permanently adversely affected by flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent abovegrade, at-grade, or below-grade fills that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the U.S. is the threshold measurement of the impact to the existing waters for determining whether a project may qualify for a NWP; it is not a net threshold calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and values. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the U.S. temporarily filled, flooded, excavated, or drained, but restored to preconstruction contours or elevations after construction, are not included in the acreage or linear foot measurements of loss of waters of the U.S. or loss of stream bed, for the purposes of determining compliance with the threshold limits of the NWPs.

The purpose of this section is to clarify, that while this Plan may call out the maintenance activities as allowed in the Preserve, impacts could result in the need for additional authorization (permit) under Section 404 of the Federal Clean Water Act or Section 1602 of California's Fish and Game Code. Also, if a

project will not result in the permanent loss of wetlands or waters of the U.S., only temporary loss or "impact", a permit is still required. There are several Nationwide Permits (Nationwide Permits, are permits for activities resulting in the loss of less than 0.50 acre of wetlands or waters of the U.S.) currently available for maintenance activities. These are *NWP 3, Maintenance*; *NWP 7, Outfall Structures and Maintenance*; *NWP 12, Utility Line Activities*; and *NWP 31, Maintenance of Existing Flood Control Facilities*. Specific maintenance activities may also qualify for the Clean Water Act Section 404(f) exemption for maintenance. If there is a question regarding whether a maintenance activity will require a Corps permit, the Bank Manager should seek guidance from the Corps.

For activities requiring a permit, the Grantee will be provided notification within 5 (five) days of notification of the Resource Agencies. The Grantee will have the right to provide comments to the Resource Agencies and the Property Manager as to the potential effects the proposed action may have on the Conservation Easement and on the Grantee's ability to monitor the conditions of the Conservation Easement area. The Grantee will be provided notification of the Resource Agencies' decision.

4.5 Emergency Situations

Should an emergency situation arise that requires immediate action in an upland area, and would normally require that the Resource Agencies be notified or have review and approval authority, the Resource Agencies will be notified verbally within forty-eight (48) hours of taking the action, with written confirmation of the actions taken within one (1) week. The Grantee will also receive written notification within one (1) week. In these situations, "emergency" is a situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship.

Should and emergency situation arise that requires immediate action in a wetland or waters of the U.S., but would normally require that a permit be obtained from the Corps, the following applies as stated in the Code of Federal Regulations, Title 33, Chapter II, Part 325, Section 325.2 – Processing of Applications:

Emergency procedures – Division engineers are authorized to approve special processing procedures in emergency situations. An "emergency" is a situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unseen, and significant hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures.

Any Corps permitting associated with emergency procedures would trigger Service involvement to address potential impacts to federally-listed species.

5.0 LONG TERM MANAGEMENT OF THE BANK

5.1 Adaptive Management

In preparing a management plan for habitat to be preserved in perpetuity, it must be acknowledged that there will undoubtedly be future developments in habitat and species management that may affect how the Plan Goal is met. This Plan can only provide guidance for adopting new technologies or practices as they are developed. Ultimately, the Bank Manager in coordination with the Monitoring Biologist, and the Resource Agencies, must determine the appropriate management decision for a given situation. The following management strategies, approved uses, and restrictions are intended to provide a framework for the long-term management and operation of the Bank. Before considering any management action, the Bank Manager must consider the Plan Goal, which is to ensure that the protected wetland and upland habitats within the Preserve are maintained in good condition such that they will continue to support the flora and fauna in perpetuity. Furthermore, this Plan cannot anticipate all possible site conditions. Therefore, if a condition arises which is not specifically addressed by this plan, the Bank Manager may, upon review and approval by the Resource Agencies, adopt techniques not described here.

Adaptive management practices for the Bank will most likely be triggered for changes in biological functions which can be affected by management or maintenance actions. Therefore, it is critical to establish thresholds related to habitat function or species occurrence which will trigger the need for changes in management practices. The Bank has been established primarily for the long-term conservation of state and/or federally-listed threatened and endangered vernal pool invertebrates and California tiger salamander. Existing and proposed baseline surveys identify the level of current species presence/use of site. Future monitoring will assess the ongoing presence of these species and measures to improve the long-term viability of habitat for this species on site. Monitoring from 2007 to 2011 documented the presence of non-native predatory species in the California tiger salamander breeding pools. A supplemental program to assess the location and vector source of the population of these predators, and identify measures to exclude these species, has been included in Attachment E. Significant changes in habitat or species utilization will trigger adjustments in land management or adaptive management practices.

Exhibit D of the Burke Ranch Conservation Bank Agreement provides the technical reports conducted in 2007. As described in the monitoring methodologies (**Attachment B**), supplemental biological baseline surveys will be conducted for several years following bank approval. Using the data gathered

during the baseline surveys, species presence trends will be identified and specific management thresholds will be identified. Updated survey results, and any revisions to the monitoring methodologies including these proposed thresholds, will be provided to the Resource Agencies in the annual monitoring reports (Section 9.0).

