EXHIBIT D

# BIOLOGICAL RESOURCE SURVEY AND MANAGEMENT REPORT

# Biological Resource Survey and Management Report for the Byron Burrowing Owl Conservation Bank Contra Costa County

## Background and Introduction

The 120-acre Byron property, located at the base of the interior central Coast Range foothills just south of the town of Byron (Figure 1), represents a unique opportunity for the preservation of a mixture of annual grassland, vernal pool, and seasonal wetland habitats that are utilized by a resident population of western burrowing owls. Opportunities also exist for wetland restoration and creation. Improved management of the existing annual grassland, through managed grazing and control of ruderal vegetation (e.g., milk thistle, Italian thistle, mustard) would be implemented with the project. These protected, restored /created, and enhanced habitats would benefit a variety of special-status wildlife and plants species that are of interest to the California Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), and other conservation organizations. Special-status species known from the project site and immediate area are listed in Table 1.

## Existing Conditions

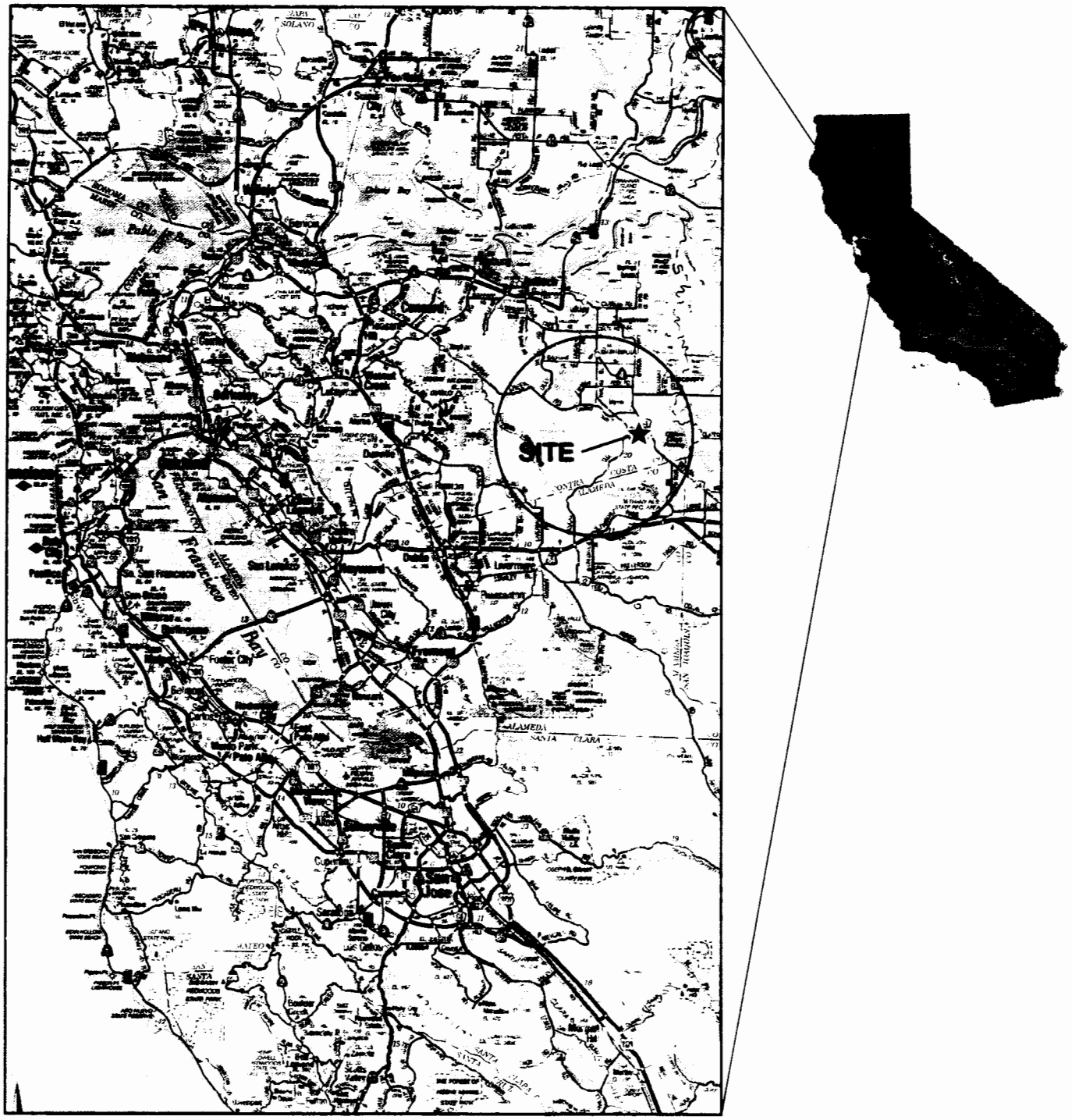
Existing habitats on the site include annual grassland, vernal pools and seasonal swales, alkali wetlands, valley sink scrub, and intermittent drainage (Brushy Creek). These are described below.

