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CH2MHILL

November 23, 2010

Sent via electronic mail

Ms. Marcia Grefsrud
California Department of Fish and Game
Central Coast (Region 3)
7329 Silverado Trail
Napa, CA 94558

Subject: Mariposa Energy Project (MEP) Burrowing Owl Survey Report

Dear Marcia:

Mariposa Energy has prepared the attached Burrowing Owl Survey Report for your review.

Please feel free to contact me at (916) 286-0348 (doug.urry@ch2m.com) or Todd Ellwood at (408) 839-2402 (todd.ellwood@ch2m.com) with any additional questions.

Sincerely,

Doug Urry
CH2M HILL Project Manager

Attachment

cc: Craig Hoffman, CEC
Sara Keeler, CEC
Todd Ellwood, CH2M HILL
Bo Buchynsky, Mariposa Energy, LLC

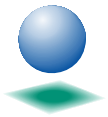
Burrowing Owl Survey Report

Mariposa Energy Project

Prepared for

Mariposa Energy LLC

November 2010



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2485 Natomas Park Drive
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Contents

Summary

A complete three-phase western burrowing owl *(Athene cunicularia hypugaea)* survey was conducted during the spring of 2010, in support of the proposed Mariposa Energy Project (the Project) in northeastern Alameda County near the community of Bryon, California. These surveys included a Phase I habitat assessment, Phase II burrow surveys, and Phase III burrowing owl surveys in accordance with the California Burrowing Owl Consortium (CBOC) Survey Protocols and Mitigation Guidelines (CBOC, 1993). These surveys were conducted within the approximately 379-acre Burrowing Owl Survey Area (Survey Area) during the 2010 breeding season. The Survey Area included the Project footprint and a majority of the recommended buffer area (500-foot). Three active burrowing owl territories[1] within the Survey Area were confirmed by these surveys.

Based on these survey results, occupied burrows occur between approximately 86 to 227 feet outside the Project's proposed construction footprint. However, all identified occupied burrows occur within 250 feet of the Project, thus exposing them to potential indirect effects. A preconstruction survey following the CBOC guidelines for burrowing owls should be conducted prior to ground disturbance when the Project commences to determine current owl occupancy.

As for minimizing impacts to burrowing owls during Project construction, avoidance of occupied burrows is the preferred approach, but if that is not feasible due to an active burrow being located in the Project area or vicinity (if found during preconstruction surveys), then passive relocation is recommended and should be conducted according to agency-approved, project-specific mitigation measures and with approved burrow replacement ratios, consistent with the CBOC's protocols and guidelines (CBOC, 1993), the California Department of Fish and Game's (CDFG) *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995), and/or any direct guidance given by CDFG staff.

[1] A territory represents a single adult owl, a pair of owls, or a family group associated with a nest burrow.

1.0 Introduction

1.1 Project Description

On behalf of Mariposa Energy, LLC (Mariposa Energy), CH2M HILL has prepared this Burrowing Owl Survey Report for the proposed Mariposa Energy Project (the Project). Mariposa Energy proposes to construct the Project in northeastern Alameda County, California, located both near the California Aqueduct and Delta-Mendota Canals (see Figure 1-1).

The Project will be a nominal 200-megawatt, simple-cycle generating facility consisting of four power blocks. Each power block will contain one GE LM6000 PC-Sprint natural gas-fired combustion turbine generator. The generated power will be delivered to the grid via Pacific Gas and Electric's (PG&E) Kelso Substation. The new facility will be designed, constructed, and operated in accordance with applicable laws, ordinances, regulations and standards. The main access to the facility site will be from Bruns Road. A portion of the site will be paved to provide internal access to all project facilities and onsite buildings. The areas around equipment, where not paved, will have gravel surfacing. The project also includes: a new approximately 0.7-mile-long, 230-kV transmission line to deliver the plant output to the electrical grid via the existing 230-kV Kelso Substation located north of the project site; approximately 580 feet of new 4-inch-diameter natural gas pipeline that will run directly northeast from the project site to interconnect with PG&E's existing high-pressure natural gas pipeline; and a new 6-inch-diameter, 1.8-mile water supply line from the Byron-Bethany Irrigation District (BBID) Canal 45 delivering raw water to the project site.

1.2 Project Location

The facility site is in northeastern Alameda County, in an unincorporated area designated as Large Parcel Agriculture by the East County Area Plan. The site is located approximately 7 miles northwest of Tracy, 7 miles east of Livermore, 6 miles south of Byron, and approximately 2.5 miles west of the community of Mountain House in San Joaquin County (Figure 1). The facility will be located southeast of the intersection of Bruns Road and Kelso Road on a 10-acre portion of an approximate 158-acre parcel immediately south of the Bethany Compressor Station and 230-kV Kelso Substation, both owned by PG&E. The proposed power plant site is located in the southern portion of the project parcel. The existing, unrelated 6.5-MW Byron Power Cogen Plant occupies 2 acres of the 158-acre parcel northeast of the proposed MEP site. The remainder of the parcel is non-irrigated grazing land and will remain as such during MEP operation. A wind turbine development was once located on the southern portion of the parcel, including the MEP site. Concrete foundations and other miscellaneous debris, including remnants of turbine housings, remain onsite.