5.2 Bank Management During Project Construction or Adjacent Construction

No construction is currently proposed on the Bank. However, habitat enhancement or restoration could occur on the Bank in the future. Should habitat restoration or enhancement occur on the Bank, it would likely entail excavation of wetlands in or adjacent to existing wetlands on site. A comprehensive design plan would be prepared, including measures to avoid, minimize, and mitigate impacts to existing resources on the Bank. Should any habitat modifications be proposed on the Bank, an analysis will be prepared evaluating the potential effects on covered species at the bank. WES would coordinate with the Resource Agencies to review any proposed plans and to acquire the appropriate permits for this process and approval for any action including but not limited to tree planting, that could be detrimental to credited species at the Bank.

5.3 Bank Management Activities and Guidelines

WES is responsible for the long-term operations and management of the Bank. The primary management objective for the Bank is protecting the habitat value of the listed species on site and their associated habitats. WES will record a conservation easement over the 962.14 acre Bank and will establish an endowment fund (see Section 10.0) to finance the protection and management of the Bank in perpetuity. Long-term management actions include general site maintenance, vegetation management, and adaptive management.

The following outlines management and maintenance activities that are allowed within the Bank.

5.3.1 Authorized Access

The intent of the Bank is to maintain the habitats of these areas in perpetuity. Access to the Bank for maintenance activities is allowed. Pedestrian access to the Bank will be discouraged through fencing, gates, and signage, outreach activities, and education of adjacent landowners. Utility companies will have access to the Bank, but only within the designated easement areas. Access to the Bank in emergency or law enforcement situations, by medical, fire or law enforcement personnel or vehicles is

allowed. Supervised access to the Bank for educational or habitat restoration activities is allowed (See Section 3.0).

5.3.2 Thatch Management

Historically, grassland habitats burned periodically due to the occasional wildfire. These fires would burn dead plant material, or thatch, keeping it from building up. In addition, native ungulates, and later cattle, have inhabited these grasslands. The grazing and trampling action of these animals further reduces the amount of thatch as well. In preserves such as the Bank, thatch has an opportunity to build up if not exposed to fires or grazing. The buildup of thatch can be detrimental to the Bank habitats, especially vernal pools and seasonal wetlands (Barry 1996). During one of the two biological surveys (as discussed below in Section 9.3), the Monitoring Biologist will make a determination as to the extent of thatch accumulation and if it is adversely impacting the Bank habitats. Methods to determine the effect of thatch buildup are defined in the biological monitoring methodologies (**Attachment B**).

Three current methods for managing thatch are outlined below:

5.3.2.1 Grazing

The Bank has historically been and is actively now grazed. The Ronayne Family grazed the property consistently from 2000 through 2007, using a density of one cow/calf pair for every 6-7 acres of land. This has retained an acceptable level of residual dry matter (**RDM**; a standard grazing measure) on the Bank. Surveys of the property indicated the grazing has maintained the integrity of existing vernal pools and there do not appear to be areas dominated by yellow star thistle (*Centaurea solstitialis*) or Medusa head (*Taeniatherum caput-medusae*). Judging by the consistent presence of vernal pool resources on the Bank, as documented in the 1999 and 2007 biological surveys (see CBA Exhibit D.2.b and D.2.f). Grazing appears to be compatible with vernal pool landscape maintenance on the Bank, and will be the primary means of thatch management.

WES will continue to graze the site with the primary goal of maintaining or enhancing the health and ecology of the vernal pool complexes. Grazing will serve to reduce annual vegetation biomass in both wetland and upland areas. This will ultimately reduce the amount of thatch in the grasslands during summer and autumn, which will lessen, but not eliminate, the risk of unplanned grass fires. Livestock may also be employed in targeted areas to effectively remove unwanted vegetation. A draft grazing strategy based upon the existing land management

practices has been included as **Attachment C**. Following completion of the baseline surveys in 2008, this plan will be updated by December 31, 2008 and will replace the existing grazing plan. The grazing plan will be evaluated every 5 years based upon site experience and the best available scientific practices, and updates to the grazing plan will be provided in the annual report for that year.

5.3.2.2 Mowing

Another method to remove thatch is the mechanical mowing of the site. In order for mowing to be effective for thatch removal, the cut material would need to be removed from the site. In addition, the mowing regime should be timed in order to minimize the invasion of non-native weedy upland species, particularly yellow star thistle. To date, little research has been conducted on mowing for thatch management. However, mowing would be expected to be effective for thatch management and could be a realistic management practice for portions of the Bank. As mowing is a highly labor intensive process, this process would likely be utilized in areas where ruderal, invasive species have a high potential for occurrence. If necessary, it is anticipated that such mowing practices would be conducted only within limited areas of the site, primarily near Burke Lane or where dense stands of invasive species are documented, and would be needed, at the most, once every three years.

Mowing does have a positive benefit for burrowing owl, as the reduced cover around burrows aids in predator avoidance. Mowing or use of a string trimmer may be employed around known burrow locations, making sure to avoid direct impacts to the burrows or nesting individuals. To the extent feasible, mowing will be avoided where other species of ground-nesting birds are detected.

5.3.2.3 Controlled Burns

Controlled burning is the most efficient method to eliminate accumulated plant matter and reduce cover of non-native annual grasses (Pollak and Kan 1996). However, planning and implementation of a burn program is a complex process requiring intensive input from local agencies and fire department(s). The Bank is located within the Sacramento Valley Air Basin, and controlled burns would be subject to regulations of both the air basin management plan and the Solano County Air Pollution Control District (**District**). Due to recent air quality regulations, permits to conduct controlled burns have become increasingly difficult to obtain. In addition, as the location of the Bank is directly within the aircraft landing approach path for Travis Air Force Base, it is likely that the military would raise objections to the smoke generated from a controlled burn. Therefore, it is

unlikely that WES would pursue this option. However, should the CalFire or another government organization elect to pursue a controlled burn on the Bank, the land manager will coordinate as necessary to assist in developing and implementing this process.

