

# **Brushy Creek Conservation Bank**

## ***Draft* Habitat Management Plan**

### **BACKGROUND AND INTRODUCTION**

The 120-acre Brushy Creek Conservation Bank property, located at the base of the interior central Coast Range foothills just south of the town of Byron (Figures 1 and 2), has recently been established as a Burrowing Owl-focused conservation bank. Wildlands, Inc., the owner and operator of the conservation bank, purchased the property to establish the bank, and then conveyed a conservation easement for the property to the California Department of Fish and Game. Preservation of the site protects a mixture of annual grassland, vernal pool, and seasonal wetland habitats that are utilized by a resident population of western burrowing owls.

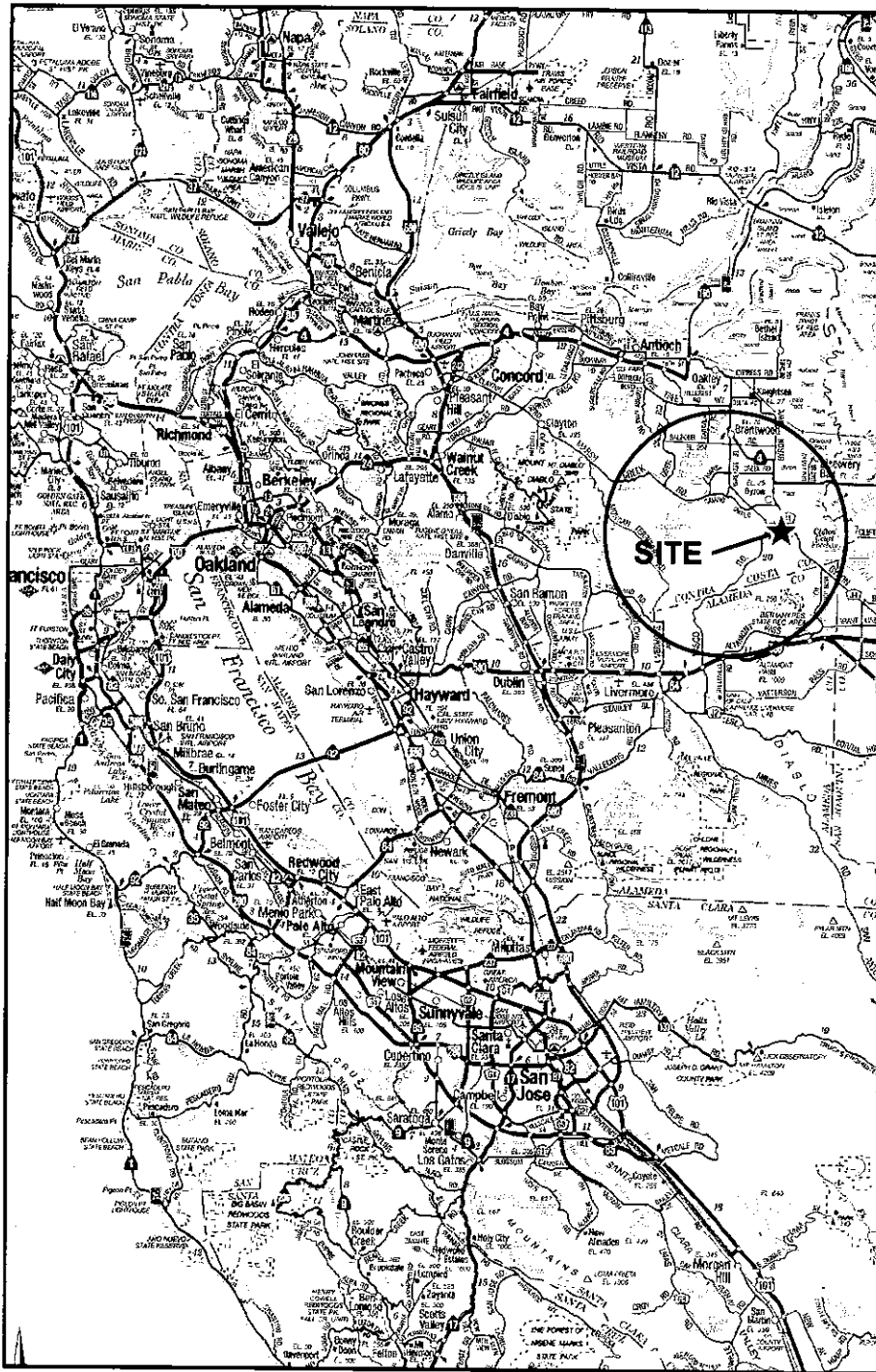
Historically, the site has been used for seasonal grazing. Now that the property has been set aside for the long-term preservation of habitat for burrowing owls, management of the property will focus on maintaining the grasslands in a state compatible with the needs of burrowing owls. It is anticipated that this will occur through managed grazing and other habitat management measures described in this plan. These actions would also benefit a variety of special-status wildlife and plants species that are known from the project site and immediate area (Table 1). These species are of interest to the California Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), and other conservation organizations.

