FOCUSED BURROWING OWL SURVEY REPORT

MARATHON SOLAR PROJECT

Cougar Buttes USGS 7.5' quadrangle
Section 27, Township 4 North, Range 1 East
APNs 0449-631-02 and 0449-172-75

SAN BERNARDINO COUNTY, CALIFORNIA

Submitted by the Project Applicant:

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URS Project Number 28907132

June 2012

TABLE OF CONTENTS

Section **Page**

List of Tables

List of Figures

Follows Page

List of Appendices

CERTIFICATION

"I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a nondisclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project."

DATE: 6/20/2012 SIGNED: Christopher Julian

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EXECUTIVE SUMMARY

Marathon Solar, LLC (the Applicant) has retained URS Corporation (URS) to prepare this Focused Burrowing Owl Survey Report for the Marathon Solar Project (Project), a proposed 20-megawatt (MW) alternative current (AC) solar photovoltaic (PV) electrical power generating facility on approximately 130 acres of a 152-acre site located in unincorporated San Bernardino County, California. The proposed Project will connect with an existing Southern California Edison (SCE) 33-kilovolt (kV) transmission line. No new off-site transmission line is proposed.

During protocol surveys, a pair of burrowing owls were detected occupying a burrow within the Marathon site. These owls were observed and monitored in accordance with the California Burrowing Owl Consortium's survey protocol for this species (CBOC 1993), and the locations of burrows and extent of utilized habitat were mapped. Based on the behavior patterns observed, it appears likely that the pair of owls was nesting in the burrow. Because implementation of the project would eliminate the existing burrows and associated foraging habitat, measures that would minimize and compensate for impacts to this species are proposed.

SECTION 1.0
INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The Applicant proposes to construct and operate a 20-megawatt (MW) alternating current (AC) renewable solar photovoltaic (PV) electrical power generating facility in unincorporated San Bernardino County, California. The proposed Marathon Solar Project Project (Project) will connect with the existing Southern California Edison (SCE) 33-kilovolt (kV) transmission line that runs north-south along Camp Rock Road (adjacent to the Project's eastern boundary). No new off-site transmission line is proposed.

This Focused Burrowing Owl Survey Report presents the results of focused surveys for the burrowing owl (*Athene cunicularia*), a small owl that is designated by the California Department of Fish and Game (CDFG) as a California Species of Special Concern (CSC), that have been undertaken within the Marathon Solar Project site. The project's impacts on this species are described, and feasible mitigation measures that would reduce impacts to less than significant levels are recommended. The unauthorized take of migratory non-game birds, including the burrowing owl, is prohibited by the Migratory Bird Treaty Act (16 USC 703) and by Section 3513 of the California Fish and Game Code. **This Focused Burrowing Owl Survey Report and mitigation measures recommended herein do not constitute authorization for incidental take of migratory birds.**

Because the proposed project is a PV solar generating facility that would be located in unincorporated San Bernardino County (County), the responsibility for issuing or denying land use approvals for the project rests with the County. The Applicant will submit a Conditional Use Permit (CUP) application to the County, and the Planning Division of the County Land Use Services Department (Planning) will initiate environmental review of the proposed Project as required under the California Environmental Quality Act (CEQA).