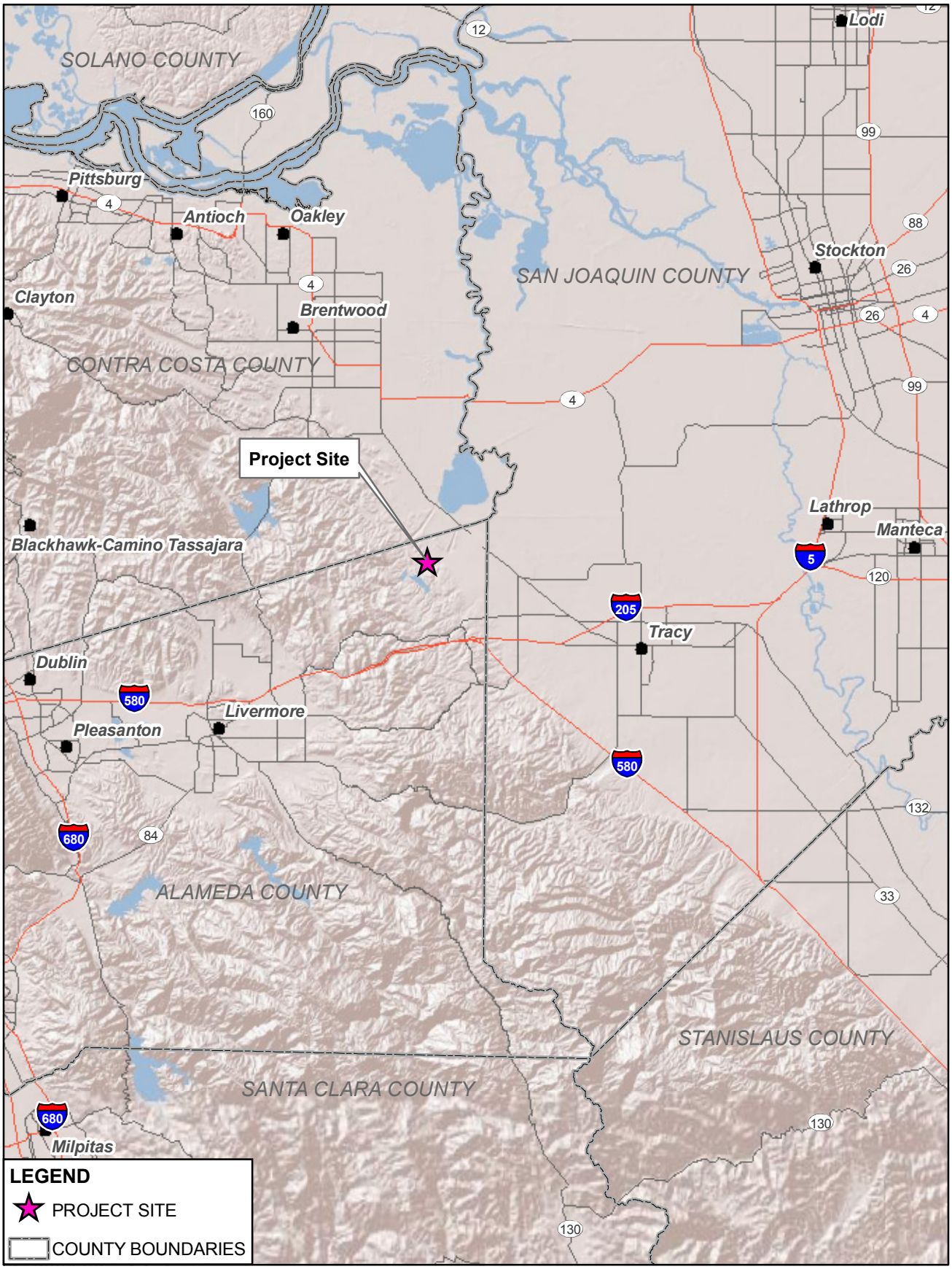

FIGURE 1-1
PROJECT VICINITY
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

CH2MHILL

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1.3 Purpose of Report

This report summarizes the results of the breeding season burrowing owl survey conducted at the proposed Project site. The survey was composed of a Phase I habitat assessment, Phase II burrow surveys, and Phase III burrowing owl surveys for the western burrowing owl (*Athene cunicularia hypugaea*). All of these surveys were conducted in 2010 within the Survey Area shown in Figure 1-2, Burrowing Owl Survey Area. The objective of the surveys was to determine whether the Survey Area is currently occupied by burrowing owls, to document such territories, and ultimately to avoid and minimize potential project impacts on burrowing owls. The methodology and results of this survey are discussed in the following sections.