### **EXISTING CONDITIONS**

Existing habitats on the site include annual grassland, vernal pools and seasonal swales, alkali wetlands, 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. Besides providing nesting and foraging habitat for burrowing owls, these grasslands also support a large population of California ground squirrels and provide nesting habitat and/or foraging habitat for a number of special-status birds that breed on or near the site, including loggerhead shrike and California horned lark. The ground squirrel population also provides a prey base for

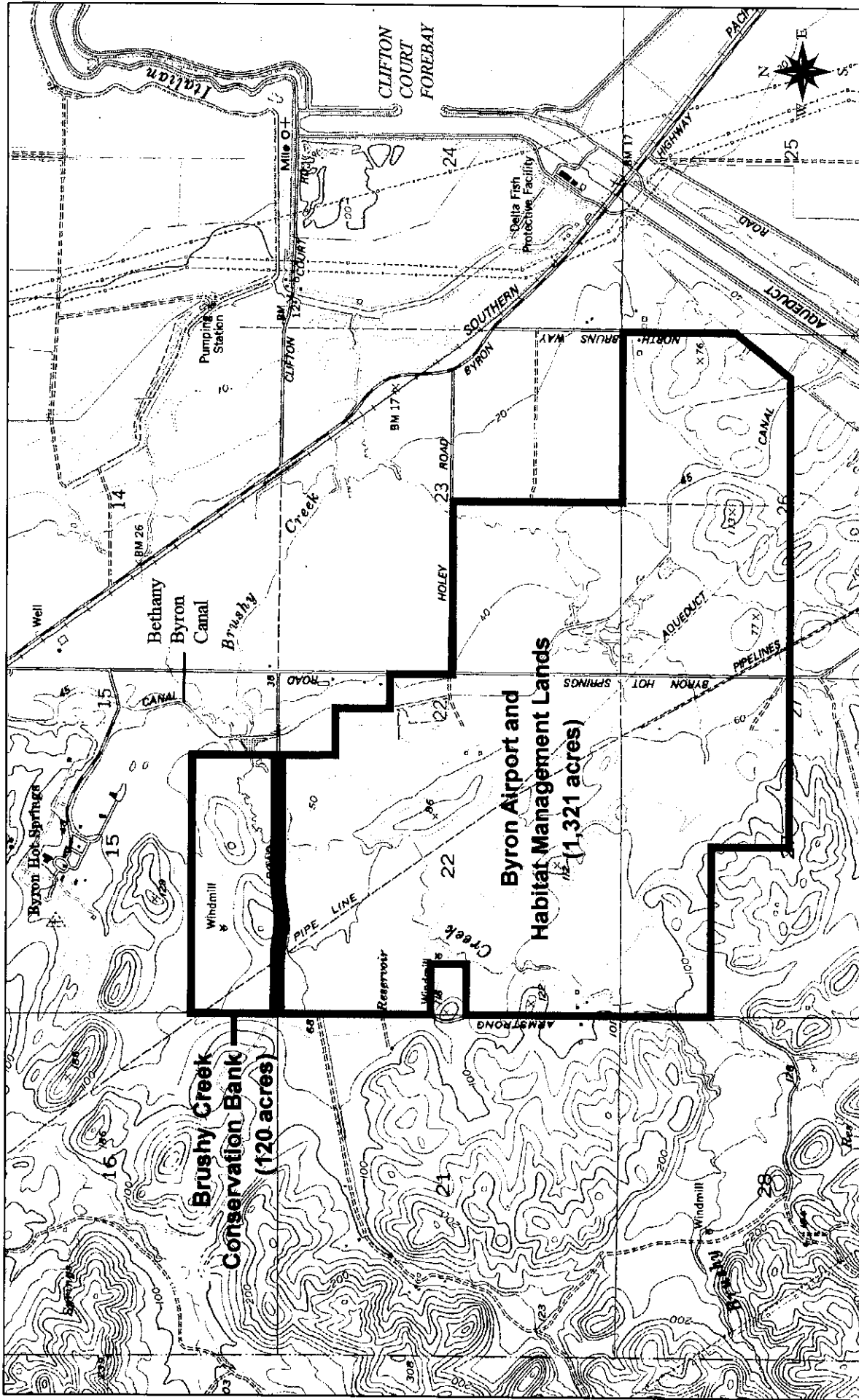


Brushy Creek Conservation Bank Project Location



Wildlands, Inc.

Figure 1



Brushy Creek Conservation Bank and Vicinity

Figure 2



Wildlands, Inc.

**Table 1. Special-Status Species Occurring on the Brushy Creek Conservation Bank (BCCB)**

Common Name Scientific Name	Status State/Federal	Habitat Affinities	Occurrence on BCCB
<b>ANIMALS:</b>			
<i>Amphibians:</i>			
California Tiger Salamander <i>Ambystoma californiense</i>	SSC/FC	Breeds in temporary pools, estivates in grassland and oak savanna	Not present, but occurs on nearby properties
California red-legged frog <i>Rana aurora draytonii</i>	SSC/FT	Breeds in semi-permanent pools with emergent vegetation	Not present, but occurs on nearby properties
<i>Birds:</i>			
Ferruginous hawk <i>Buteo regalis</i>	SSC/SSC	Winters in grasslands	Present
Golden eagle <i>Aquila chrysaetos</i>	SSC/--	Forages in a variety of open habitats	Present
Burrowing owl <i>Athene cunicularia</i>	SSC/SSC	Grasslands and open scrub habitats	Present
California horned lark <i>Eremophila alpestris actia</i>	SSC/--	Short-grass grasslands	Present
Loggerhead shrike <i>Lanius ludovianus</i>	SSC/SSC	Grasslands, scrublands, and oak savanna	Present
<i>Mammals:</i>			
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	ST/FE	Grasslands, saltbush scrub	Not sighted here, but occurs on nearby properties
American badger <i>Taxidea taxus</i>	--/--	Grasslands and oak savanna	No recent sightings, but has occurred
San Joaquin pocket mouse <i>Perognathus inornatus</i>	--/SSC	Grassland, saltbrush scrub	Known from project area
<i>Invertebrates:</i>			
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	--/FT	Vernal pools and swales	Present
California linderiella <i>Linderiella occidentalis</i>	--/--	Vernal pools and swales	Absent
Curved-footed Hygrotus diving beetle <i>Hygrotus curvipes</i>	--/SSC	Small mineralized pools and small pools in intermittent streams formed by rain	Present