5.3.3 Non-native Plant Species Management

The vernal pool and grassland complex on the Bank supports several native, endemic species. Additionally, the site currently functions with a number of naturalized exotic species such as soft chess, wild oats, ripgut brome, and perennial rye. Due to the predominance of these exotic species on the Bank as well as the surrounding grasslands, management of non-native plants will therefore be limited to newly introduced exotic pest plants and controlling the spread of existing pest plants that would threaten Conservation Values on the Bank. As discussed in Section 1.4.3, the Monitoring Biologist and Bank Manager can refer to species identified on the Cal-IPC "Lists" to determine which species should be given priority for management.

The Bank Manager will look for target management species during the General Inspections; in addition, the Monitoring Biologist will assess the presence of any newly introduced exotic pest plant species during the Biological Inspections and recommend removal as needed. Supplemental information may also be gathered by the Bank Manager during the General Inspections. Three methods of removing or controlling these species are outlined below:

5.3.3.1 Hand/Mechanical Removal

Hand removal, including use of small hand powered or handheld equipment (e.g., string trimmer) will be the preferred method of removing exotic pest plant species from the Bank. If hand removal methods are tried and found to be ineffective, or the problem is too widespread for hand removal to be practical, then mechanical methods (use of larger equipment with motors such as mowers) or biological controls as described below can be implemented. The Bank Manager does not need to notify the Resource Agencies if removal will be done by hand, hand held equipment, or with a mower. Resource Agency approval will be required if large equipment other than a mower is to be used for pest plant removal.

5.3.3.2 Biological Controls

Biological controls are natural parasites, predators, or pathogens that are released to combat non-native species. For example, there are several natural enemies of yellow star thistle that have been introduced from Europe to act as biological controls against this invasive species. The

insects begin life within the seed head of the flower and develop there, feeding on the seed. Biological controls should be used with caution and only after contact with the Solano County Agricultural Commissioners Office. If biological control methods are proposed for use on the Bank, approval by the Resource Agencies is required.

5.3.3.3 Use of Herbicides for Non-Native/Exotic Pest Plant Management

Herbicides can be used for the management of some non-native invasive plant species. Hand or mechanical removal should be the first choice for all non-native species removal. While herbicides can be potentially harmful, invasive species can be extremely detrimental to native habitats. The use of chemicals should be considered carefully and the most recent research regarding the appropriate herbicide for the target plant should be consulted.

Herbicides use will be under the direction of a licensed pest control advisor at the appropriate time of year. Herbicides must be applied according to the label, in accordance with applicable federal, state, and local laws. Herbicide use, if needed would likely be focused in the immediate vicinity of Burke Lane and other areas where ruderal, invasive species have a greater opportunity to take hold. No herbicides will be used within 25 feet of vernal pools or seasonal wetland habitat. Any actions taken will be described in the Annual Report.

5.3.4 Tree Removal

Eucalyptus trees are located in a three main patches and a few isolated occurrences on the Bank. These trees serve as nesting locations for several raptor species including American kestrel (*Falco sparverius*), Red-tailed hawk (*Buteo jamaicensis*), and Swainson's hawk. Unless trees are diseased or pose a threat to infrastructure on the site, trees will not be removed from the Bank. However, there are allowances in the language of the existing easements on the site for tree trimming or removal as determined by the easement holder. WES will work with the utility companies to review any management actions which could affect these raptor nesting locations on site. Mitigation by the utility companies will be provided for any intentional removal of nesting trees.

5.3.5 Altered Hydrology

The hydrology of the Bank is directly fed by precipitation and related surface flows. No actions are proposed to affect the hydrology on site. The Hay Road landfill has been in operation since 1964, and the runoff is directed north and away from the Bank. Adjacent lands are preserved or grazed similar to the Bank. The Bank Manager will take steps to prevent landowners or adjacent developments adjoining the Bank from directing the flow of

drainage, landscaping, or storm water runoff from their property onto the Bank.

5.3.6 Mosquito Control

Vernal pools are not considered mosquito breeding habitat due to their seasonal nature. Most pools generally dry during the mosquito dormant season. For this reason, a mosquito control plan is not needed.

5.3.7 Landowner Liaison

The Bank Manager will be responsible for informing residents whose property adjoins the Bank if they are engaging in activities that are counter to the conservation goals of the Conservation Easement.

5.3.8 Trash Removal

Upon establishment of the Bank, WES will remove all debris on the Bank. This includes all materials detected during the Phase I Environmental Assessment (Burke Ranch CBA Exhibit H) in the central portion of the Bank. These materials will be disposed of at an appropriate waste collection site.

Due to the limited access to the Bank, and the absence of public roads adjacent to the Bank boundary, it is not anticipated there will be much trash accumulation on the site. The landfill has measures in place to prevent airborne debris from exiting their property, and will remove litter from the Bank when exceptions occur. The Bank Manager will remove accumulations of any other trash and other unwanted debris from the Bank as needed.