LEGEND

- POWER POLE LOCATION
- PUMP STATION/TURNOUT STRUCTURE
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- WATER SUPPLY PIPELINE LAYDOWN AREA
- PROJECT SITE
- DISTURBANCE AREA

OWL SURVEY AREA

- BURROWING OWL SURVEY AREA, PARTIAL BINOCULAR COVERAGE DUE TO PRIVATE PROPERTY
- BURROWING OWL SURVEY AREA, 100 PERCENT VISUAL COVERAGE
- 500FT SURVEY AREA

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

N

0 1,000 2,000
Feet

FIGURE 1-2
BURROWING OWL SURVEY AREA
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

2.0 Burrowing Owl Biology

2.1 Status and Distribution

The western burrowing owl is considered to be a California Species of Special Concern (SSC) by the California Department of Fish and Game (CDFG) (CDFG, 2009). Although the SSC designation does not provide formal protection of the species or its habitat under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA), potential impacts to burrowing owls and their nests fall under the jurisdiction of the Migratory Bird Treaty Act (MBTA), the California Environmental Quality Act (CEQA), and Sections 3500, 3503.5, and 3800 of Fish and Game Code.

The western burrowing owl is one of two subspecies that occur in North America. Western burrowing owls are currently found from the Mississippi River west to the Pacific Ocean and from the prairie provinces of Canada south to Mexico, Panama, and Argentina (Johnsgard, 1988; Haug et al., 1993). Historically, the species' range extended farther north, west, and east.

2.2 Habitat Requirements

The burrowing owl is a small, ground-nesting bird that is predominantly nocturnal but is also active during the day. Burrowing owls are found in a variety of habitats that include dry, open areas with mammal burrows. Burrowing owls require low vegetative cover and adequate perch sites to forage from and to act as lookout points for predators. Burrowing owls also require level to gently sloping areas (Haug et al., 1993; Dechant et al., 2003). Specifically, breeding habitat includes shortgrass prairie, pastures, hayfields, and fallow fields (Dechant et al., 2003). Burrowing owls also occur in a variety of urban habitats that include areas adjacent to roads and railroads, irrigation ditches, golf courses, airports, university campuses, and vacant dirt lots (Coulombe, 1971; Thomsen, 1971; Collins and Landry, 1977; Trulio, 1995; and Dechant et al., 2003).

The three ecosystems in which burrowing owls are most prevalent in California are grasslands and irrigation banks adjacent to intensive agriculture; large expansive grasslands; and small patches of grassland surrounded by urban development (Rosenberg and DeSante, 1997).

Burrow availability is a major factor in defining suitable burrowing owl habitat (Coulombe, 1971; Green and Anthony, 1989). Most importantly, western burrowing owls require the presence of a mammal burrow or cavity (natural or man-made) that is the appropriate size for a nest burrow. Although western burrowing owls can excavate holes where burrowing mammals are absent, they rarely do so (Thomsen, 1971). Therefore, the presence of burrows seems to be more important for the western burrowing owl than for its eastern counterpart, the Florida burrowing owl (*Athene cunicularia floridana),* that usually excavates its own

burrow (Thomsen, 1971; Martin, 1973; Zarn, 1974; Wedgwood, 1978; Haug, 1985; Millsap, 2007).

Throughout California, western burrowing owls primarily use California ground squirrel (*Spermophilus beecheyi*) burrows. Burrowing owls also use man-made cavities for nest burrows. Examples include pipes, culverts, rock piles, concrete debris, and artificial burrows.

2.3 Breeding Ecology

In California, nesting season for burrowing owls occurs between February 1 and August 31, with the peak of breeding activity between April 15 and July 15 (CBOC, 1993). Upon arrival to the breeding areas, males occupy the burrows, prepare them for use, and begin courtship and territorial behavior. Migratory owls arrive singly. Non-migratory owls retain their pair bonds throughout the year (Haug et al., 1993). Burrowing owls often nest in loose colonies, which may be an indication of burrow abundance or as an adaptation for mutual defense. Colony members and ground squirrels alert each other to potential predators (Butts, 1973; Desmond, 1991; Desmond et al., 1995; Desmond and Savidge, 1996). A small territory around the nest burrow is aggressively defended against intrusions by other burrowing owls, squirrels, and predators (Center for Biological Diversity, 2003) such as feral cats *(Felis domesticus)* and dogs *(Canis familiaris)*, coyotes *(Canis latrans)*, weasels *(Mustela* spp.), skunks *(Mephitus mephitis* and *Spilogale gracile)*, and various hawks (Family Accipitridae) and falcons (Family Falconidae).