**Table 1. Continued**

<b>Common Name Scientific Name</b>	<b>Status State/Federal/CNPS</b>	<b>Habitat Affinities</b>	<b>Occurrence on BCCB</b>
<b>PLANTS:</b>			
Heartscale <i>Atriplex cordulata</i>	CEQA/--/1B	Chenopod scrub, valley grassland on hard alkali and saline soils	Present
Brittlescale <i>Atriplex depressa</i>	CEQA/--/1B	Chenopod scrub, playa and valley/foothill grassland on alkali and clay soil	Present
Recurved Larkspur <i>Delphinium recurvatum</i>	CEQA/--/1B	Chenopod scrub, valley grassland, alkali places on poorly drained soils	Not present, but historically recorded on nearby property
Diamond-petaled California poppy <i>Eschscholzia rhombipetala</i>	CEQA/--/1A	Foothill and valley grassland on clay soils	Not present, but historically recorded on nearby property
Contra Costa goldfields <i>Lasthenia conjugens</i>	SE/FE/1B	Valley grassland and vernal pools	Not present, but historically recorded from Byron Hot Springs
Little mousetail <i>Myosurus minimus</i> ssp. <i>apus</i>	--/--/3	Alkaline vernal pools	Present
Round woolly marbles <i>Psilocarphus tenellus</i> var. <i>globiferous</i>	CEQA/--/4	Vernal pools	Present

**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: CNPS designation for plant of limited distribution

golden eagles, ferruginous hawks, white-tailed kites, northern harriers, and other raptors that are known to forage over the site and adjacent grassland habitat. Also, ground squirrel burrows in the grassland may provide aestivation sites for California tiger salamanders.

As previously noted, the site has been subject to grazing for many years. Because the grazing pressure appears to have been of low to moderate intensity, nuisance weedy species such as star thistle and milk thistle have not become widely established on the property. However, nuisance species such as these do occur in small, localized patches, particularly in an area that was recently disturbed during expansion of the Byron Airport. During the expansion, the western-most hillock on the Conservation Bank was lowered by several feet to provide increased vertical air space distance along the incoming and outgoing flight path. Weedy species also occur on disturbed ground along the road edges.

While the grazing has been light enough not to have promoted a property-wide establishment of nuisance weeds, the grazing has been heavy enough to favor occupation of the site by burrowing owls and California ground squirrels. In fact, populations of ground squirrels often increase in heavily grazed areas, as forb production and visibility increases (Polite and Ahlborn 1990). Increased visibility is especially important for ground squirrels and owls to avoid predation, especially from aerial hunters. Without grazing, it is likely that the grass height would become too high to favor use of the site by either species.

### **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. Vernal pool fairy shrimp, a federally threatened invertebrate, and the curved-footed *Hygrotus* diving beetle, a federal species of special concern, are 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. After pools and swales have dried in the spring, these wetlands blend into the grassland landscape.

### **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 of *Atriplex*, including heartscale and brittlescale (Table 1). 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. The drainages carry watershed runoff sporadically during the winter and early spring. At the eastern edge of the site, the channels are saturated or inundated most of the year due to leakage from the adjacent Byron-Bethany Canal; where this occurs, the channels are dominated by cattails.

## **HABITAT MANAGEMENT GUIDELINES**

### **Background**

Because simply purchasing the property in fee title or placing a conservation easement over the property will not ensure the long-term protection of the biological resources of the site, especially maintenance of the existing burrowing owl population, a number of habitat management actions are proposed. These include establishing a grazing management program; controlling weedy species; and maintaining a large presence of California ground squirrels. The goal of the grazing program is to accomplish the latter two actions so that minimal human effort is required to maintain the site's grasslands, over the long-term, in an optimal state for burrowing owl and special-status species occurring on the site (Table 1). Other management actions that will be needed include maintenance of perimeter fencing and gates, and occasional removal of litter and dumped refuse.

Although weed control is a proposed management action, some difficulty in weed control is likely to occur because many of the weeds prefer disturbed soils, such as freshly churned soils associated with ground squirrel burrows. In some areas of the site, burrowing owls are actively using burrows that are flanked by various thistle species and field mustard. Therefore, control of weeds may mean occasional disturbance to burrowing owls. Passive vegetation management actions, such as a light year-round or seasonal grazing program, may be a preferred approach instead of physical removal or chemical spraying. Physical removal could include manual removal using hoes or weed-

eat. Chemicals could be used if they were determined to be the most efficacious method of weed control when balanced against the need for protecting the various habitats that occur on the site. Therefore, weed control strategies will be discussed with resource agencies before any actions are implemented. The results of any actions would also be closely monitored to determine the actions that provide the best weed control and least disturbance to the owls and wetland habitat.

