

**Desert Tortoise Focused Survey Report**  
**The Calico Water Treatment Project**  
**Community of Calico, County of San Bernardino, California**

*Yermo, CA.* USGS 7.5-minute Topographic Quadrangle Map  
Township 10 North, Range 1 East, Section 22  
20-Acre Study Area

Government Lot 49 section of APN#0517-101-44-33

Prepared for:

**The County of San Bernardino**  
Special Districts Department  
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Report Date: November 22, 2010

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## SECTION 1: EXECUTIVE SUMMARY

Michael Brandman Associates (MBA) conducted a focused desert tortoise (*Gopherus agassizii*) survey of an approximately 20-acre project site located south of Calico Ghost Town, in San Bernardino County, California. This survey was intended to determine the presence/absence of desert tortoise and identify the potential for impacts to this species resulting from the proposed development.

This desert tortoise focused survey was conducted according to standard protocols set forth by the United States Fish and Wildlife Service (USFWS) for the 2010 field season. These surveys require 100 percent coverage of the proposed action area.

No desert tortoises were observed within the proposed action area. There was no other sign such as scat, or carcasses.

## SECTION 2: INTRODUCTION

MBA conducted a focused survey for desert tortoise on an approximately 20-acre project site in San Bernardino County, California. The survey was conducted according to survey protocol established by the USFWS in 2010.

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### 2.1 - Project Location

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Situated northeast of Barstow (Exhibit 1), the project area is located south of Ghost Town Road on land associated with Calico Ghost Town Regional Park. The property is rectangular and is located in the southwestern portion of Section 22, Township 10 North Range 1 East (Exhibit 2), as shown on the Yermo, CA. United States Geological Survey (USGS) 7.5-minute topographic quadrangle map. The property is divided into several Lots, and the Park's well is located in the southeast corner of Lot 49. The drying basins are proposed for land located south of the existing sewer ponds.

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### 2.2 - Project Description

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The proposed project involves improvements to the existing small water system that serves the Calico Ghost Town Regional Park, which is operated by the Regional Parks Department of San Bernardino County. The main components of the current system include two small water wells located south of the Ghost Town and two small reservoirs located at the extreme north end of the Ghost Town. Water from the two wells is pumped up to the reservoirs and is then distributed to the various operations within the Ghost Town. However, due to water quality problems with the well water, it is now necessary to provide for water treatment to remove various contaminants from the water prior to use by the Ghost Town facilities. In order to address this issue, a small reverse osmosis water treatment unit will be installed at a location proximate to and generally south of the existing sewer treatment ponds located south of the park entrance. The raw water from the two existing wells would then be pumped to the proposed water treatment unit and the treated water would then be pumped to the two existing reservoirs through existing piping.

Waste brine resulting from the treatment of the water would then drain to new evaporation ponds to for disposal. These ponds would be at a depth of approximately 6 feet, and will be lined to prevent contaminants from re-entering the water table. Although the design of the evaporation ponds and water treatment plant has not been completed as of the date of this report, all improvements and land disturbances related to their construction would be confined to the area within Government lot 49. For purposes of analysis, this study conservatively assumes that all of lot 49 would be affected by the proposed project.

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## 2.3 - Environmental Setting