**Annual Grassland.** Vegetation in the annual grassland includes soft chess, Mediterranean barley, ryegrass, salt grass, alkali heath, gumweed and turkey mullein; several special-status plants may also occur in the grassland (see Table 1). Besides providing nesting and foraging habitat for burrowing owls, these grasslands also provide foraging and/or nesting habitat for a number of special-status birds including ferruginuous hawk, golden eagle, loggerhead shrike, and California horned lark. Also, ground squirrel burrows in the grassland may provide estivation sites for California tiger salamanders.

**Vernal Pools and Swales.** The site contains the only concentration of vernal pools in the Byron vicinity (Stromberg 1995). The vernal pools contain popcorn flower, downingia, goldfields, coyote thistle, annual hairgrass, and Mediterranean barley. The curved-footed *Hygrotus* diving beetle is also known to occur on the site in vernal pools or ponded areas in intermittent drainages and swales. Additionally, Contra Costa goldfields and California tiger salamander historically occurred on the property just north of the site, and may have occurred here as well. Seasonal swales support Mediterranean barley, ryegrass, coyote thistle, and rabbitsfoot grass.

**Alkali Wetlands.** Three different types of alkali wetlands occur on the site; these include alkali meadow, alkali scalds, and valley sink scrub. Vegetation in alkali meadows and scalds includes salt grass, alkali heath, alkali mallow, sand spurrey, and several rare or unusual species including heartscale and brittlescale. Valley sink scrub includes many of these same species, but is dominated by iodine bush; eastern Contra Costa County represents the northern most occurrence of this species in California (Stromberg 1995).

**Intermittent Drainages.** Brushy Creek, an intermittent drainage, crosses the southeastern portion of the site. An unnamed tributary to Brushy Creek also crosses this part of the site and merges with Brushy Creek on the eastern edge of the site. Throughout most of their reaches within the site, the two channels are sparsely vegetated but include pockets of rabbitsfoot grass, saltgrass, Baltic rush, and ryegrass. At the eastern edge of the site, the channels are saturated or inundated throughout most of the year due to leakage from the adjacent Byron-Bethany Canal; where this occurs, the channels are dominated by cattails.




Project Location

Wildlands, Inc.

Figure 1

**Table 1. Special-Status Species Occurring on the proposed Burrowing Owl Conservation Bank (BOCB) or Byron Airport Habitat Management Lands (BAHML)**