Unless otherwise specified, off-road vehicle use (except as related to grazing and habitat management activities), hunting, unauthorized collection of plants or animals, dumping of refuse, and similar activities are prohibited. Also, graded firebreaks along frontage roads will not be maintained unless required by the Contra Costa County fire marshal. To prevent such actions that could conflict with habitat management goals, existing farm gates and fences will be maintained to restrict unauthorized access and to secure the site for cattle grazing. Also, signs indicating Wildlands' ownership of the property and the need to obtain permission for entry will be posted around the perimeter of the site. Wildlands will coordinate monitoring actions with its staff and grazing operator (if any) who regularly are working on the site or vicinity to ensure that the general condition and security of the site is monitored on a monthly basis.

### **Burrowing Owl Habitat Requirements**

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Burrows are the essential component of burrowing owl habitat, providing protection, shelter, and nests for burrowing owls. Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels and badgers, but also may use man-made structures, such as cement culverts; cement, asphalt or wood debris piles; or openings beneath cement or asphalt pavement (Burrowing Owl Consortium 1999).

Optimal grass or scrubland vegetation height for California burrowing owls is not reported in the literature. However, in the Great Basin and Great Plains region, the Colorado Bird Observatory (CBO) describes optimal vegetation height as 4-inches or less (Gillihan and Hutchings 2000). Also, CBO reports that burrowing owls benefit from some areas of taller (at least 12-inches tall), dense vegetation which can provide habitat for insect and small mammal prey.

Observations of grassland habitat in the central Coast Range in Alameda, Contra Costa, and San Joaquin Counties indicate that sites receiving heavier grazing utilization support more ground squirrels and may support burrowing owls. A linkage to high forage utilization and ground squirrel/burrowing owl occurrence may be that high forage utilization increases visibility, which allows these ground-dwelling species to better watch for predators. The high level of forage utilization does not appear to reduce the likelihood of burrowing owl occurrence, and may favor it. In grasslands that are lightly grazed or not grazed, ground squirrels are often absent. Without ground squirrels to



provide burrow sites, burrowing owl occupation cannot occur, unless another source of burrows is present. Also, without grazing to maintain short grass heights, owl occurrence would be minimal or absent.

Finding by CBO (Gillihan and Hutchings 2000) support these conclusions. In grazed grasslands of the Great Plains, they found that burrowing owls successfully raise more young where there is a high density of prairie dogs. This is probably because the owls are less conspicuous to predators in areas with many prairie dogs, or because prairie dogs are good at spotting predators and barking to alert all residents of the colony, including burrowing owls. The same may be true with respect to California and round-tailed ground squirrel colonies in California.

To manage vegetation at the Brushy Creek Conservation Bank property at an optimal height to promote ground squirrel and burrowing owl occurrence, grazing or some other form of annual vegetation reduction is needed. To ensure the continued presence of natural burrows for burrowing owls, the continued occupation of the site by California ground squirrels is needed. Therefore, if the site is to provide long-term habitat for burrowing owls, it must be grazed, and ground squirrels must continue to occupy it. A proposed grazing strategy to achieve this is described in the subsequent section, and is described in full detail in the appendix.

## **Vegetation Management**

The height of the grassland is likely the primary factor that affects habitat quality for burrowing owl and California ground squirrel. A goal of the Habitat Management Plan is therefore to maintain grass height in an optimal height range. A managed grazing program, described below, will be used to achieve this goal.

As previously indicated, patches of weedy thistle species occur on the site. The timing and intensity of the grazing program may prove sufficient to reduce or maintain the distribution and relative abundance of these species. However, it may also be necessary to treat patches or new occurrences of these species through chemical and physical means to achieve reduction or control. Strategies for control of these species are also described below.

## **Grazing**

In developing a grazing scheme for the BCCB, it was realized that vegetation height should be maintained over the course of the year in a low height range. Through consultations with Lawrence D. Ford, PhD, a Certified Rangeland Manager, a grazing prescription was developed that will likely lead to maintenance of optimal conditions for burrowing owl habitat and other special-status species that occur or could occur at the site. The results of grazing on vegetation and wildlife will be monitored each year so that

appropriate and beneficial grazing levels can be achieved. The following sections are based upon recommendations prepared for Wildlands by Dr. Ford. The entire grazing management plan prepared by Dr. Ford is appended to this habitat management plan.

Maintaining average grass height throughout the year at a range not exceed 3 to 12 inches is the general goal of vegetation management. At this height, suitable grassland conditions for burrowing owl and California ground squirrel are likely to be met and potential adverse affects of grazing are minimized. A maximum grass height of 18 inches may occur for short periods in late winter and early spring before or during the initial spring grazing period. This is acceptable for a short period because once grazing is initiated in the spring, the grass height will be reduced to within the desired range.