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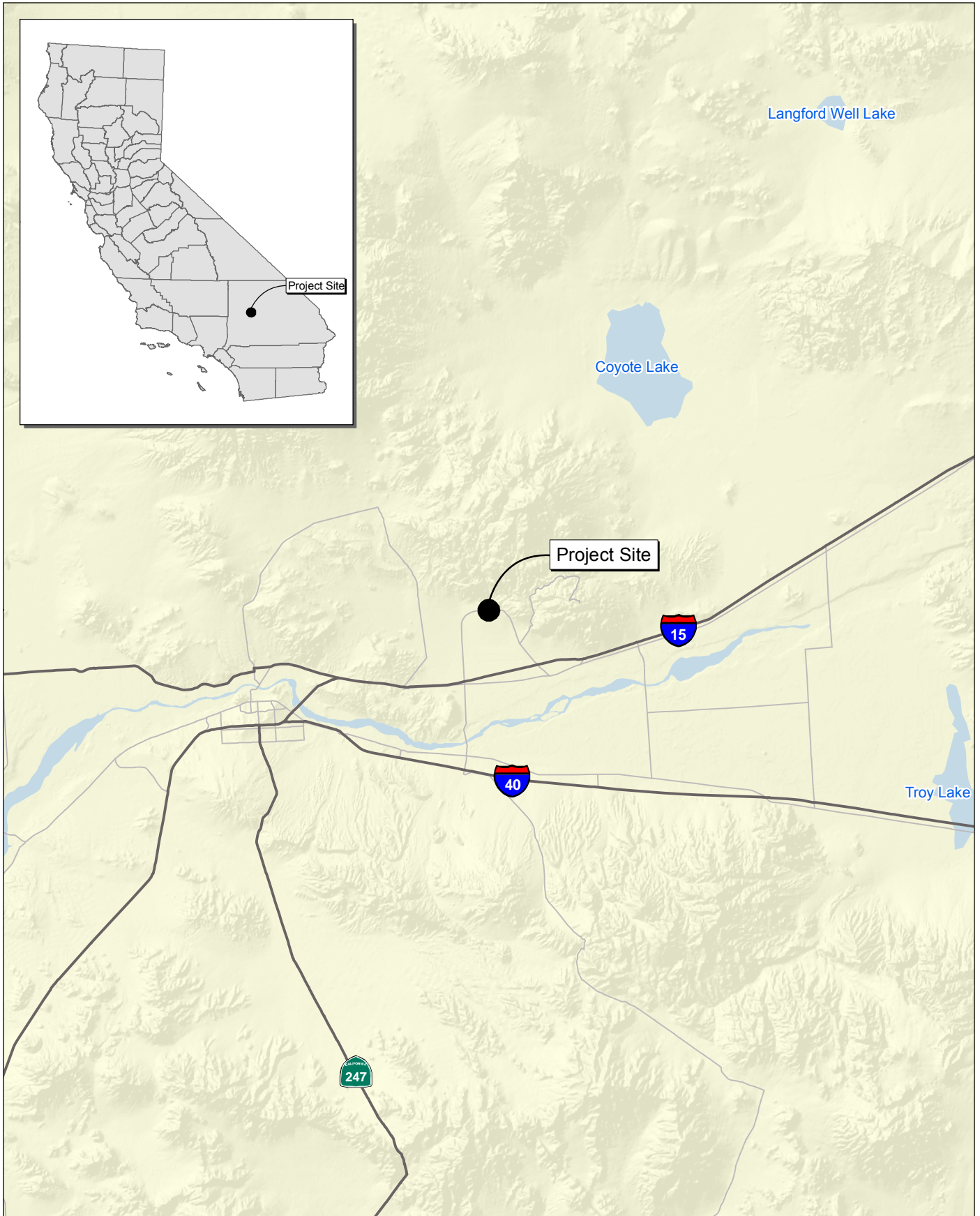
The project site is located the south of Ghost Town Road on land associated with Calico Ghost Town Regional Park. The elevation on the project site ranges from approximately 2,133 to 2,085 feet above mean sea level (AMSL) and gently slopes from north to south

The project area consists of creosote bush scrub and contains existing sewage treatment ponds that encompass roughly one acre of the project site.

Land use surrounding the site includes Calico Ghost Town Regional Park to the north, and open space to the south, east and west.

The majority of the project site contains creosote bush scrub. This community is an open plant community with shrubs widely spaced, usually with bare ground in between each shrub. Creosote bush scrub grows on well-drained secondary soils of slopes, fans, and valley floors with saline soils. The dominant plant species of this community is creosote bush (*Larrea tridentata*). Additional shrub species observed include cheese bush (*Ambrosia salsola*), burrobrush (*Ambrosia dumosa*), Mojave rabbitbrush (*Ericameria paniculata*), brittlebush (*Encelia farinosa*), and sweet bush (*Bebbia juncea*). Dominant annual species within the project site including cheat-grass (*Bromus tectorum*), red-stemmed stork's bill (*Plantago ovata*), and Sahara mustard (*Brassica tournefortii*).

There is a sewage treatment pond facility within the project site. The two ponds were constructed with raised levees and are fenced with chain link. Shrubs and small trees growing on the banks of the ponds include burrobrush, cheesebush, and palo verde (*Parkinsonia florida*).

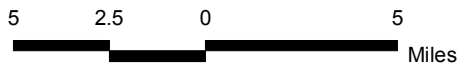


Source: Census 2000 Data, The CaSIL, MBA GIS 2009.