During the early part of the nesting cycle, the female incubates and broods the young while the male defends the territory and is the primary food provider. Young owls can be seen at the burrow entrance approximately two weeks after hatching and fledge after approximately six weeks (Haug et al., 1993). Burrowing owl families remain a loose-knit group, and often move from burrow to burrow, until early fall when the young begin to disperse to nearby burrows (Haug et al., 1993; Dechant et al., 2003) or other areas.

Typically, burrowing owls are known to lay one clutch per season; however, they will renest if the first nest is destroyed or is unsuccessful early in the breeding season (Thomsen, 1971; Butts, 1973; Wedgwood, 1976). Recently, western burrowing owls have been observed with a second brood of chicks even after a successful first brood (Gervais and Rosenberg, 1999).

Burrowing owls often stand at or near their burrow, either on the ground or on a low perch. The burrow protects against predators (Butts, 1973; Green and Anthony, 1989) and adverse weather conditions; it also creates a microhabitat for arthropods, a primary food source (Coulombe, 1971). Both adults renovate and maintain burrows through a combination of kicking backwards and digging with their beaks (Thomsen, 1971). An owl's territory generally includes multiple burrows, including the nest burrow (the largest and best maintained burrow), escape burrows, and satellite burrows.

Burrowing owls have a moderate to high site fidelity, meaning they typically return to or never leave the same breeding area year after year. Although burrowing owls reuse traditional breeding areas, not all owls reuse the same nest burrow (Haug et al., 1993; Dechant et al., 2003).

2.4 Food Habits

Burrowing owls are opportunistic feeders. Their diet consists primarily of arthropods (e.g., spiders, beetles, grasshoppers, crickets, earwigs, crustaceans) in addition to small mammals (e.g., voles, mice, pocket mice, kangaroo rats) and birds (e.g., blackbirds, horned larks, mourning doves) and to a lesser extent reptiles and amphibians (Bent, 1938; Glover, 1953; Earhart and Johnson, 1970; Thomsen, 1971; Zarn, 1974; Gleason and Craig, 1979; Conroy and Chesemore, 1987; Haug and Oliphant, 1990). The majority of prey remains can be identified in the owl's pellets. Although burrowing owls are active day and night, they primarily forage at night when they are less vulnerable to diurnal predators such as hawks and falcons (Bloom, 2005).

Burrowing owls use a variety of hunting styles depending on the time of day, type of prey, and habitat type (Thompson and Anderson, 1988; Haug et al., 1993). Sometimes owls hunt from a perch and capture prey during short flights or glides, and sometimes they hover or fly-catch. Burrowing owls will also walk, run, and hop on the ground to catch prey (Grant, 1965; Thomsen, 1971; Marti, 1974). After catching their prey, burrowing owls typically return to a perch or will stand at the burrow entrance while eating.

2.5 Movement

Burrowing owls tend to stay close to the nest burrow during the day and forage farther from the nest between dusk and dawn (Haug, 1985; Haug and Oliphant, 1990). Average home range size during the breeding season for a study conducted in the Central Valley of California varied between 98 and 139 hectares (ha) (242 and 343 ac) (Gervais et al., 2003). Although home range includes the nest territory and overall foraging areas, the majority of the foraging efforts of male owls tend to be concentrated within 600 m (1,968.5 ft) of the nest (Gervais et al., 2003; Rosenberg and Haley, 2004).

Burrowing owls are year-round residents within much of California (Shuford and Gardali, 2008). Relatively little is known about migration routes, times, and wintering areas (Haug et al., 1993). However, observations indicate that populations of the western burrowing owl in the northernmost and highest-elevation portions of the species' range are migratory. The migratory individuals leave their breeding grounds in the fall, around September or October, and return to the same or nearby burrows each spring, around March or April (Center for Biological Diversity, 2003; Klute et al., 2003). Wintering areas include Arizona, California, New Mexico, Oregon, Texas, and Mexico south to western Panama (Klute et al., 2003).

California has a large wintering population relative to other portions of the burrowing owl's North American range. Many of the wintering individuals are assumed to come from snow-covered areas where burrows and food are inaccessible (Center for Biological Diversity, 2003).

2.6 Population Trends

The western burrowing owl was once a widely distributed and common grassland bird. However, overall population trends indicate a decline throughout the species' range. Historically, burrowing owls in California were described as a "common resident" (Grinnell, 1915; Dawson, 1923) within its range and was found from "the base of the Sierras down to the ocean's edge" (Dawson, 1923). Although early accounts described burrowing owls as "probably one of the most common birds in California," the state's burrowing owl population has been in continuous decline since at least the 1940s (Center for Biological Diversity, 2003). During the last 10 to 15 years, breeding burrowing owls in California have been extirpated to approximately 8 percent of their former range (Center for Biological Diversity, 2003). Currently, the majority of burrowing owls exist in small, declining populations of birds that are highly susceptible to extirpation (Center for Biological Diversity, 2003).