6.0 LONG TERM MAINTENANCE OF STRUCTURES AND IMPROVEMENTS

The following paragraphs outline the allowed maintenance of features and improvements present within the Bank. **If maintenance or replacement activities associated with these features will impact the vernal pools or seasonal wetlands on the Bank, the Resource Agencies and Corps will be notified and any appropriate permits will be obtained (see Section 4.4).** If these wetlands will not be impacted by maintenance or replacement of any of these features or improvements, then the Bank Manager will review the activity plans to ensure disturbance to biological resources are minimized. The Resource Agencies will not have to be notified. These activities will be described in the annual letter report. In addition, disturbed areas will be restored (see Section 8.0).

6.1 Fencing, Signage and Gates

6.1.1 Fencing and Signage

The entire perimeter of the Bank will be fenced to allow grazing of the site and deter unauthorized public access. Fencing currently exists along all but the northern third of the western property boundary. Within 120 days of recording a conservation easement on the Bank, the existing fence was repaired or replaced as needed, and the unfenced portion of the Bank was fenced in a manner consistent with the remainder of the site. Signage will be installed along the perimeter to inform the public of the presence of the Bank. The Bank Manager will be responsible for the maintenance and replacement of the fencing and signage.

Temporary electric fencing may be used on site to partition the property for rotational grazing.

6.1.2 Gates

Following vacation of the portion of Burke Lane within the Bank by Solano County, a reinforced metal gate was installed across the road at the northern edge of the Bank. The Bank Manager will be responsible for the maintenance of authorized gate(s) into the Bank, and for keeping them locked. No other gates are authorized for access into the Bank. The Bank Manager will be responsible for notifying any party that has installed an unauthorized gate into the Bank and ensuring its removal and replacement with the appropriate fencing.

6.2 Utility Easements

Several utility easements occur on the Bank (**Figure 7**), including utility vehicle access along Burke Lane, a high voltage above-ground transmission line, an underground natural gas pipeline, and two underground water conveyance

pipelines. These easements have been mapped and their affects on the resources on site have been described in Exhibit G of the Burke Ranch Conservation Bank Agreement. It is anticipated that these easements will receive infrequent, sporadic use by the maintenance personnel from the utility districts for monitoring and inspecting the pipelines and transmission lines. However, Burke Lane will continue to be maintained as a gravel road per the County's easement upon vacating their interest in the existing road.

6.3 Maintenance Vehicle Access Roads

There are currently vehicle access tracks, in several locations across the property, including along many of the existing easements. These two-track vehicle paths are infrequently used, and some have become lightly vegetated. These access paths will continue to be used as necessary during the General Inspection and the Biological Monitoring site visits to minimize biological impacts across the site.

6.4 Management Facilities

As previously stated, no facilities or structures occur on the Bank at the time of preparation of this Plan. Any proposed facilities will be temporary in nature, and occur within the designated Management Facilities Location (Figure 6).

6.5 Fire Breaks

Firebreaks will not occur on the perimeter of the Bank, as the Bank is not adjacent to developments or other landscapes which pose a fire danger. If a firebreak is required, mowing or grazing is the preferred alternative. Use of disking or other method of fire break installation will require coordination and approval of the Resource Agencies.

6.6 Wells

The Phase I Environmental Assessment (Burke Ranch CBA - Exhibit H) indicates that one abandoned old water supply well, and two historic abandoned water supply wells occur on the Bank. All three wells have been capped or crimped shut to prevent injury to grazing cattle and impacts to wildlife through entrapment. It may be necessary to provide a permanent water source on the Bank other than vernal pools to support grazing operations. If it is determined that a well would be necessary a new well will be established near an abandoned well or an abandoned well will be refurbished and returned to functionality if possible.

6.7 California Tiger Salamander Predator Avoidance Measures

The “Predator Management Measures for Burke Ranch California Tiger Salamander Breeding Ponds” (Attachment E) describes the need for supplemental measure to investigate the occurrences and path of introduction of non-native predatory species detected in the California tiger salamander breeding pools. Should a source location for be detected, and effective measures be identified to preclude access for these predatory species (e.g., installation of exclusion fencing), a plan for installation, monitoring, and maintenance will be developed and implemented following approval by the Resource Agencies and acquisition of any required permits.