1.2 PROJECT SITE

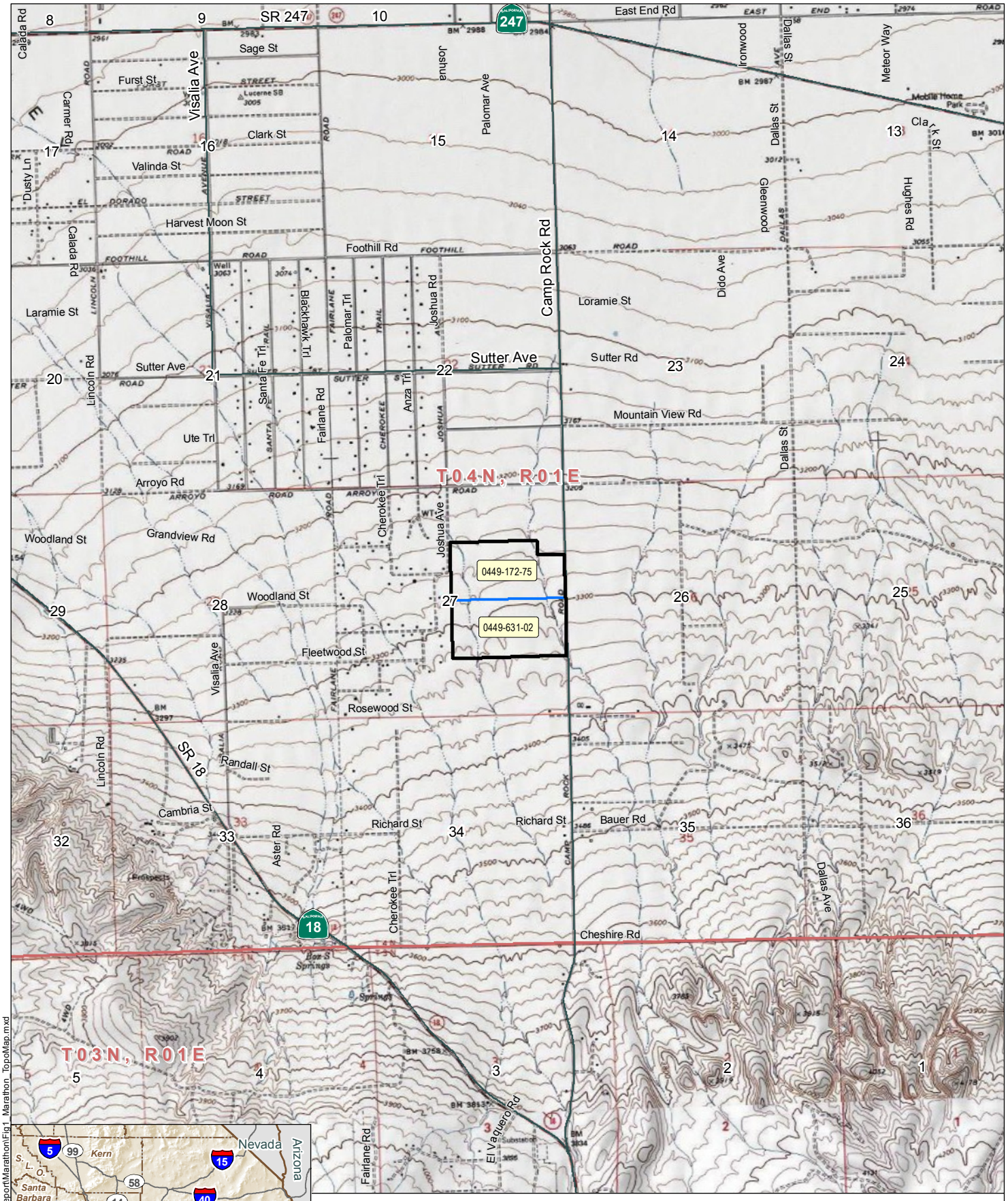
The Project site evaluated in this Focused Burrowing Owl Survey Report comprises approximately 152 acres in the Lucerne Valley, in the western Mojave Desert in unincorporated San Bernardino County. The site is located approximately six miles southeast of the intersection of State Routes (SR) SR 18 and SR 247, which occurs in the unincorporated town of Lucerne Valley. Access to the site can be achieved via Camp Rock Road, which forms the site's eastern border. Joshua Avenue, an unpaved County road, forms the western border of the site. The site's northern and southern borders are not marked by physical features. The site is located within Township 4 North, Range 1 East (San Bernardino Base and Meridian), within the Cougar Buttes USGS 7.5-minute series quadrangle. The site

is nearly square, with the exception of a 300-foot by 600-foot indentation in the northeastern corner (see Figure 1).

The project site is comprised of two adjacent parcels, both of which are currently unimproved and vacant. Both parcels are zoned LV/AG (Agriculture), which has a minimum 10-acre lot size and is intended for commercial agricultural operations, agriculture support services, rural residential uses and similar and compatible uses. Under County Code Chapter 82.04, electrical power generation is defined as a transportation, communications and infrastructure use, and is allowed in the AG zone upon approval of a Conditional Use Permit (CUP). The site is privately owned, and is not within or adjacent to any designated sensitive resource areas, ecological reserves, or other formally protected lands.

Elevations within the Project site range from approximately 3,240 to 3,346 feet above mean sea level, with the overall grade sloping gradually from the southeast to the north-northwest with a slope of 3.6 percent. The northern foothills of the San Bernardino Mountains, a major regional mountain range with elevations exceeding 11,000 feet, are located approximately three miles south of the site. The site exhibits microtopography associated with two ephemeral drainage channels that traverse the site, but major landforms and topographic features are absent.