| Common Name<br>Scientific Name | Status<br>State/Federal | Habitat<br>Affinities | Occurrence on BOCB or BAHML |
|---|---|---|---|
| ANIMALS: | | | |
| *Amphibians:* | | | |
| California Tiger Salamander<br>*Ambystoma californiense* | SSC/FC | Breeds in temporary pools, estivates in grassland and oak savanna | BOCB: ?,known to breed just north of site<br>BAHML: present |
| California red-legged frog<br>*Rana aurora draytonii* | SSC/FT | Breeds in semi-permanent pools with emergent Vegetation | BOCB: ?<br>BAHML: present |
| *Birds:* | | | |
| Ferruginous hawk<br>*Buteo regalis* | SSC/SSC | Winters in grasslands | BOCB: present<br>BAHML: present |
| Golden eagle<br>*Aquila chrysaetos* | SSC/-- | Forages in a variety of open habitats | BOCB: present<br>BAHML: present |
| Burrowing owl<br>*Athene cunicularia* | SSC/SSC | Grasslands and open scrub habitats | BOCB: present<br>BAHML: present |
| California horned lark<br>*Eremophila alpestris actia* | SSC/-- | Short-grass grasslands | BOCB: present<br>BAHML: present |
| Loggerhead shrike<br>*Lanius ludovianus* | SSC/SSC | Grasslands, scrublands, and oak savanna | BOCB: present<br>BAHML: present |
| *Mammals:* | | | |
| San Joaquin kit fox<br>*Vulpes macrotis mutica* | ST/FE | Grasslands, saltbush scrub | BOCB: ?<br>BAHML: present |
| American badger<br>*Taxidea taxus* | --/-- | Grasslands and oak savanna | BOCB: ?<br>BAHML: present |
| San Joaquin pocket mouse<br>*Perognathus inornatus* | --/SSC | Grassland, saltbrush scrub | BOCB: ? known from project vicinity<br>BAHML: ? same as above |
| *Invertebrates:* | | | |
| Vernal pool fairy shrimp<br>*Branchinecta lynchi* | --/FT | Vernal pools and swales | BOCB: ?<br>BAHML: present |
| California linderiella<br>*Linderiella occidentalis* | --/-- | Vernal pools and swales | BOCB: ?<br>BAHML: present |
| Curved-footed Hygrotus diving beetle<br>*Hygrotus curvipes* | --/SSC | Small mineralized pools and small pools in intermittent streams formed by rain | BOCB: present<br>BAHML: present |

**Table 1. Continued**

| Common Name<br>Scientific Name | Status<br>State/Federal/CNPS | Habitat<br>Affinities | Occurrence on BOCB or BAHML |
|---|---|---|---|
| PLANTS: | | | |
| Heartscale<br>*Atriplex cordulata* | CEQA/--/1B | Chenopod scrub, valley grassland on hard alkali and saline soils | BOCB: present<br>BAHML: ? |
| Brittlescale<br>*Atriplex depressa* | CEQA/--/1B | Chenopod scrub, playa and valley/foothill grassland on alkali and clay soil | BOCB: present<br>BAHML: ? |
| Recurved Larkspur<br>*Delphinium recurvatum* | CEQA/--/1B | Chenopod scurb, valley grassland, alkali places on poorly drained soils | BOCB: ?<br>BAHML: ?; recorded near Byron Airport |
| Diamond-petaled California poppy<br>*Eschscholzia rhombipetala* | CEQA/--/1A | Foothill and valley grassland on clay soils. | BOCB: ?<br>BAHML: historically present; current status ? |
| Contra Costa goldfields<br>*Lasthenia conjugens* | SE/FE/1B | Valley grassland and vernal pools | BOCB: ? Historically recorded from Byron Hot Springs<br>BAHML: ? |
| Little mousetail<br>*Myosurus minimus* ssp. *apus* | --/--/3 | Alkaline vernal pools | BOCB: present<br>BAHML: ? |
| Round woolly marbles<br>*Psilocarphus tenellus* var. *globiferous* | CEQA/--/4 | Vernal pools | BOCB: present<br>BAHML: ? |

**Status Codes:**

**California Department of Fish and Game designations:**

SE: listed as endangered by DFG
ST: listed as threatened by DFG
SSC: listed by DFG as a species of special management concern
CEQA: indicates a taxa that might be locally significant and should be evaluated for consideration during preparation of CEQA documents

**U.S. Fish and Wildlife Service designations:**

FE: listed as endangered
FT: listed as threatened by USFWS
FC: a federal candidate species for listing by the U.S. Fish and Wildlife Service (USFWS) as threatened or endangered
SSC: listed by USFWS species of special management concern

**California Native Plant Society designations:**

1A: California Native Plant Society (CNPS) designation for plants presumed extinct in California
1B: CNPS designation for plants considered to be rare and endangered in California and elsewhere
3: CNPS designation for plants about which additional data is needed to evaluate conservation status
4: CNPA designation for plant of limited distribution

## Byron Airport and Habitat Management Lands

The Byron property occurs immediately north of the 1,321-acre Byron Airport and its Habitat Management Lands (HML) (Figure 2). The HML comprise about 800 acres of the Airport property and were established in part as mitigation for the airport's expansion-related potential impacts on San Joaquin kit fox. The HML contain preserved natural wetlands as well as those created as mitigation for project impacts; these wetlands support California tiger salamander, vernal pool fairy shrimp, curved-footed *Hygrotus* diving beetle, and California red-legged frog. Besides benefiting sensitive species and habitats on the site and vicinity, the HML also provide the airport with a non-development buffer, protecting the airport from potential encroachment of development.