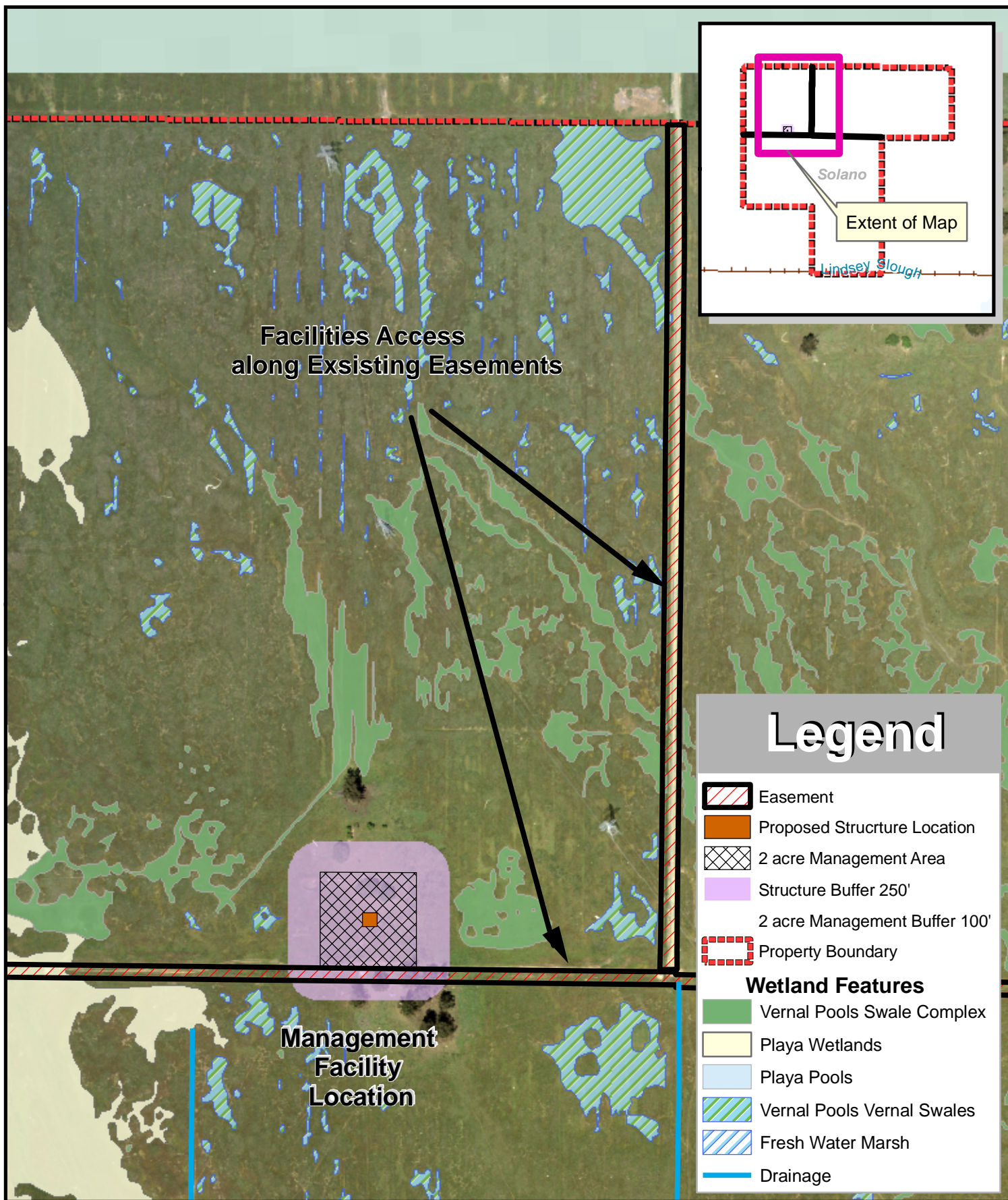


Figure 6: Burke Ranch Management Facilities Location



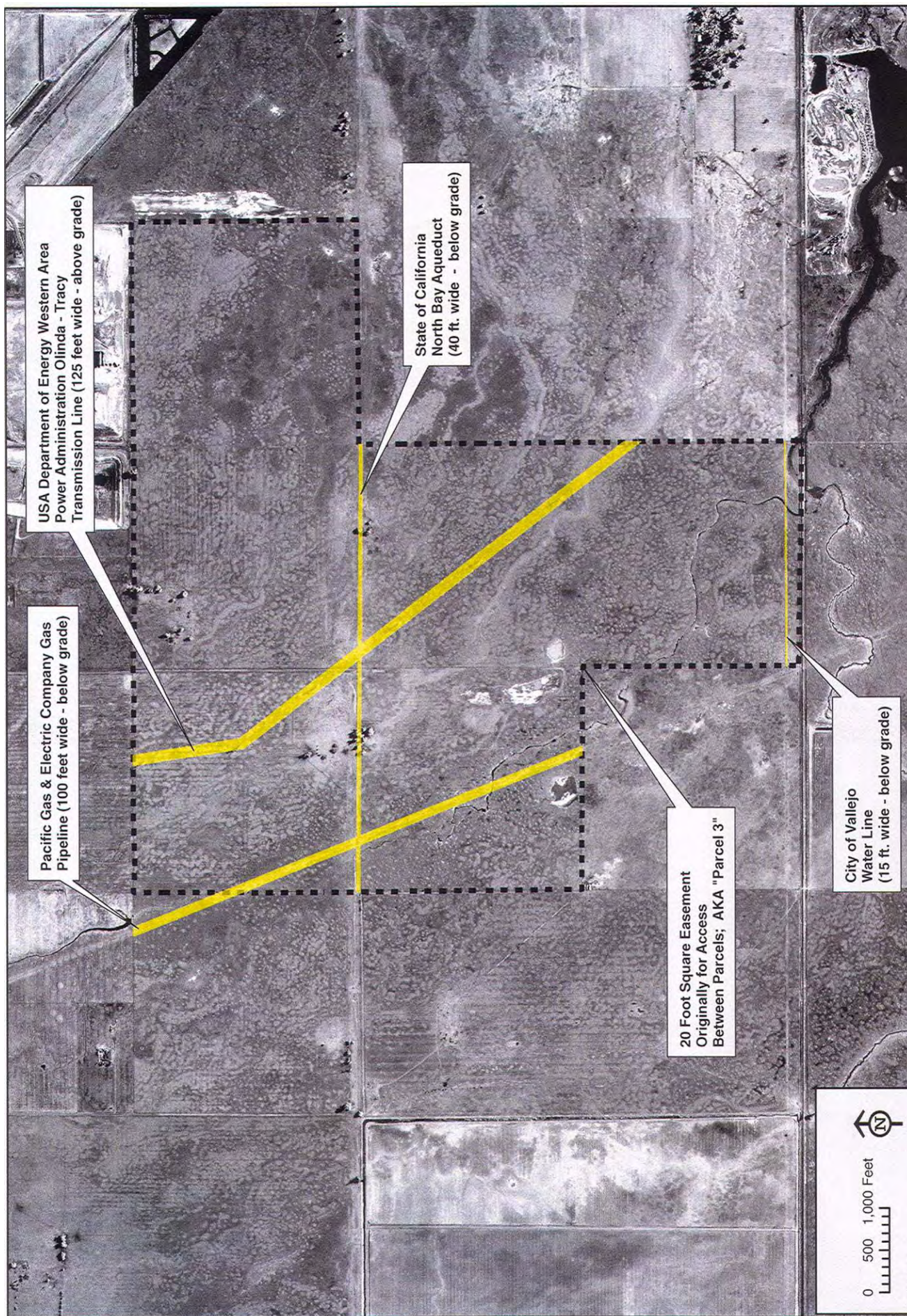


Figure 7: Burke Ranch Conservation Bank Utility Easements

Panchromatic Satellite Imagery Source: Space Imaging, Thornton, Colorado Date Acquired: 02-04-2001

7.0 PROHIBITED ACTIVITIES WITHIN THE BANK

This section outlines the restrictions on activities that can take place in the Bank. The Conservation Easement also defines prohibited activities that may include, but would not be limited, to those defined in the Plan. **It is understood that the following activities are prohibited, except as permitted within the management plan or approved through the notification process (Section 4.0). Additionally, if any of these activities must be undertaken due to special circumstances, they will be reviewed and approved by the Resource Agencies on a case-by-case basis.**

7.1 Access to the Bank

The intent of the Bank is to maintain on-site native habitats in perpetuity. Limiting access to the Bank will aid in furthering this goal. Unauthorized access to the Bank will be discouraged through fencing and signage. See Section 3.0 and 5.3.1 for descriptions of authorized access. All other access to the Bank is prohibited.

7.2 Vegetation Removal

No killing, removal, or alteration of any existing native vegetation will be allowed in the Bank except as described in this Plan.

7.3 Burning and Dumping

No burning or dumping of rubbish, garbage or any other wastes or fill materials will be allowed in the Bank. The foregoing prohibition will not be interpreted to prohibit controlled burning as a method of thatch management.

7.4 Disking

No disking will occur on the Bank property.

7.5 Additional Roads, Trails, Benches and Utility Lines

Roads, trails, benches and utility lines not called out in this Plan will not be allowed in the Bank without approval from the Resource Agencies.

7.6 Equipment or Fuel Storage

Equipment and fuel storage will occur at least 250 feet away from any wetlands on site.

7.7 Topography

Topographic alterations as necessary for structures may occur within the Management Facility Location. Otherwise, unless areas become disturbed and

require restoration (see Section 8.1), or are approved for habitat enhancement, no alteration may be made to the topography of the Bank. This includes leveling or grading. No exploration, development, or extraction of oil, gas or minerals may be made from the Bank.

7.8 Pesticides and Chemical Agents