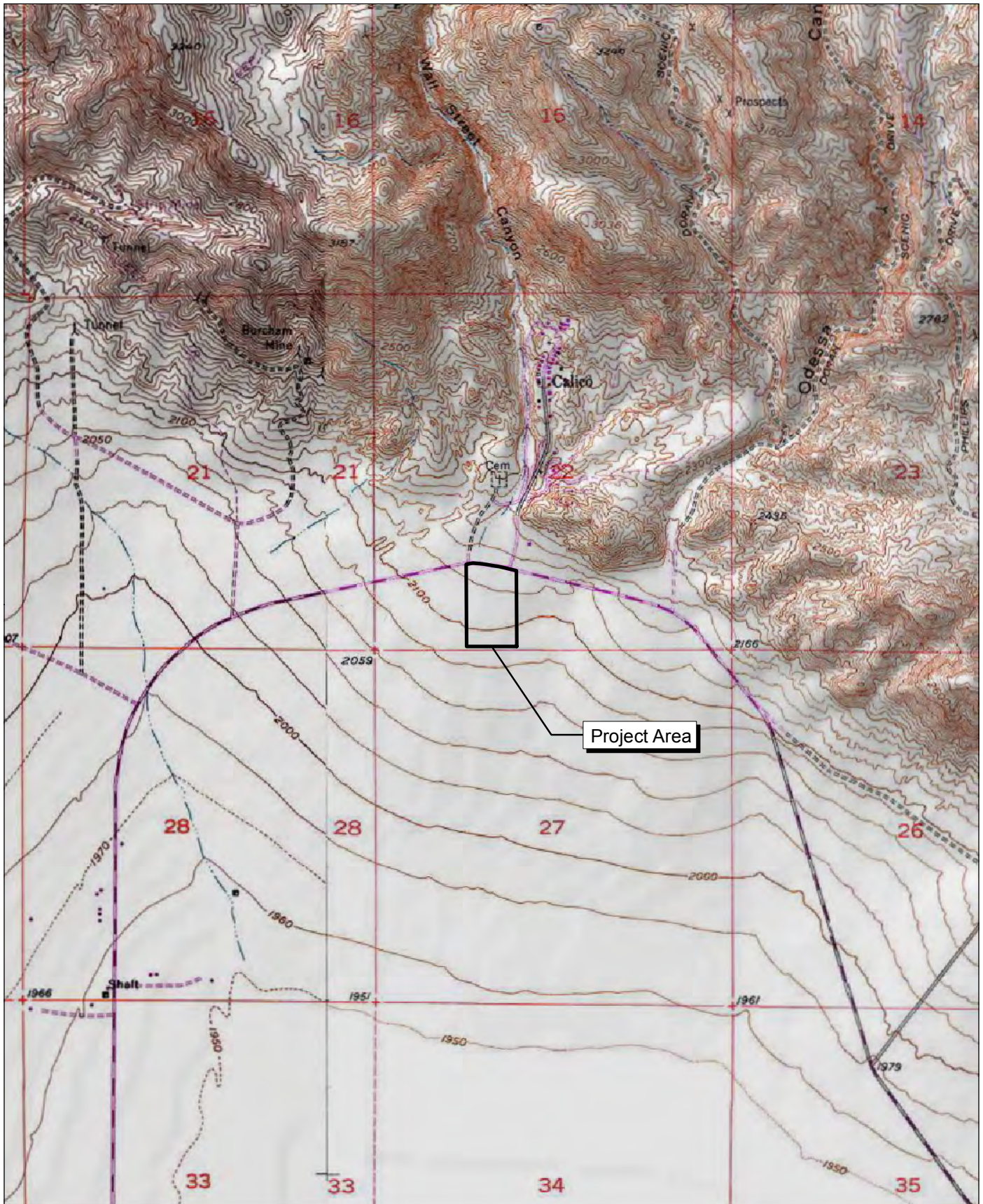
Michael Brandman Associates

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## Exhibit 1 Regional Location Map

COMMUNITY OF CALICO, COUNTY OF SAN BERNARDINO  
THE CALICO WATER TREATMENT PROJECT  
DESERT TORTOISE SURVEY



Source: TOPO! USGS Yermo, CA (1970) 7.5' DRG.



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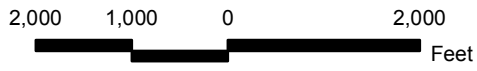


## Exhibit 2 Local Vicinity Map

COMMUNITY OF CALICO, COUNTY OF SAN BERNARDINO  
THE CALICO WATER TREATMENT PROJECT  
DESERT TORTOISE SURVEY



Source: BING Maps, (c) 2010 Microsoft Corporation and its data suppliers.