Despite their ability to adapt to urban environments and some degree of human presence, the burrowing owl population in California has continued to decline. In California, breeding burrowing owls have been extirpated from Marin, San Francisco, Santa Cruz, Napa, coastal San Luis Obispo, Ventura, Santa Barbara, and western Los Angeles counties (DeSante and Ruhlen, 1995; Kidd et al., 2007). In addition, breeding burrowing owls have been nearly extirpated from Sonoma, Orange, coastal Monterey, and San Mateo counties (DeSante and Ruhlen, 1995). The species is rapidly disappearing from eastern Los Angeles, western San Bernardino, western Riverside, and San Diego counties (Lincer and Bloom, 2007; Center for Biological Diversity, 2003).

2.7 Causes of Population Decline

Primary threats to the western burrowing owl across its North American range are habitat loss and fragmentation primarily due to intensive agricultural and urban development, and habitat degradation due to declining populations of colonial burrowing mammals and non-native grasses (Grant, 1965; Konrad and Gilmer, 1984; Ratcliff, 1986; Haug et al., 1993; Dundas and Jensen, 1994 and 1995; Rodriguez-Estrella and Holroyd, 1998; Sheffield, 1997; Dechant et al., 2003). Over 85 percent of burrowing owls in California are found on agricultural land in the Imperial and Central Valleys (DeSante and Ruhlen, 1995), which are among the most rapidly urbanizing areas of the state (CDF, 1993, 1994, and 2001).

Another cause of historic and current population declines can be attributed to the elimination of burrowing rodents through control programs (Butts and Lewis, 1982; Pezzolesi, 1994; Desmond and Savidge, 1996, 1998, and 1999; Toombs, 1997; Dechant et al., 2003; Desmond et al., 2000; Murphy et al., 2001). The use of rodenticides and insecticides associated with rodent control programs reduce the food supply and may be toxic to owls (Ratcliff, 1986; James and Fox, 1987; James et al., 1990; Baril, 1993; PMRA, 1995; Hjertaas, 1997; Sheffield, 1997).

Other man-made threats to burrowing owl populations include vehicle collision, destruction of burrows by disking or grading, increased predation by feral dogs and cats, shooting, and harassment.

3.0 Methodology

The following section discusses the methodology used during the burrowing owl surveys. Surveys were conducted in accordance with the guidelines set forth by the California Burrowing Owl Consortium and CDFG (CBOC, 1993; CDFG, 1995).

3.1 Phase I Habitat Assessment and Phase II Burrow Surveys

The Phase I habitat assessment survey was conducted as part of a plant and wildlife characterization of the Project area that were conducted on December 31, 2008 in support of the Project's California Energy Commission Application for Certification. This survey was conducted within the Project footprint and was intended to identify general habitat suitability for general and special-status plants and animals. Suitable foraging and nesting habitat was observed in the Survey Area for burrowing owl.

During rare plant surveys in April 2009, one occupied burrowing owl burrow was observed within the project's proposed temporary laydown area and another active owl burrow offsite in the vicinity of the proposed gas pipeline. A single adult was observed at both locations including white wash at each burrow opening; nesting behavior was not observed however. Although both burrows were confirmed to be inactive during Phase III surveys likely as a result of overgrown site conditions, these previous sightings establish an historical presence of burrowing owl onsite when site conditions are suitable.

Phase II burrow surveys were conducted on May 10, 2010, in accordance with CBOC Phase II methodology (CBOC, 1993). For these surveys, one biologist conducted walking transects of the Survey Area where access to the property was provided (which consisted of the Project footprint plus a 500-foot buffer spaced no greater than 100-foot apart. Onto private property, the biologist used binoculars from vantage points partially surveying the study area for owl activity. Where access on foot was allowed, the surveyor searched for burrows with evidence (for example, sign) of burrowing owl occupancy (including presence of owls, pellets, whitewash, feathers, prey remains, or tracks). Burrows where owls or their sign were observed were documented using Global Positioning System (GPS) Trimble GeoXT units with sub-meter accuracy.

3.2 Phase III Focused Surveys

Phase III burrowing owl surveys were conducted by CH2M HILL biologists on June 4, 11, 23, and July 9, 2010 in order to map the locations of and estimate the approximate number of burrowing owl territories located within the Survey Area. All burrows with sign of potential occupancy from the Phase II surveys were revisited during the Phase III surveys. These burrows were approached during the first Phase III survey to check for sign, unless an owl was observed at or near the burrow. During the subsequent Phase III surveys observations were made from a distance using binoculars from multiple fixed locations to minimize survey-related disturbance to the owls. In accordance with the CBOC guidelines (CBOC,

1993), the biologists had the proper qualifications based on their experience with burrowing owl biology and identification, and the focused nesting season surveys were conducted during the height of the breeding season between April 14 and July 14 (CBOC, 1993).