Except as needed for management of the habitat as outlined in this Plan or as approved by the Resource Agencies, there will be no use of any pesticides, fungicides, insecticides or any other chemical agents used to kill or suppress plants, animals, or fungi in the Bank.

7.9 Motor Vehicle Use

No motorized vehicles will be ridden, brought, used, or permitted on any portion of the Bank with the exception of the following: motorized vehicular use will be restricted to that required for Bank management; maintenance and monitoring purposes; as described for utility maintenance and replacement within the existing easements on site; and for emergency or law enforcement situations requiring access by medical, fire or law enforcement vehicles.

7.10 Construction

No construction will be allowed in the Bank with the exception of the activities mentioned in this Plan.

7.11 Non-native Plants

Non-native grass seed may be included in the seed mix used for erosion control following restoration activities (see Section 8.0). No other planting of non-native species will occur within the Bank. No invasive, non-native plants will be planted in the Bank.

8.0 REMEDIATION/RESTORATION ACTIVITIES

8.1 Post-Construction Remediation/Restoration

The replacement or improvement of existing structures (e.g., fencing) in the Bank may require post-construction restoration. Post-construction restoration is defined as hydroseeding areas of the Bank that were disturbed by equipment, restoring the original grade where the intent was not to alter it, cleaning up construction debris, and generally reverting the area back to pre-construction conditions. Hydroseeding may utilize both native and naturalized grasses; the intention is to re-introduce native grass species while rapidly stabilizing the soil with quick-growing species to preventing runoff into vernal pools.

8.2 Restoration Provisions for Potential Conservation Easement Violations/Vandalism

Conservation easement violations are not anticipated to occur at the Bank. However, the following table outlines some potential violations and mitigation guidelines (**Table 1**). This table has been prepared to address the most likely types of disturbance and remediation measures that would be implemented for each violation. If a particular situation is not addressed in this table, that does not mean that restoration is not required. In these cases, determining an appropriate mitigation measure will be at the discretion of the Bank Manager in coordination with the Resource Agencies.