**Seasonal Use Dates.** A spring and summer grazing system will be initiated to maintain the grassland in the desired height range of 3 to 12 inches. Grazing will begin at the first of March and be terminated at the end of August. At the end of the grazing season, the mean residual dry matter (RDM) should be approximately 700 pounds/acre. This level of RDM should promote optimal seed germination and seedling growth during the fall and winter, and optimize forage production while promoting good rangeland conditions in the annual grassland present on the site.

**Stocking Rates.** The recommended normal stocking rate for the 6 month grazing program is based on the estimated number of pounds of forage produced and available in a normal year. A normal year is one with average precipitation and a combination of winter and spring precipitation and temperatures that favors normal production of forage plants. The grazing management plan provides details of forage production for normal, unfavorable, and favorable years. Based on calculations of forage production in a normal year of 150,381 total pounds (1,274 pounds/acre) and a grazing season ending RDM of 700 pounds/acre, 67,781 total pounds of forage (574 pounds/acre) are available for consumption. This level of forage production is sufficient to support 19 Animal Units (AUs), which is the total number of mature cows (1,000 pounds cow without calf) grazing the site each month for 6 months.

When weather predictions indicate a normal year and normal forage production, normal stocking rates will be used. If weather predictions indicate a year of lower forage production, stocking rates will be reduced to appropriate levels. During a year when a substantial forage production deficit occurs, but was not predicted, stocking rates will be reduced if feasible for the grazing operator. If not feasible because other pastures are not available for livestock transfer, it will be permissible to graze the site at the normal level for that year. This deferral of grazing would allow a maximum of one year of excessive grazing as a result of unexpected drought, but repeated years of excessive grazing will not be allowed. For years following an unexpected drought year, the base stocking rates for the following year will be reduced in the anticipation of another low forage production year. However, if normal conditions again prevail during the fall and winter, stocking rates will be increased.

**Fencing.** Currently, the site is grazed as a single pasture within the boundary of the existing perimeter fence. Recent grazing within the single pasture appears to have resulted in proper animal distribution and forage utilization. Therefore, the site will continue to be grazed as a single pasture. However, if monitoring results indicate that uneven grazing utilization is occurring, pasture subdivision may be required to achieve more equal utilization. Therefore, internal fencing to subdivide the one pasture into two pastures would be developed. Splitting the herd of cattle into two groups proportional to the estimates of forage production for the two pastures would also be required. Monitoring the effects of pasture subdivision would occur to determine if more even forage utilization is achieved so that optimal burrowing owl habitat is maintained.

On the eastern edge of the property where Brushy Creek and its tributary exit the site, small areas of cattail marsh occur. The cattail habitat is supported by leakage from the adjacent Byron-Bethany Canal. New permanent fence will be installed in these areas to protect these habitat patches; Figure 3 shows the general locations for these fences. Beyond construction of fencing in these two areas, no other new fencing is anticipated unless pasture subdivision is found to be necessary.

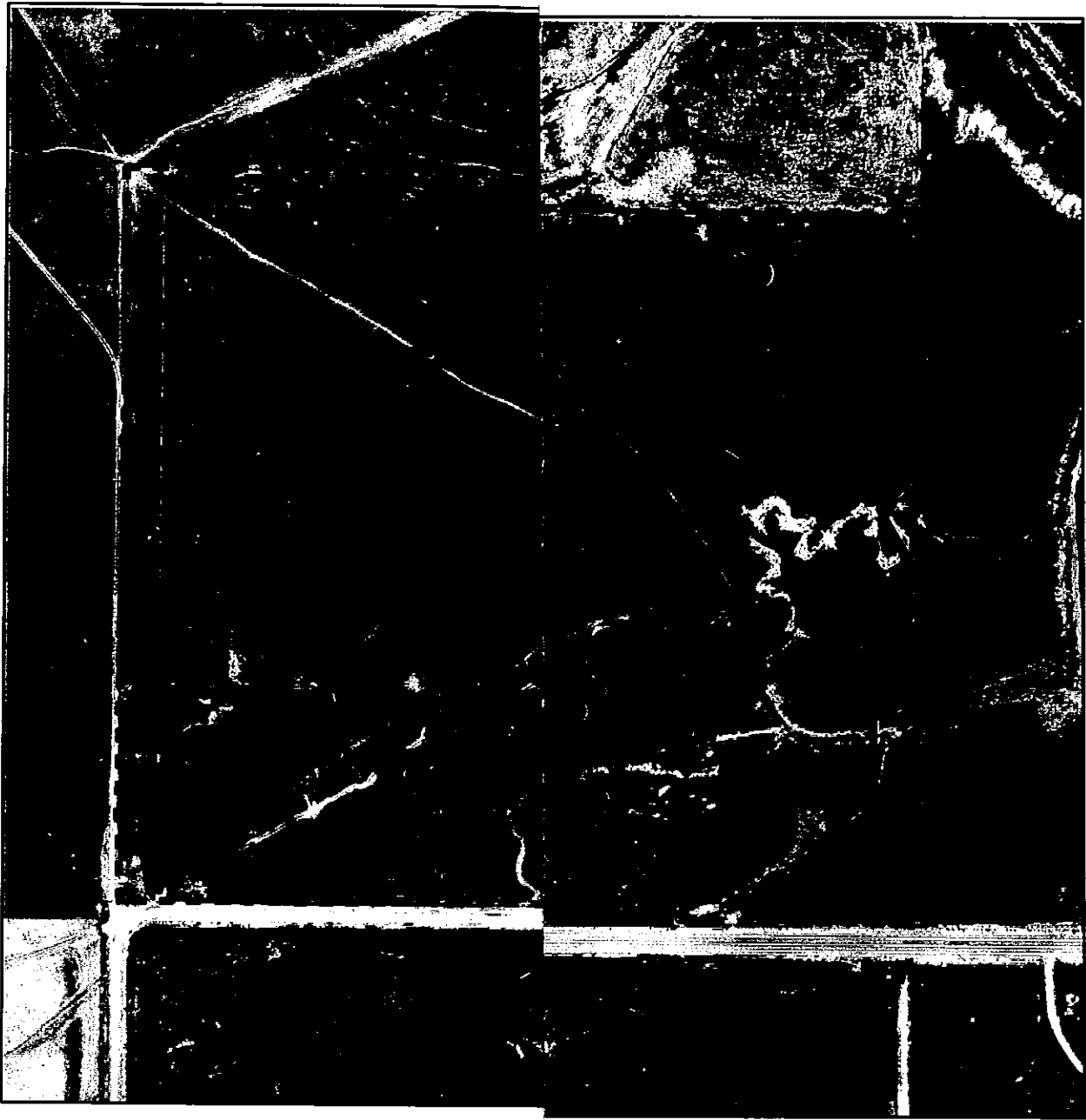
**Water Source.** Development of a water supply will be necessary to support cattle during the summer months. Reconstruction of the abandoned windmill, located near the center of the site (see Figure 3) will be investigated. If this proves to be infeasible, an alternate well and pump system will be developed to supply water for cattle use.