Surveys were conducted during suitable weather conditions. Specific information regarding survey times and weather conditions can be found in Table 3-1 below. All burrowing owl observations were mapped using Trimble GeoXT GPS units and on maps with an aerial photograph overlay. Other survey equipment included binoculars and digital cameras.

During the first Phase III survey all Phase II burrows that showed evidence of burrowing owl were re-examined for sign, followed by fixed point surveys of the burrows, in search of burrowing owls. In subsequent surveys, the biologist viewed the occupied burrows from vantage points to minimize potential disturbance to the owls and maximize visual coverage of the territory. A new burrow and owl location was recorded during Phase III surveys (Territory 3). Biologists counted and mapped all burrowing owl observations, occupied nest burrows, and potential burrows with owl sign. No attempt was made to quantify territory size or foraging range.

TABLE 3-1
Phase III Survey Dates, Times, and Weather Conditions
Burrowing Owl Survey Report, Mariposa Energy Project

Survey #	Date	Time	Conditions
1	6/4/2010	5:16AM-1:38PM	Mid 60s degrees Fahrenheit (°F), light winds (~0-5 mph), partly cloudy skies
2	6/11/2010	6:25AM-9:31AM	Mid 60s °F, moderate winds (~10-15 mph) with gusts up to 22 mph, sunny and clear
3	6/23/2010	6:30AM-7:27AM	Mid 60s °F, light to moderate winds (~5-10 mph), partly cloudy
4	7/9/2010	10:00AM-11:30AM	Mid 80s °F, light winds (~0-5 mph), sunny and clear

4.0 Results and Recommendations

4.1 Survey Results

Five burrows that comprise three burrowing owl territories were observed during Phase III focused surveys within the Survey Area. A territory represents a single adult owl, a pair of owls, or a family group associated with a nest burrow and satellite burrows. Territories were determined based on direct observations of owls using one or more burrows. For territories with multiple burrows in use, the burrows were classified as main or satellite burrows. The three territories were located adjacent to the project's proposed transmission line work corridor.

A summary of Phase III survey dates and conditions is presented above in Table 3-1. The results of the Phase II and III surveys are discussed below and are summarized in Table 4-1. Burrowing owl locations within the Survey Area are shown in Figure 4-1 at the end of Section 4.1. Photographs of burrowing owl habitat within the Survey Area are shown in Appendix B, Representative Site Photographs.

4.1.1 Territory Summary

The five burrows are described below and the survey results are summarized following the list of burrows in Table 4-1. Two burrows that showed sign of potential owl use during Phase II surveys that were subsequently determined during Phase III surveys to be not used by burrowing owl are described in Table 4-1 only.

Territory 1

- **Burrow 2.** This main burrow is located on level, flat ground inside heavily grazed annual grassland characterized as cattle pasture. The burrow was observed during a Phase II survey with fresh whitewash at its entrance; no burrowing owls were observed at the time of initial discovery. During all Phase III surveys, adults and young were observed at the main burrow and two adjacent satellite burrows (see 2a and 2b below), with adults feeding young. On June 4, 2010, seven young were observed near the main burrow, with fewer young observed during subsequent Phase III surveys. Burrow 2 is approximately 227 feet east of the transmission line work corridor.
- **Burrows 2a and 2b.** These are satellite burrows of Burrow 2. Both adults and young were observed at these burrows during Phase III surveys. These burrows are located within 20 feet of Burrow 2 and approximately 227 feet east of the transmission line work corridor.