## The Need for Burrowing Owl Habitat Conservation Banks

Based on a statewide census of burrowing owls conducted between 1991-1993, an estimated 167 nesting pairs of owls were reported for the San Francisco Bay area (DeSante and Ruhlen 1995). This total represents a decline of about 50% since the mid 1980s (Burrowing Owl Consortium 1999). Because of the continuing high development pressures in the San Francisco Bay area, public and private development projects continue to infringe upon burrowing owl populations, forcing owls onto smaller and more isolated habitat patches.

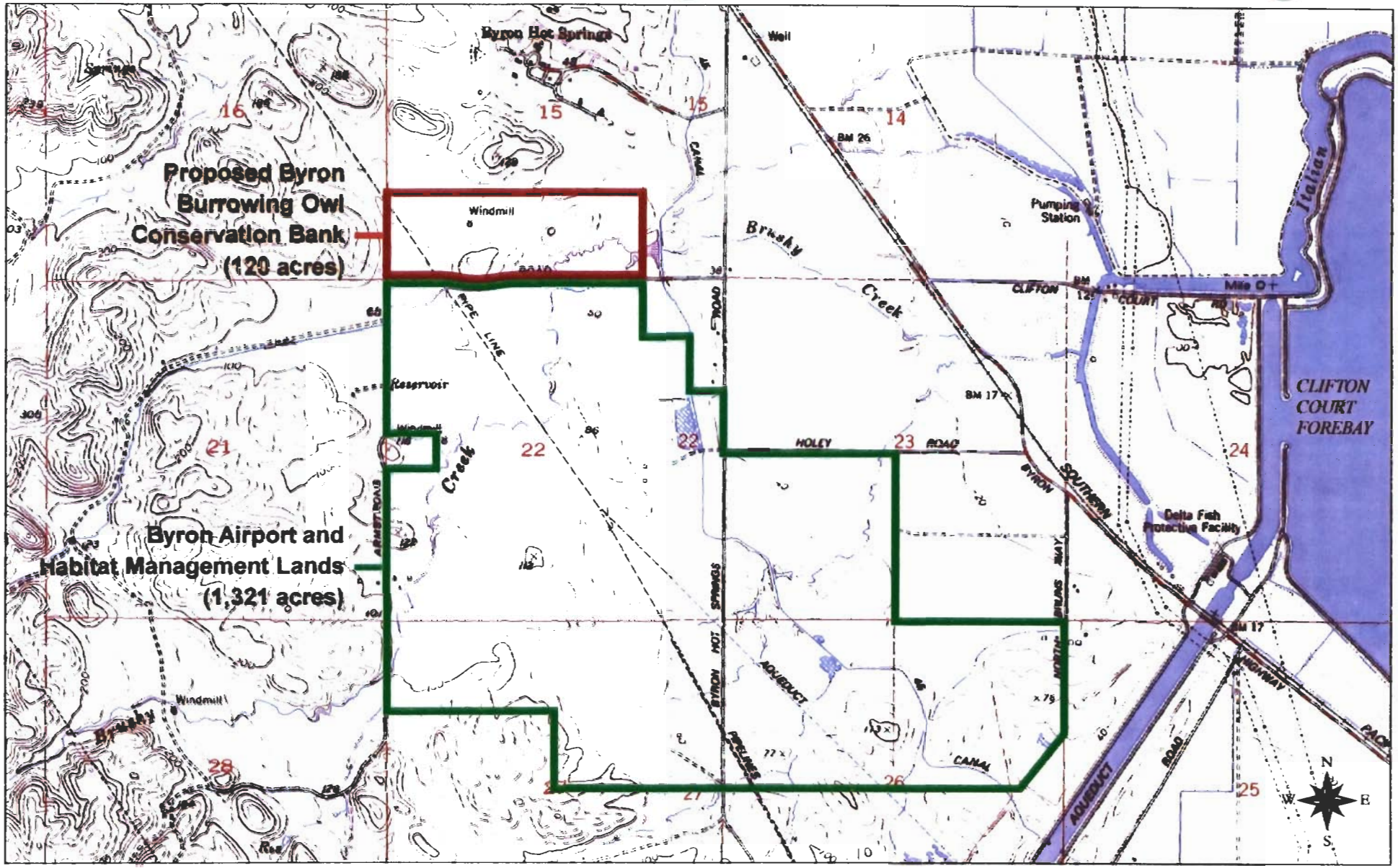
Where development activities reduce suitable on-site burrowing owl habitat below the threshold of 6.5 acres per pair or individual bird, the Burrowing Owl Consortium (1999) recommends that habitat should be replaced off-site. The Byron property would provide habitat conservation credits to private and public entities that conduct land development or provide public services that affect burrowing owl habitat in the Bay Area. Wildlands, Inc., in cooperation with DFG, proposes to establish a habitat conservation bank at the Byron property so that projects which affect burrowing owl habitat in the South Bay and East Bay regions, along with projects in the Byron vicinity, would be eligible to mitigate at the Byron Burrowing Owl Conservation Bank.