## **Weed Management**

Before initiating a weed management program, the occurrence and distribution of pest plants will be mapped. Once this information is developed, a weed control action plan will be developed. It is already known that several relatively concentrated patches of star thistle and milk thistle occur on the site. These and other occurrences will be accurately mapped and entered into a geographic information system (GIS) database so that population distribution and abundance can be tracked over time.

The distribution of star thistle appears to coincide with recent ground disturbance associated with grading of the site's two central hills that occurred during expansion of the Byron Airport's runways. A relatively concentrated patch of milk thistle occurs on the north slope of the western hill, also coinciding with apparent ground disturbance. The general low distribution of these and other weedy species throughout the site suggest a history of less ground disturbance. This also suggests that future human-related ground disturbance should be minimized to prevent or control the introduction and expansion of these pest plants.

On portions of the site, some difficulty in weed control is expected because many weeds are able to colonize freshly churned soils around ground squirrel burrows and burrows used by owls. Human control of weeds in these circumstances may pose an



Aerial Source: Radman Aerial Flown: 4-26-00

**Burrowing Owl Occurrences:**

- Burrowing Owl Sighting (C)
- Burrows with molted feathers

**Other Features:**

- \* Windmill/Stock Watering T
- New Fence (to protect catt

**Property Boundary Lines:**

- - - Property Boundaries
- - 60' Easement



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**Burrowing Owl Occurrences  
and Windmill Location**

Figure 3

occasional disturbance to burrowing owls. Instead of enacting pest plant control actions around burrows, a preferred initial passive control method will be to allow grazing to reduce weed populations around burrows.

Elsewhere on the site, pest plants may also be controlled to some extent through the grazing program. The rationale for expecting this is that, during early summer grazing, after other forage species have dried and been consumed, the green thistles will probably be grazed to some extent. This will probably reduce the abundance of flowering stems and seeds, and height of flowering stem; the latter factor may reduce the likelihood for distribution of seed beyond the existing plant area.

Because grazing will only provide limited control of pest plants, other means of control may be needed. Use of tractor mowers, weed-eaters or other hand tools can be used effectively in some situations. Use of herbicides may be more effective in other circumstances. Or a combination of physical and chemical control may be appropriate. The use of fire through prescribed burning of localized infestations may also be appropriate.

Before any pest plant control actions are implemented (except for implementation of the grazing program), a weed control action plan will be prepared for and presented to DFG for approval. This plan will be completed by December 2002, after the effects of 2 years of grazing on pest plant populations can be analyzed. Following implementation of any weed control actions, monitoring the reoccurrence of pest plants will be required to determine the effectiveness of the management action and the need for follow-up treatment.

## MONITORING

The monitoring program for BCCB will be used to assess the success or failure of the habitat management actions that focus on maintaining the grasslands in optimal conditions for burrowing owl use. The monitoring program will focus on two main areas: grassland habitat condition and the occurrence of burrowing owls.

Grassland habitat condition monitoring will focus on the balance between annual forage production and utilization to assure that cattle stocking rates and schedules are set to provide optimal burrowing owl habitat and rangeland conditions. This monitoring provides the basis for adjustment in future cattle stocking rates and schedules so that habitat conditions are maintained or improved.

The monitoring of burrowing owl occurrence will be used to provide evidence of habitat quality and need for modification to habitat management actions. The specifics of these monitoring efforts are described below.

## **Vegetation Monitoring**

Vegetation monitoring will assess grassland forage production, grazing utilization, residue, herbaceous foliage cover, and pest plant populations. Data relevant to assessment of these herbaceous foliage variables will be collected at various times during the year, before, during, and after the grazing season. Analysis of the vegetative data will provide information on which to base cattle stocking rates, and to determine forage consumption and if the target of 700 pounds RDM remained at the end of the grazing period. Monitoring of pest plant populations subsequent to the initial mapping of the baseline condition will allow a determination to be made if their populations are expanding, being reduced, or are unchanged as well as to determine if other pest plants are colonizing the site.