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### Exhibit 3 Local Vicinity Map - Aerial Base

COMMUNITY OF CALICO, COUNTY OF SAN BERNARDINO  
THE CALICO WATER TREATMENT PROJECT  
DESERT TORTOISE SURVEY

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## 2.4 - Desert Tortoise

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### 2.4.1 - Habitat

The desert tortoise is widely distributed in the Mojave and Sonoran deserts from below sea level to approximately 2,200 meters (7,217 feet). This species occurs in almost every desert habitat; however, it is most common in desert scrub, desert wash, and Joshua tree habitats. Highest densities of tortoise typically occur in creosote bush communities with extensive annual wildflower blooms.

Tortoises require friable, sandy, well-drained soil for excavation of nests and burrows. Burrows are crucial to survival, especially in areas of extreme temperatures. For shelter, this species normally excavates a burrow under bushes, overhanging soil, or rock formations and may dig into open soil in a clearing. On occasion, a tortoise will take cover under a bush or any natural shelter.

Desert tortoises are mostly herbivorous, eating both annual forbs and grasses. In general, forbs are preferred over grasses, and green vegetation is preferred over dry. Rabbits and rodents likely compete with tortoises for these available food resources. This species has been observed eating carrion and feces as well as excavating and eating calcium carbonate mineral deposits. They do not require water, but they will drink it if it is available.

Home range size seems to depend upon the quality of the habitat. In the western Mojave, home ranges are approximately 2 to 15 hectares (5 to 38 acres), but in the eastern Mojave, where the project site is located, home ranges may be 10 times as large. Desert tortoise densities can vary greatly, ranging from 3.5 per square kilometer (9.2 per square mile) in the eastern Mojave to more than 1,000 per square kilometer (2,600 per square mile) in the western Mojave (CDFG 2005).

### 2.4.2 - Behavior

Desert tortoises may be active at any time of year, but most activity takes place between March and June and, to a lesser extent, in late summer in areas with summer rains. In early spring, they may be active all day, but by late spring, activity is typically reduced to less than 1 hour in the early morning.

Tortoises are aggressive and may defend their home territories. Mating begins shortly after they become active in late March or early April, and eggs are laid in early summer (late May to July) with clutches averaging two to nine eggs per nest. These clutches take approximately three to four months to hatch. Nests are often constructed at the entrance to burrows. The absence of rainfall for prolonged periods and consequent scarcity of annual plants may result in a decrease in reproduction.

When tortoises are young and vulnerable, they are often killed by many different predators, including ravens, eagles, coyotes, domestic dogs, and foxes. As adults, they have few enemies; however, coyotes may attack when food is scarce.

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## **SECTION 3: REGULATORY BACKGROUND**

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### **3.1 - Federal Endangered Species Act**

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The USFWS administers the federal Endangered Species Act (ESA). The ESA provides a process for listing species as either threatened or endangered, and methods of protecting listed species. The ESA defines as “endangered” any plant or animal species that is in danger of extinction throughout all or a significant portion of its range. A “threatened” species is a species that is likely to become endangered in the foreseeable future. A “proposed” species is one that has been officially proposed by USFWS for addition to the federal threatened and endangered species list, but has not been sufficiently reviewed to determine if further listing is necessary.

Section 9 of the ESA prohibits “take” of threatened or endangered species. The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. The presence of any federally threatened or endangered species that are in a project area generally imposes severe constraints on development, particularly if development would result in “take” of the species or its habitat. Under the regulations of the ESA, the USFWS may authorize “take” when it is incidental to, but not the purpose of, an otherwise lawful act.

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### **3.2 - California Endangered Species Act**

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The California Department of Fish and Game (CDFG) administers the California Endangered Species Act (CESA). The State of California considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is considered as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management. A rare species is one that is considered present in such small numbers throughout its range that it may become endangered if its present environment worsens. State threatened and endangered species are fully protected against take, as defined above.

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## **SECTION 4: METHODOLOGY**

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### **4.1 - Literature Review**

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MBA reviewed available documents and graphics describing desert tortoise biology, habitat, and mapped distribution in the Mojave Desert, and project vicinity. The literature review included a review of field guides, websites, Geographic Information Systems (GIS) data, literature describing the desert tortoise, as well agency documentation identifying designated critical habitat. A complete list of references is included at the end of this report.