Table 1. Remediation Guidelines for the Bank

Type of Disturbance	Mitigation Guideline
Disturbance of Grassy Upland Areas	Restoration of grassy upland areas due to disturbance resulting in bare ground will include seeding the area with native and naturalized grass seed and implementing the proper erosion control measures until bare ground becomes vegetated.
Wetlands/Waters of the U.S.	Restoration for fill/loss of Waters of the U.S. will result in the removal of fill from the feature, potentially the minor re-grading and revegetation of the feature (if appropriate) and monitoring for at least two seasons to gauge the feature's recovery. The Bank Manager will contact the Resource Agencies if fill/loss of wetlands has occurred and submit for review and approval what remediation/restoration is

	proposed (see Section 4.0). While the normal time period for the Corps to review and approve an action is 60 days, the Corps will make every effort to respond in a timely manner to requests regarding these wetlands so that restoration can be implemented at the appropriate time of year (e.g. before the rainy season).
Fencing	Restoration for the destruction or modification (e.g., installing an unauthorized gate) of Bank fencing will include fixing or replacing the section of fencing to its original specifications.
Structures, Landscaping, Other Improvements, etc.	Any unauthorized structure, landscaping, or other improvement will be removed from the Bank. If any native habitats are disturbed, mitigation will be required using the above mitigation measures as guidelines.

8.3 Timing/Process for Corrective Actions

Minor corrective measures not requiring notification or approval of the Resource Agencies (e.g., prevention of unexpected runoff, prevention of unauthorized access to the area by placing locks on gates, etc.) will be carried out by the Bank Manager within sixty (60) days of identification of the problem, unless site conditions warrant delay (i.e., if soil is saturated and equipment would damage the upland habitat in the Bank, it may be necessary to delay work until conditions improve). All other corrective actions will take place when conditions are best suited for restoration to occur, and after the Resource Agencies has been notified or the Bank Manager has received approval.

9.0 BANK INSPECTIONS AND REPORTING

9.1 Schedule

The monitoring/inspections described below are long-term activities to be carried out in perpetuity. The schedule of inspections for the Bank in all monitoring years is as follows:

- The Monitoring Biologist will conduct two Biological Inspections each year, in perpetuity; one in April or May and one in September.
- The Bank Manager will conduct (at minimum) two General Inspections each year, in perpetuity; one in January and one in July.
- The Conservation Easement Grantee will conduct a minimum of one inspection each year, in perpetuity, to verify compliance with the Conservation Easement.

9.2 General Inspections

The Bank Manager will arrange for the General Inspections to occur at a frequency and duration that adequately monitors the integrity of the Bank. Inspections will concentrate on an evaluation of the following factors: erosion, fire hazard reduction, fencing integrity, condition of signage, trash accumulation, and evidence of unauthorized use by motor vehicles. General inspection surveys will include the entire perimeter of Bank and meandering transects through the interior of the bank. An inspection report will be prepared upon the completion of the General Inspection survey. Previous inspection reports will be reviewed before each visit to determine if there are potential trouble spots or recurring problem areas. If any problems are identified, more frequent inspections will be done to closely track if the problem is a reoccurring issue and whether remedial actions are effective. Evaluation and corrective actions for each factor are described below:

9.2.1 Erosion

If it is determined during the inspection that adjacent sheet-flow drainage is causing any erosion or other adverse effects upon the Bank, standard erosion control measures will immediately be implemented. If any significant erosion problems occur (i.e., greater than what can be controlled with standard erosion control measures), the Resource Agencies will be notified and a qualified erosion control specialist will be consulted.

9.2.2 Fire Hazard Reduction

If at any time conditions at the Bank become a fire hazard, the Bank Manager will work with the Resource Agencies and the local fire authorities to determine the best method to reduce the fire risk at the Bank.

9.2.3 Fencing and Signage

The condition of the fencing, gate, and signage at the Bank will be checked during the General Inspection. The Bank Manager will be responsible for maintaining the fencing and signage at the Bank.

9.2.4 Trash Accumulation

The Bank Manager will arrange for the removal of trash from the Bank.

9.2.5 Unauthorized Motor Vehicle Use

The perimeter of the Bank will be inspected for evidence of unauthorized motor vehicle use/access. If necessary, corrective actions such as repairing locks and gates will be taken.

9.3 Biological Inspections

In managing the Bank, measures must be taken to ensure that the existing or enhanced conditions are maintained over the long term to realize the goals of the conservation bank. Inspections by a qualified biologist will help ensure the long-term integrity of the wetland and upland habitats.

The Biological Inspection of the Bank will be conducted by the Monitoring Biologist in order to monitor habitat function, thatch accumulation, newly introduced exotic species, and overall Bank function. The entire perimeter of the Bank should be covered, as well as meandering transects through its interior. The goal of these surveys is to ensure that the various habitat types are maintained in perpetuity. The first inspection is intended assess the various wetland habitats during the floristic season. The second will be focused upland habitats, problem areas, and assessing the success of remediation activities, if applicable. Although each of these surveys has a focus, all aspects of the Bank will be reviewed during each visit.

9.3.1 Habitat Function

The purpose of assessing habitat function is to ensure that the preserved vernal pool and upland habitats are continuing to maintain diversity and richness, the habitats on site continue to support the special-status for which the Bank was designed, monitor the effectiveness of management activities, and monitor anthropogenic influences on the different habitats.