The monitoring methods are described in the appended grazing management plan. During the fall and winter of 2000 and 2001 before the first grazing period, the monitoring program proposed by Dr. Ford will be initiated to measure the initial baseline condition. This will also help determine if refinements to the program are needed to increase its utility and ease of implementation. Refined methods, if any, will be submitted to DFG with the initial annual report.

As part of the vegetation monitoring, permanent photographic monitoring stations will be established at approximately 10 locations so that repeatable photographs can be taken to provide a visual record and reference of general rangeland conditions, grass height and cover, and pest plant populations. Photographs (or slides) will be taken each year before and after the grazing season.

## **Burrowing Owl Occurrence**

Although the exact number of owls currently utilizing the Byron property is not known, the 120-acre parcel supports a high concentration of burrowing owls. Figure 3 shows the distribution of owl sightings and active burrows (based on the presence of molted feathers, cast pellets, prey remains, or excrement) observed throughout the site in 1999 and 2000. Besides the burrows with evidence of owl utilization, many ground squirrel burrows are present on the site and may occasionally be used by owls now or in the future.

Long-term annual monitoring will be conducted to determine the level of burrowing owl utilization of the site. The monitoring will include surveys conducted during the breeding and non-breeding season. At least one breeding season survey will be conducted each year during the peak of the breeding season, between April 15 and July 15. One winter survey will also be conducted, between December 1 and January 31, to determine the level of site utilization during the non-breeding season.

The surveys will be conducted by walking and/or driving transects throughout the site, and will be supplemented by viewing the site from the prominent hillocks located in

the center of the site. The distance between the transects will be spaced approximately 100 – 200 feet apart to allow complete visual coverage of the site. When viewing the site from the hillocks, a spotting scope will be used so that good visual coverage of the site can be accomplished with minimal disturbance to owls at burrows. Surveys will be conducted, either in the morning or evening, during weather that is conducive to observing owls outside of burrows [e.g., days that are not rainy, excessively windy (less than 20 mph), or foggy]. Morning surveys should be conducted from approximately 1 hour before sunrise to approximately 9:00 a.m.; evening surveys, if used, should be conducted from 2 hours before sunset to 1 hour after sunset. Results of the surveys will include a map of the site showing locations and numbers of adult and young owls, occupied burrows (natural or artificial), feathers, pellets, white-wash, prey remains, or other evidence of owl presence. Survey date, time, weather conditions, and any other comments or observations will be recorded. Incidental observations of burrowing owls will also be recorded when land management staff is present on the site during routine management or maintenance activities.

### **ADAPTIVE MANAGEMENT**

Adaptive management is the management philosophy that recognizes the need to constantly monitor habitat conditions, and adapt management actions, if necessary, based on the results of monitoring. Over time, as it is learned how habitats respond to management actions (e.g., grazing), it is likely that adjustments to management actions will be required. New information that results from ongoing research on burrowing owls, California ground squirrels, or species of relevance could also lead to changes in management actions.

Before changes are made to ongoing management actions, a brief statement that describes the reason for the proposed change(s) will be included in the annual report and submitted to DFG for review. If emergency actions become necessary, a request for approval would be submitted to DFG at that time rather than with the annual report. The statement will describe the proposed action(s) and monitoring that will be initiated to determine if the proposed action(s) is successful in achieving its goal.

### **ANNUAL REPORT PREPARATION**

Brief reports summarizing the results of each year's burrowing owl monitoring, grazing, and general habitat maintenance activities will be prepared and submitted to DFG by December 15 of each year. The reports will also describe the need for any future unexpected maintenance actions and the potential schedule for implementation of such actions.

## ANNUAL WORK PLAN

Various management tasks that need to be conducted throughout the year have been described in the preceding sections. Table 2 shows the general tasks to be accomplished and the months during the year when each should occur.

## OTHER MITIGATION BANKING OPTIONS

Besides establishing habitat credits for burrowing owls, the rights to restore and create wetland or endangered species habitat for the purpose of wetland or endangered species habitat banking has been reserved by the bank developer. Before any wetland or endangered species habitats are restored or created, a wetland or endangered species habitat restoration plan would be prepared in cooperation with, and for the approval of the appropriate resources agencies that may include the DFG, USFWS, U.S. Army Corps of Engineers, and U.S. Environmental Protection Agency. A premise of any restoration plan is that it would not affect existing burrowing owl habitat, but would enhance the site for use by the owl and other special-status species known from the project site and vicinity.

## PROJECT SITE ENCUMBRANCES

A title report was prepared to identify existing easements located on the property. The title report, including a map of the existing easements, is contained in the Bank Enabling Agreement. Three parallel underground pipelines were identified crossing the southwestern corner of the site; these are records 13, 15, and 18 in the title report. A telephone line easement was identified along the western boundary; this is listed in record 13 in the title report. Also, a 1,850-foot slope drain easement was identified along Armstrong Road frontage, in the southeastern corner of the property; this is record 19 in the title report. The locations of these easements are shown on Figure 4.