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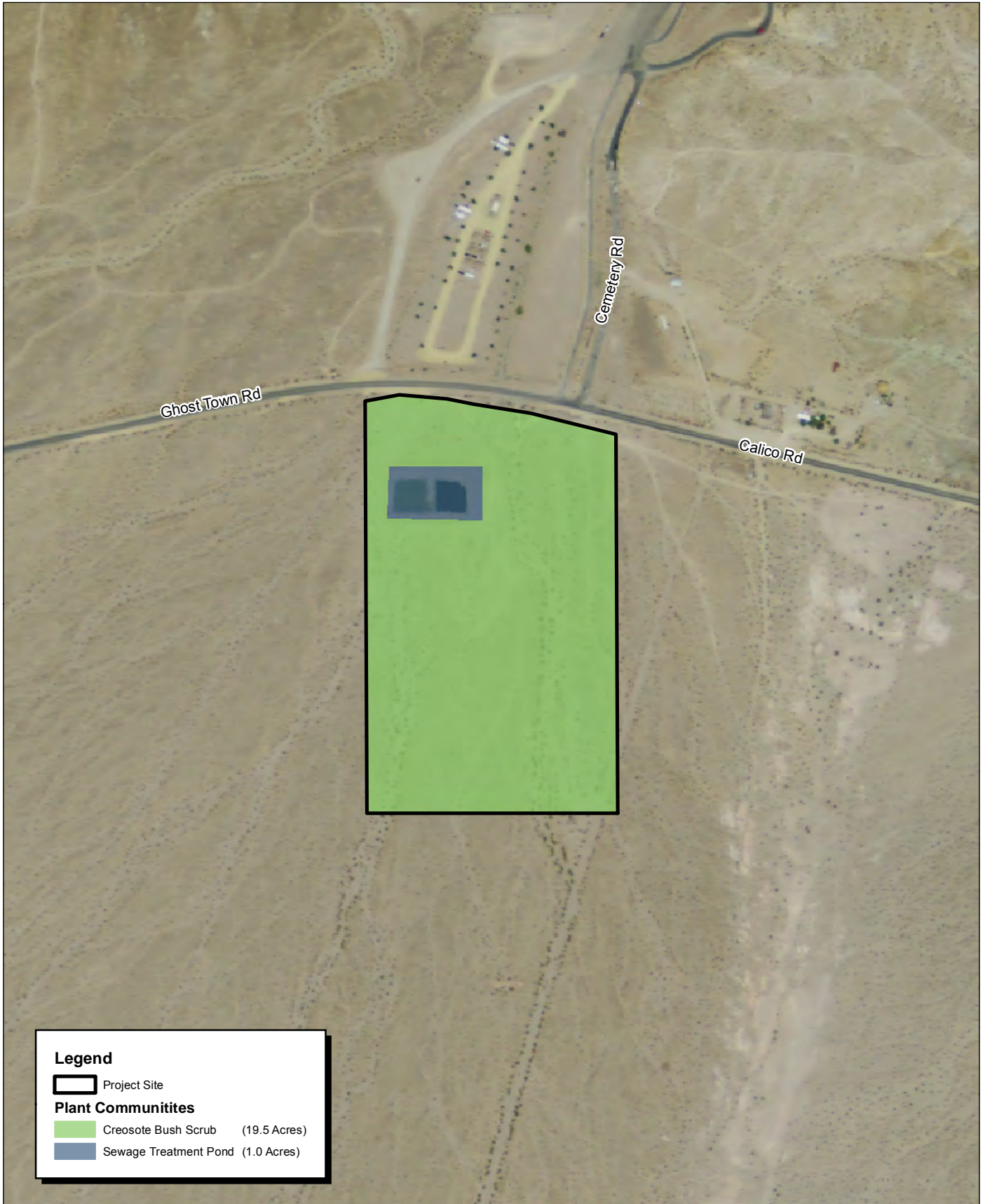
### **4.2 - Field Surveys**

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The proposed action area was surveyed by MBA biologist Dale Hameister, on October 28, 2010 from 10:00am to 3:30pm. The site was surveyed for signs indicating the presence of desert tortoise, including burrows, scat, drinking depressions, carcass remains, and live tortoises. Notes were taken on the plant and animal species observed, site surface characteristics, topography, and the suitability of the habitat for the desert tortoise.

#### **4.2.1 - Desert Tortoise**

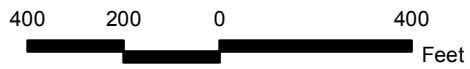
MBA biologist, Dale Hameister, followed USFWS protocol survey techniques developed for the desert tortoise. These surveys require 100 percent coverage of the proposed action area (Exhibit 4). Transects approximately 10 meters (33 feet) wide were walked over the entire project site, providing 100 percent visual coverage.



Source: NAIP San Bernardino County (2009).