Territory 2

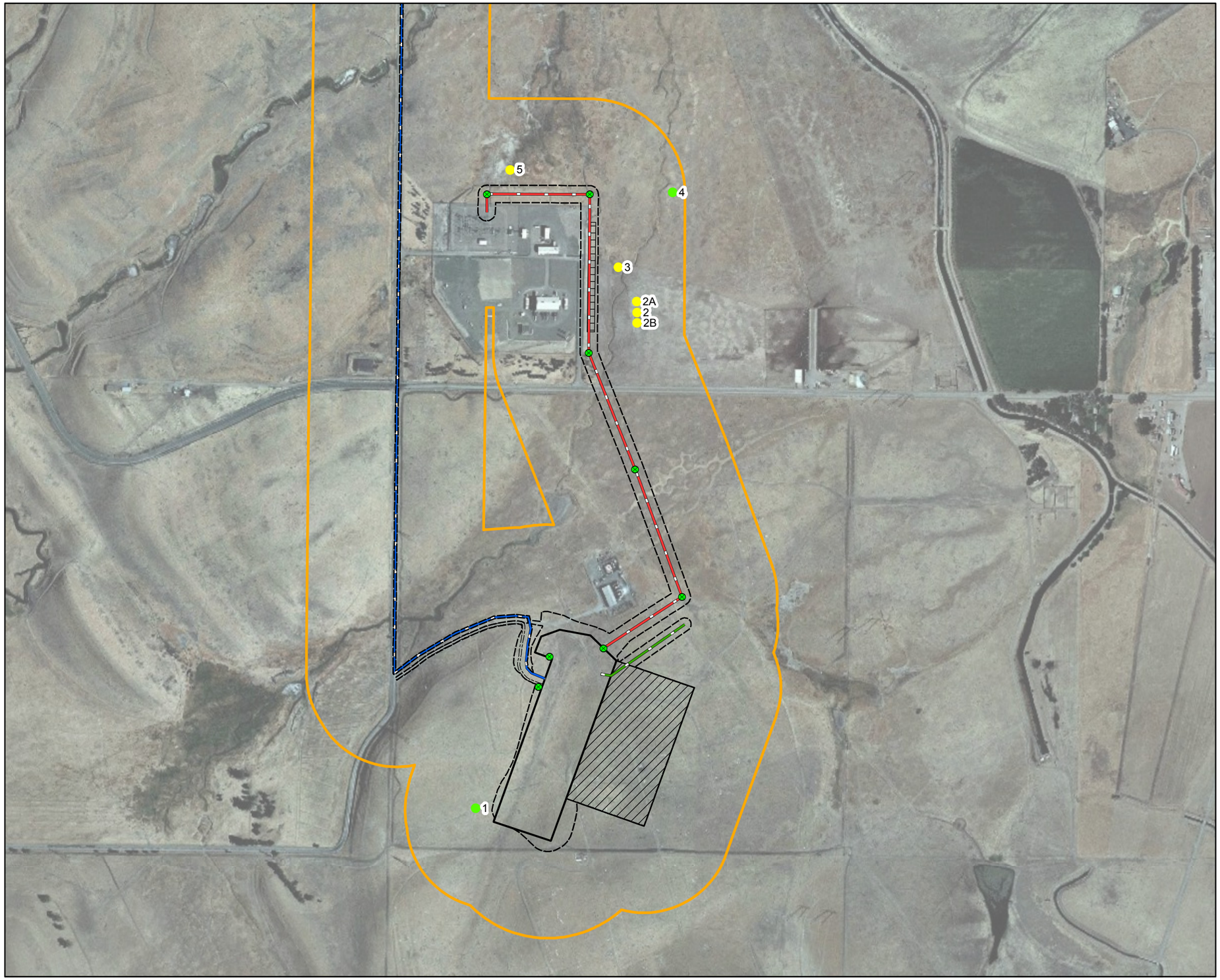
- **Burrow 3.** This burrow is located in the heavily grazed cattle pasture approximately 270 feet northwest of Burrow 2 and 120 feet east of the transmission line work corridor. A single adult owl was flushed from this burrow during the Phase II survey; white wash and pellets were observed at the burrow entrance upon closer inspection. During Phase III surveys, an adult owl was routinely observed foraging for insects in the burrow vicinity, and perching on an adjacent fence pole. The adult was also observed carrying food items back to the burrow during Phase III surveys. Neither a second adult (presumably the female) nor young were observed during Phase III surveys. There were no apparent satellite burrows associated with this territory.

Territory 3

- **Burrow 5.** This burrow is located on the upland edge of an alkali seasonal wetland feature in an annual grassland area lightly grazed by horses. A single adult owl was flushed from the burrow during Phase III surveys. During subsequent Phase III surveys, a pair of adult owls was observed at the burrow entrance, but no young. There were no apparent satellite burrows associated with this territory. This burrow is approximately 86 feet north of the transmission line work corridor.

TABLE 4-1
Summary of Results from Burrowing Owl Survey Conducted from 6/4/10 to 7/9/10
Burrowing Owl Survey Report, Mariposa Energy Project

Burrow ID	Territory	Project Site	Owls Observed?	Notes
1	Possible temporary use	Outside MEP Site	No	Possible owl white wash observed during Phase II survey, but no sign or owls observed during Phase III surveys.
2	1	227 feet from transmission line route	No in Phase II, but all Phase III surveys	Observed includes adult pair feeding up to 7 young at main burrow and 2 satellite burrows.
2a	Satellite burrow for Territory 1	227 feet from transmission line route	Yes, during Phase III	No owl sign or owl observed during Phase II surveys.
2b	Satellite burrow for Territory 1	227 feet from transmission line route	Yes, during Phase III	No owl sign or owl observed during Phase II surveys.
3	2	120 feet from transmission line route	Yes	Single adult observed during Phase II and Phase III, foraging and carrying food to burrow.
4	Possible temporary use or possible infrequent satellite burrow to Territory 1 or Territory 2	Outside transmission line route	No	White wash observed during Phase II survey, but no sign or owls observed during Phase III surveys.
5	3	86 feet from transmission line route	Yes	Adult pair observed at burrow entrance during Phase III surveys.