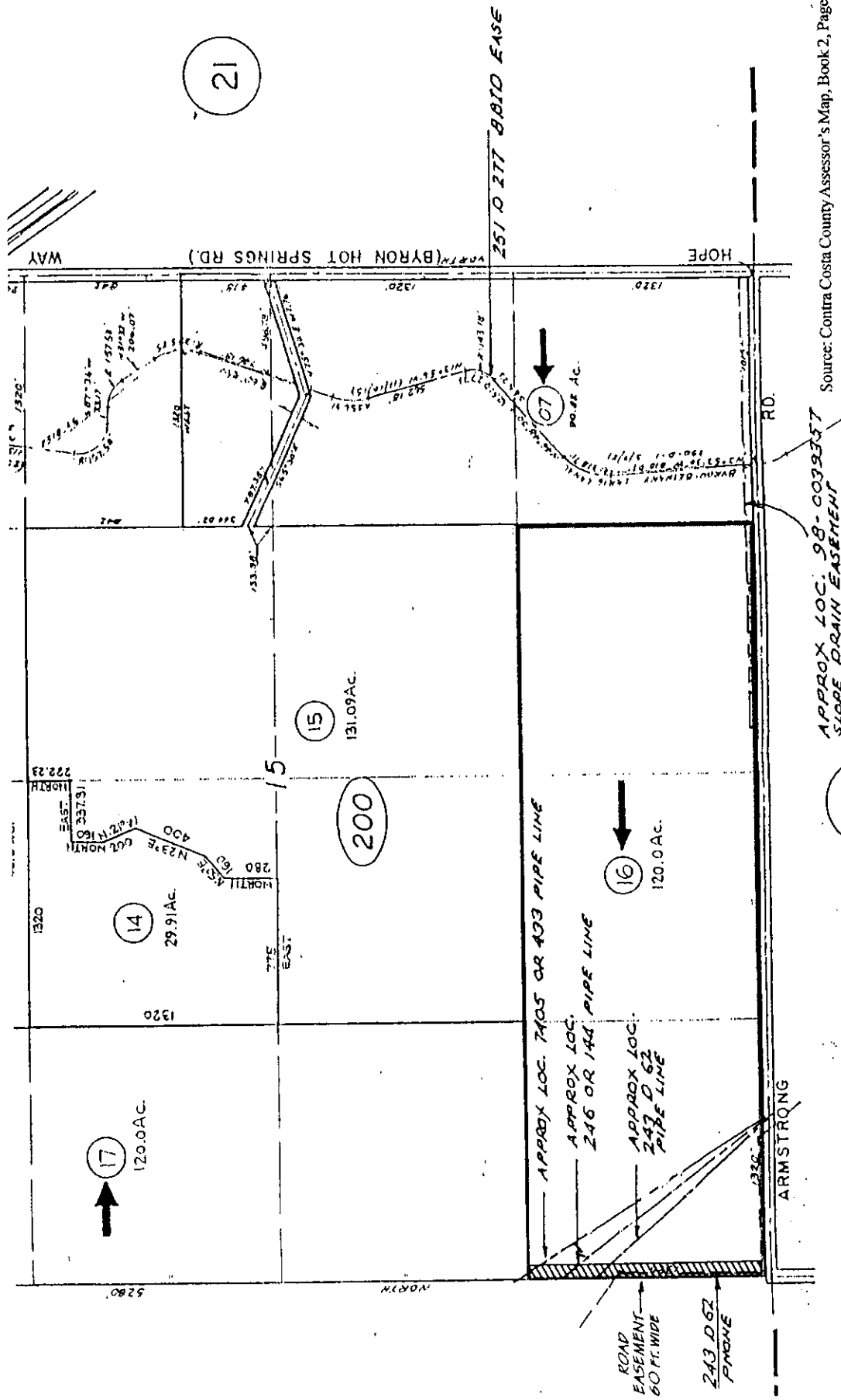
To provide access to the Fowler property north of the burrowing owl conservation bank, Wildlands, Inc. has granted a 60-foot wide road easement to David Fowler; if this easement will not be used for an access road, it will be abandoned. The location of this easement is shown on Figure 3 and 4.

The easement holders have the expressed right of reasonable use of their easements. Wildlands, Inc. will work with the easement holders to ensure that reasonable use of their easements will not adversely affect burrowing owls or degrade the existing burrowing owl habitat.



Table 2. Preliminary Annual Work Plan

Tasks	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1) Grazing Management</b>												
Coordinate with grazing operator												
Monitor grazing forage utilization												
<b>2) Vegetation Management</b>												
Map concentration of pest plants (e.g., star thistle, milk thistle)												
Conduct pest plant control activities (e.g., physical removal and/or chemical application)												
Monitor pest plant response to control actions (as needed)												
<b>3) Wildlife Management</b>												
Conduct burrowing owl monitoring												
<b>4) Property Management</b>												
Conduct fence checks/repairs, trash clean-up, and signage maintenance												
<b>5) Administrative Management</b>												
Prepare annual reports												
Coordinate with DFG												



Source: Contra Costa County Assessor's Map, Book 2, Page 20

## Existing Easements on the Brushy Creek Conservation Bank Property

Figure 4



Wildlands, Inc.

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**APPENDIX A.      GRAZING MANAGEMENT PLAN  
BRUSHY CREEK CONSERVATION BANK**