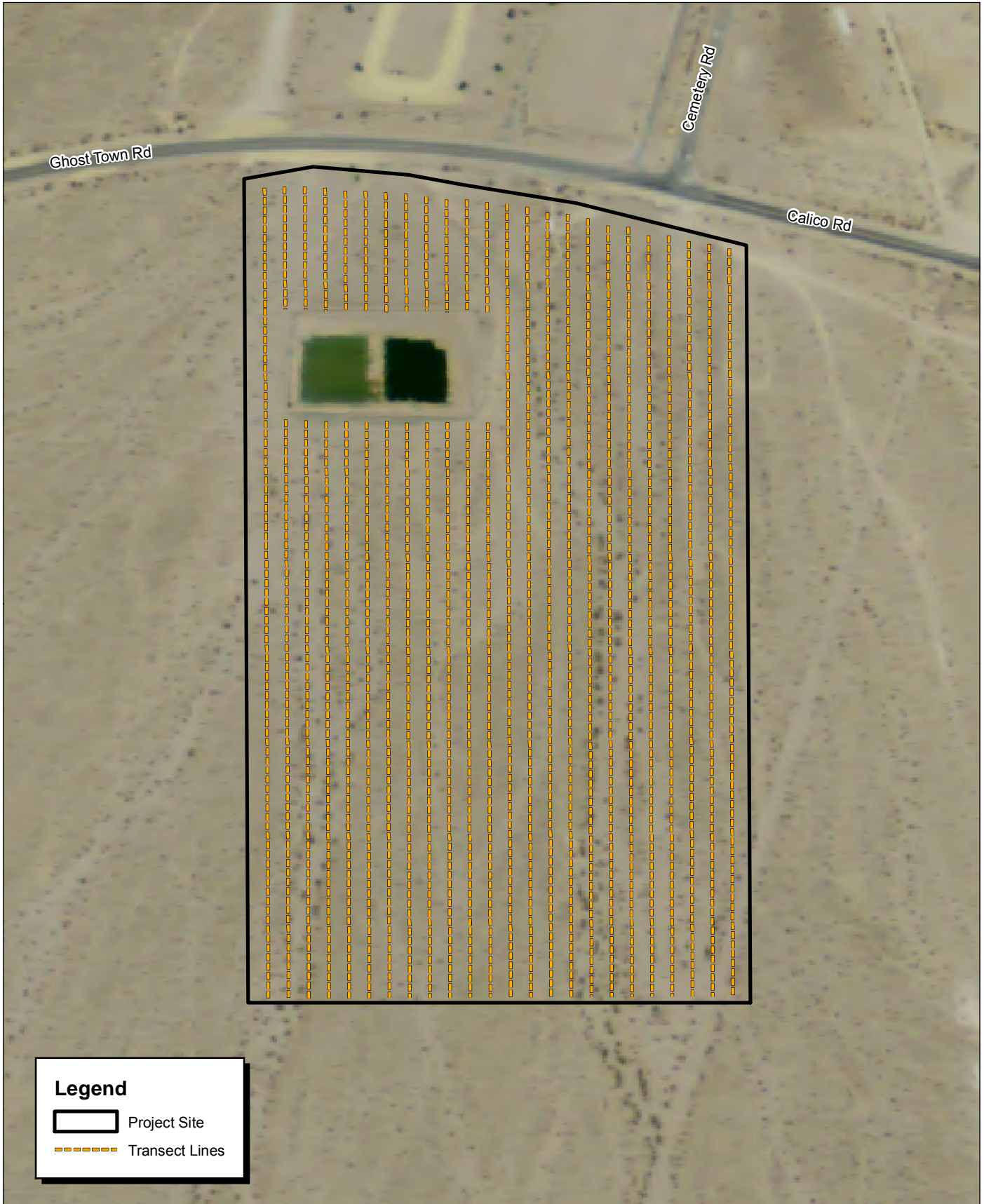


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## Exhibit 4 Plant Communities Map

COMMUNITY OF CALICO, COUNTY OF SAN BERNARDINO  
THE CALICO WATER TREATMENT PROJECT  
DESERT TORTOISE SURVEY



Source: NAIP San Bernardino County (2009).

## **SECTION 5: RESULTS**

The project site is outside USFWS Desert Tortoise Critical Habitat. The closest recorded California Natural Diversity Database (CNDDDB 2010) point location for desert tortoise is approximately 33 miles to the northwest of the project site.