LEGEND

- POWER POLE LOCATION
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- PROJECT SITE
- DISTURBANCE AREA

BURROWING OWL SURVEY

- OCCUPIED BURROW
- PHASE II BURROW
- 500FT SURVEY AREA

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

N

0 500 1,000
Feet

FIGURE 4-1
BURROWING OWL SURVEY RESULTS
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

4.2 Conclusion

No occupied burrows by burrowing owl were observed within the proposed Project footprint during 2010 Phase II or Phase III surveys. Burrowing owl burrows observed during Phase I surveys were determined to be inactive. All five occupied burrows are less than 250 feet outside the Project footprint adjacent to the transmission line work corridor, therefore they are potentially vulnerable to ground disturbances during the non-breeding (Sep 1 – Jan 31) and breeding (Feb 1 – Aug 31) seasons. Because burrowing owls exhibit high nest site fidelity, territories 1-3 are likely to be occupied in the future during project construction and thus would be subject to standard mitigation measures such passive relocation and offsite compensation (for example, replacement of three owl territories).

In April 2009, two occupied burrows by burrowing owl were observed, including one inside the proposed 9.2 acre laydown area and the other near the proposed gas line work corridor. At the time, the grassland habitat was grazed which was conducive for burrowing owl. By the time of the Phase II and Phase III surveys, grasses and forbs ranging from 2 to 3 feet in height – likely due to lack of grazing –precluded owls from the Lee Property. Phase III active burrows were found in moderately to heavily grazed lands, on properties north of Kelso Road, lending to good visibility by the owls from their burrows for potential predators.

4.3 Recommendations

A preconstruction survey of the entire Project footprint plus a 500-foot buffer where access is possible should be conducted for burrowing owls and occupied burrows not more than 30 days prior to ground disturbance when Project construction commences. For minimizing impacts to burrowing owls found during the Project's preconstruction surveys, avoidance of occupied burrows by 160 feet during non-breeding season and 250 feet during breeding season is the preferred approach, but if that is not feasible, then passive relocation and burrow replacement should be conducted according to the CBOC's Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC, 1993), CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995) and project-specific mitigation measures from CDFG, if applicable. A qualified biologist may be able to justify smaller no-work buffers for CDFG approval that take into consideration existing site disturbances such as nearby developments and line of sight barriers such as hills.

If agency guidance is to provide compensatory mitigation for project related impacts to burrowing owl, then off-site mitigation will be most feasible option for Mariposa Energy. Currently, Mariposa Energy does not have any options with local land owners to establish a conservation easement for burrowing owl onsite. Therefore, if any off-site mitigation is required for burrowing owl impacts, it should occur at a CDFG-approved mitigation bank (for example, Mountain House Conservation Bank) using one of the following ratios prescribed by the CBOC:

1. Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 acres (= 9.75 acres) per pair or single bird.

2. Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 acres (= 13.0 acres) per pair or single bird.
3. Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 acres (= 19.5 acres) per pair or single bird.

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Appendix A
Wildlife Species Occurrences

TABLE A-1
Wildlife Occurrences Observed During the Phase II and Phase III Burrowing Owl Survey
Mariposa Energy Project

Scientific Name	Common Name
BIRDS	
Accipitridae	
Buteo jamaicensis	Red-tailed hawk
Columbidae	
Columbia livia	Rock pigeon
Zenaida macroura	Mourning dove
Cathartidae	
Cathartes aura	Turkey vulture
Charadriidae	
Charadrius vociferus	Killdeer
Corvidae	
Corvus brachyrhynchos	American crow
Falconidae	
Falco sparverius	American kestrel
Icteridae	
Agelaius phoeniceus	Red-winged blackbird
Euphagus cyanocephalus	Brewer's blackbird
Sturnella neglecta	Western meadowlark
Laniidae	
Lanius ludovicianus	Loggerhead shrike
Strigidae	
Athene cunicularia hypugaea	Western burrowing owl
Sturnidae	
Sturnus vulgaris	European starling
MAMMALS	
Leporidae	
Lepus californicus	Black-tailed jackrabbit
Scuiridae	
Spermophilus beecheyi	California ground squirrel

Appendix B
Representative Site Photographs

Cattle pasture east of PG&E substation where burrows 2, 2a, 2b, and 3 are located.

Horse pasture north of PG&E substation where burrow 5 is located.