Monitoring methodologies have been included as **Attachment B**. This plan will be evaluated following the supplemental baseline conditions in 2008 and updated every 5 years based upon site experience and the most current, best available scientific practices.

9.3.2 Thatch Accumulation

The Monitoring Biologist work with the Bank Manager to make an annual determination as to the extent of thatch accumulation using an RDM assessment (Attachment C). If excess thatch is present, the monitoring biologist will work with the Bank Manager to determine the best reduction/removal practice for the site. Several management practices can be used to address this issue including controlled burning, mowing, or grazing as described previously.

9.3.3 Newly Introduced Non-Native Plant Species

The biologist will assess the presence of any newly introduced or increasing populations of non-native plant species and recommend corrective actions as needed. Special attention will be paid to exotic pest plants.

9.3.4 Bank Function

The overall Bank function should be assessed, taking into account the above factors and the purpose of the Bank, which is to support the flora and fauna of the wetlands and uplands in perpetuity.

9.4 Conservation Easement Monitoring

As described in Section 2.4, the Center for Natural Lands Management will be the Grantee. The Grantee will conduct a minimum of one site visit per year to verify the conditions of the Bank and monitor compliance with the Conservation Easement and this Plan. Methods may include, but would not be limited to: visual inspection of the site, photo documentation, or personnel interviews. The Grantee will be responsible for reviewing this Plan, as well as any amendments to this plan or notification provided during the previous calendar year, prior to the site visit. The Grantee will document any observations regarding the property which may be violations of the prohibited activities of the Conservation Easement; the Resource Agencies will be responsible for ensuring compliance with this Management Plan through methods which may include, but are not limited to: review of the annual management reports submitted by the Bank Manager, site visits, and discussions with the Grantee. The Grantee will have the additional right, but not obligation, to assess, document, and notify the Resource Agencies of any potential violations of the Management Plan and/or the prohibited activities contained herein. The methods and intensity to which the Grantee assesses compliance with the conditions of the Management Plan are at the discretion of the Grantee. An annual report of the conditions of compliance with the Conservation Easement will be prepared by the Grantee and submitted to the Resource Agencies by January 31st of the following year. The Grantee may inspect and monitor the condition of the Bank at any time.

However, unless an emergency exists, 48-hour prior notice to the Bank Manager will be normally given.

9.5 Agency Monitoring/Inspection

The Resource Agencies may inspect and monitor the condition of the Bank at any time. However, unless an emergency exists, 48-hour prior notice to the Bank Manager will be normally given.

9.6 Annual Reporting Requirements

The Monitoring Biologist will prepare an Annual Report in conjunction with the Bank Manager, which will be submitted to the Resource Agencies by December 31 of each year. That report will include, at minimum: a map of the Bank; photos documenting the status of the Bank; a description of proposed activities and maintenance or management actions as required by this Plan; a description of actions for which Resource Agency notification or approval was not needed, but were carried out during the year; observations from the Biological Inspections; and recommendations for altered management practices as needed. Annual reporting will be provided to the Resource Agencies and to the Grantee annually, in perpetuity. The results of comprehensive species monitoring, conducted every 5 years per the Resource Agencies defined protocol, will be included in that year's Annual Report.

10.0 BANK OWNERSHIP AND FUNDING MECHANISM

10.1 Owner

The Bank will be owned and all operations and management will occur by WES.

10.2 Funding Mechanism

10.2.1 Endowment Fund

The annual cost of monitoring described in this Plan will be funded through the interest generated on an endowment fund (**Endowment Fund**). The value of the Endowment Fund is based upon a cost analysis for this Plan to manage the Bank in perpetuity (**Attachment D**). The accrued interest and earnings from the Endowment Fund will be used exclusively to fund the permanent management and long-term maintenance of the Bank. Based on calculations of the required efforts and capital costs, the value of the Endowment Fund should be \$976,661. However, an Endowment Deposit for \$1,040,491 was made on 8/21/2008; this amount is required to be maintained as permanently restricted in perpetuity. Therefore, the final Endowment Fund amount will be considered \$1,040,491 for the purposes of this Management Plan.

The Endowment Fund will be established as a trust account with the Endowment Trustee. The Endowment Fund will remain as a permanent capital endowment to manage the Bank consistent with this Plan and the Conservation Easement. WES may use interest and earnings from the Endowment Fund to pay any and all costs and expenses reasonably incurred through the monitoring, maintenance, or long-term management of the Bank. Annual expense amounts up to the accrued interest amount, or any withdrawals based upon a revised Resource Agency policy, will be issued to WES at the beginning of the fiscal year; WES is entitled to access these funds and will use these funds to manage the Bank for the respective calendar year.

The Endowment Fund obligations, the management obligations described in this Plan, and the obligations under the Conservation Easement will continue in perpetuity as a covenant running with the land.

* * * *

ACKNOWLEDGMENTS AS TO FORM

This is to acknowledge that the Burke Ranch Management Plan dated _____, is hereby accepted as to form by the undersigned:

By: _____

Title: _____

Agency: U.S. Fish & Wildlife Service

Date _____

By: _____

Title: _____

Westervelt Ecological Services

Date _____

By: _____

Title: _____

Agency: California Dept. of Fish & Game

Date _____