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### **5.1 - Site Survey**

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Weather conditions during the field survey included temperatures ranging from 64 to 72 degrees Fahrenheit, with clear skies, and winds between 2 and 5 miles per hour in the morning and gusts up to 20 miles per hour in the afternoon. This survey was conducted between the hours of 10:00 a.m. and 3:30 p.m. Wildlife activity was considered low during the survey because of the winds. However, several species of birds and three species of reptile were observed. A complete list of floral and faunal species observed is included in Appendix A.

#### **5.1.1 - Desert Tortoise**

The project site contains moderate quality desert tortoise habitat.

No desert tortoises were observed within the project site. No carcasses, scat or any other desert tortoise sign were found during the survey.

#### **5.1.2 - Plant Communities**

One plant community, creosote bush scrub, occurs within the project site. This community is an open plant community with widely spaced shrubs and bare ground in between that occurs on well-drained secondary soils of slopes, fans, and valley floors. The dominant plant species of within the project site are creosote bush, burro bush, and brittlebush.

### 5.1.3 - Wildlife

Wildlife observations include those made based on scat, tracks, burrows, nests, calls, and individuals. Common desert reptile species observed within the project area include Great Basin whiptail (*Aspidoscelis tigris tigris*), side-blotch lizard (*Uta stansburiana*) and Mojave desert sidewinder (*Crotalus cerastes cerastes*). No evidence of desert tortoise, tortoise scat, or tortoise burrows were observed within the project area. The habitat on the property provide foraging, cover, and nesting habitat for year-round residents, seasonal resident, and migrating bird species. Common species observed include mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), American goldfinch (*Carduelis tristis*), northern mockingbird (*Mimus polyglottos*), northern flicker (*Colaptes auratus*), and mallard (*Anas platyrhynchos*). Most bird activity was centered around the sewage treatment ponds. A complete list of wildlife species recorded during the survey is included in Appendix A.

### 5.1.4 - Disturbance

Disturbances within the project area are moderate and mostly attributed to trash dumping as well as construction of the sewage treatment ponds.

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## **RECOMMENDATIONS**

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### **5.2 - Desert Tortoise**

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No desert tortoise or desert tortoise sign were observed within the project. The desert tortoise is considered absent onsite. No further recommendations are required.

## **SECTION 6: CONCLUSIONS**

The focused desert tortoise survey conducted for the project determined that the project site is not occupied. No desert tortoise or tortoise sign was found on site. Focused surveys are generally considered valid for 1 year.

## SECTION 7: REFERENCES

- Bureau of Land Management (BLM). 1996. *Biological Evaluation for Programmatic Consultation on Activities Resulting in Small Disturbances of Desert Tortoise Habitat in the California Desert*. Report prepared by Dr. Larry D. Foreman, Bureau of Land Management, California Desert District Office.
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- Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians*. Boston: Houghton Mifflin Company.
- United States Fish and Wildlife Service (USFWS). 1996. "Review of plant and animal taxa for listing as endangered or threatened species; notice of review." *Federal Register* Vol. 61, No. 40.
- United States Fish and Wildlife Service (USFWS). 2010. *Preparing For Any Action That May Occur Within the Range of the Mojave Desert Tortoise (Gopherus agassizii)*.
- United States Geological Survey (USGS). 1970. *Yermo, California 7.5-Minute Topographic Quadrangle Map*. Department of the Interior. Washington, DC: U.S. Government Printing Office.