## Project Vision

The specific vision for the Byron property is to create a burrowing owl habitat conservation area to protect the existing grassland and wetland habitats on the site for the long-term benefit of burrowing owls and other species associated with the annual grassland and seasonal wetlands. Based on Burrowing Owl Consortium guidelines (1999), a minimum of 6.5 acres of foraging habitat (calculated on a 100-meter foraging radius around a natal burrow) is needed to support a pair (or unpaired resident single bird). Using this foraging habitat acreage requirement, the 120 acres can theoretically support 18.46 pairs of burrowing owls.

## Burrowing Owl Occurrence at the Site

Although the exact number of owls currently utilizing the Byron property is not known, the 120-acre parcel currently supports a high concentration of burrowing owls. During a non-breeding season survey conducted on the morning of September 23, 1999, a minimum total of 16 individual owls were observed throughout the site. Because the owls had all completed their pre-basic molts, individual owls could not be differentiated as adult or hatching year birds, and adults could not be separated as male or female.




Proposed Byron Burrowing Owl Conservation Bank
and Byron Airport Habitat Management Lands

Wildlands, Inc.

Figure 2


**Burrowing Owl Sightings** 9-23-99 (16)

**Burrowing Owl Sightings** 10-20-99 (13)

**Burrowing Owl Burrow**
(based on the presence of molted feathers, cast pellets, prey remains, or excrement observed on 10-20-99)

**Property Boundary**

60-Foot Road Easement

N

300 0 300 600 Feet

Burrowing Owl Occurrences at the Proposed Byron Burrowing Owl Conservation Bank

Wildlands, Inc.

Figure 3

To provide access to the Fowler property north of the burrowing owl conservation bank, Wildlands, Inc. will grant a 60-foot wide easement to David Fowler; this easement will be recorded during 2000. The location of this proposed easement is shown on Figure 3. Because the proposed easement occupies 1.8 acres, Wildlands, Inc. requests 118 acres of burrowing owl habitat credits, subject to a verified property survey, rather than 120 acres. If, in the future, the road easement is abandoned, Wildlands, Inc. would seek the addition of 1.8 acres of burrowing owl habitat to the credit base.

## Monitoring

Long-term monitoring will be conducted to determine the level of burrowing owl utilization of the site. Also, the effects of habitat management actions will be monitored to determine if the actions are providing benefits to the targeted special-status species. Monitoring will sample various reference habitats on the site as well as specific areas (e.g., areas dominated by weedy species, overgrazed or trampled alkali wetlands) which may be the focus of management actions to compare various features including plant species composition and cover, and their use by wildlife. The results of the monitoring will be used to determine if adaptive management actions (e.g., modifying the grazing program, conducting additional weed control, reseeding disturbed sites) are needed to bring about a greater measure of success in habitat management. The results of the monitoring will also provide useful information that can guide future management or restoration actions.

## Printed References

Burrowing Owl Consortium. 1999. Survey protocol and mitigation guidelines; information down-loaded from the Santa Cruz Predatory Bird Research Group home page.

DeSante, D. F., and E. D. Ruhlen. 1995. A census of burrowing owls in California, 1991-1993. Institute for Bird Populations.

Stromberg, L. P. 1995. Biological constraints analysis, Byron planning area, Contra Costa County, California. Report prepared for Contra Costa County Planning Department.