## **Appendix A: Floral and Faunal Compendium**

## Flora Compendia

<b>Asteraceae</b>		<b>Sunflower Family</b>
<i>Ambrosia</i>	<i>dumosa</i>	burrow-weed
<i>Ambrosia</i>	<i>salsola</i>	burrobush
<i>Bebbia</i>	<i>juncea</i>	sweet bush
<i>Encelia</i>	<i>farinosa</i>	brittlebush
<i>Ericameria</i>	<i>paniculata</i>	Mojave rabbitbrush
<i>Stephanomeria</i>	<i>pauciflora</i>	brown plume wirelettuce
<b>Boraginaceae</b>		<b>Borage Family</b>
<i>Cryptantha</i>	<i>angustifolia</i>	Panamint cryptantha
<b>Brassicaceae</b>		<b>Mustard Family</b>
<i>Brassica</i>	<i>tournefortii</i>	Asian mustard
<b>Cactaceae</b>		<b>Cactus Family</b>
<i>Cylindropuntia</i>	<i>echinocarpa</i>	silver cholla
<b>Chenopodiaceae</b>		<b>Goosefoot Family</b>
<i>Atriplex</i>	<i>hymenelytra</i>	desert holly
<b>Euphorbiaceae</b>		<b>Spurge Family</b>
<i>Chamaesyce</i>	<i>albomarginata</i>	rattlesnake weed
<b>Fabaceae</b>		<b>Legume Family</b>
<i>Parkinsonia</i>	<i>florida</i>	blue palo verde
<b>Geraniaceae</b>		<b>Geranium Family</b>
<i>Erodium</i>	<i>cicutarium</i>	red-stemmed stork's bill
<b>Plantaginaceae</b>		<b>Plantain Family</b>
<i>Plantago</i>	<i>ovata</i>	desert Indian wheat
<b>Polygonaceae</b>		<b>Buckwheat Family</b>
<i>Chorizanthe</i>	<i>rigida</i>	deveil's spineflower
<i>Eriogonum</i>	<i>davidsonii</i>	Davidson's buckwheat
<i>Eriogonum</i>	<i>inflatum</i>	desert trumpet
<b>Zygophyllaceae</b>		<b>Caltrop Family</b>
<i>Larrea</i>	<i>tridentata</i>	creosote bush
<b>Poaceae</b>		<b>Grass Family</b>
<i>Bromus</i>	<i>tectorum</i>	cheat grass
<i>Schismus</i>	<i>barbatus</i>	common Mediterranean grass

## Fauna Compendia

<b>Teiidae</b>		<b>Whiptails</b>
<i>Aspidoscelis</i>	<i>tigris</i>	western whiptail
<b>Phrynosomatidae</b>		<b>Lizards</b>
<i>Uta</i>	<i>stansburiana</i>	side-blotched lizard
<b>Viperidae</b>		<b>Vipers</b>
<i>Crotalus</i>	<i>cerastes cerastes</i>	Mojave desert sidewinder
<b>Anatidae</b>		<b>Waterfowl</b>
<i>Anas</i>	<i>platyrhynchos</i>	mallard
<b>Charadriidae</b>		<b>Plovers</b>
<i>Charadrius</i>	<i>vociferus</i>	killdeer
<b>Columbidae</b>		<b>Pigeons/Doves</b>
<i>Zenaida</i>	<i>macroura</i>	mourning dove
<b>Picidae</b>		<b>Woodpeckers</b>
<i>Colaptes</i>	<i>auratus</i>	northern flicker
<b>Parulidae</b>		<b>New world warblers</b>
<i>Dendroica</i>	<i>coronata</i>	yellow-rumped warbler
<b>Fringillidae</b>		<b>Finches</b>
<i>Carpodacus</i>	<i>mexicanus</i>	house finch
<i>Carduelis</i>	<i>tristis</i>	American goldfinch

## **Appendix B: Data Sheets**

**USFWS DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Date of survey: 10/28/2010 Survey biologist(s): Dale Hamerster  
(month, day, year)  
 Site description: Calico water treatment Project, CA  
(project name and size; general location)  
 County: San Bernardino Quad: Yermo Location: 34.941601°, 116.868786°  
(UTM coordinates, lat-long, and/or TRS; map datum)  
 Transect #: \_\_\_\_\_ Transect length: \_\_\_\_\_ Type of survey: 20 acres - 100% coverage  
(acres to be surveyed; 100% coverage/probabilistic sampling)  
 GPS Start-point: 11S 511965.70/3866572.6 49m Start time: 10:00 am/pm  
(easting, northing, elevation in meters)  
 GPS End-point: 11S 512172.76/3866175.65m 637m End time: 3:00 am/pm  
(easting, northing, elevation in meters)  
 Start Temp: \_\_\_\_\_ °C Weather: \_\_\_\_\_ End Temp: 72°F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <i>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</i>	Approx MCL >160-mm? <i>(Yes, No or Unknown)</i>	Existing tag # and color, if present
	Easting	Northing				
1	<u>no live tortoise</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows<sup>1</sup>, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <i>(burrows, scats, carcass, etc)</i>	Description and comments
	Easting	Northing		
1	<u>no tortoise</u>		<u>sign</u>	
2				
3				
4				
5				
6				
7				
8				

<sup>1</sup> See section 4.1.2 for information on burrow condition class and photographing burrows

## **Appendix C: Site Photographs**



Photograph 1: Looking north showing creosote bush scrub.



Photograph 2: Looking southwest showing sewage treatment ponds.

Source: Michael Brandman Associates, 2010



Michael Brandman Associates

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## Appendix C Site Photographs

COUNTY OF SAN BERNARDINO – CALICO PROJECT  
DESERT TORTOISE FOCUSED SURVEY