Much of the land surrounding the Project site has been subdivided into large residential lots for rural living, but only a few of these lots have been developed with residences. The closest residence to the Marathon site is located adjacent to the site's western boundary, at the intersection of Joshua Avenue and Cochise Trail. Aside from scattered rural residences, the landscape surrounding the Project site is characterized by relatively intact desert vegetation.



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Marathon Solar Site
Focused Burrowing Owl Report
San Bernardino County

URS Corporation

Source: [1] Seamless, scanned images of United States Geological Survey (USGS) paper topographic 1:24,000-scale maps by National Geographic TOPO!, [2] California Geospatial Information Library PLS, [3] San Bernardino County Office of the Assessor, [4] ESRI StreetMap USA (2007).

Figure 1. Topographic Map of Project Area

2012

SECTION 2.0
SUMMARY PROJECT DESCRIPTION

Marathon Solar, LLC (Applicant) proposes to construct a photovoltaic solar facility on a site measuring approximately 152 acres. The site is located in the northern half of the southeastern quarter and the southern half of the northeastern quarter of Section 27, Township 4 North, Range 1 East, San Bernardino Base and Meridian, in the Cougar Buttes United States Geological Survey (USGS) quadrangle, County of San Bernardino, California.

The site is bounded by Camp Rock Road directly to the East and Joshua Avenue to the West. Figure 1 shows the local site vicinity, and the inset on this figure shows the regional map for context.

The proposed Project site is situated within the Mojave Desert. The watershed generally slopes in a northwesterly direction, with elevations of approximately 3,351 to 8,190 feet above mean sea level, and an overall slope of approximately 14 percent. The site is entirely comprised of creosote bush-white burr sage scrub vegetation.

2.1 PROJECT LOCATION AND LEGAL DESCRIPTION

The proposed Project site is situated in the western Mojave Desert, in the southern Lucerne Valley region of San Bernardino County. The site is about 5.5 miles southeast of the Lucerne Valley community. The primary access point to the Project site is from Camp Rock Road, which runs along the eastern project boundary. Camp Rock Road intersects SR 18 approximately 1.8 miles south of the proposed Project site.

The proposed Project site includes the following Assessor Parcel Numbers (APNs):

- 0449-631-02 (78.4 acres, N/2, SE/4, Section 27, T4N R1E, excepting County 50-foot road easement)
- 0449-172-75 (73.78 acres, S/2 NE/4 Section 27, T4n R1E, excepting Parcel 74 (Big Bear Area Regional Wastewater Agency, and excepting County road easement)

2.2 ENVIRONMENTAL SETTING AND SURROUNDING USES

The Mojave Desert is a subsection of the Basin and Range Physiographic Province, which is characterized by long, north-south-trending mountain ranges separated by broad valleys. The site is located on a broad gently sloping bajada of alluvial material originating from the San Bernardino Mountains to the south. Elevation of the Project site ranges from approximately 3,240 feet above sea level (asl) at its northwest corner up to 3,346 asl at its southeast corner. The topography is generally flat, with a slope of about 3.6 percent towards the north-northwest.

The Project site is bordered to the north by vacant land and the balance pool operated by the Big Bear Area Regional Wastewater Agency, at the project site's northeast corner. Arroyo Road is 0.25 mile to the north. Rosewood Street is 0.25 mile to the south. The vacant land both north and south of the site is subdivided into lots ranging from five to 10 acres in size, but none have been developed. Joshua Street forms part of the western boundary of the project site, and land to the west of Joshua Street is subdivided into five acre lots. About one-quarter of these lots have been developed with single family residences. One residence is located across Joshua Street to the west, and about a dozen others are within one quarter mile of the project site. To the east, across Camp Rock Road, the land is subdivided into lots of 18 to 19 acres in size, but none of these have been developed with residential or other uses.

2.3 EXISTING LAND USES

The project site is currently vacant. The property is zoned LV/AG (Agriculture), which has a minimum 10-acre lot size and is intended for commercial agricultural operations, agriculture support services, rural residential uses and similar and compatible uses. Under County Code Chapter 82.04, electrical power generation is defined as a transportation, communications and infrastructure use, and is allowed in the AG zone upon approval of a Conditional Use Permit (CUP).

2.4 PROJECT LAYOUT AND CONSTRUCTION

The proposed 152-acre solar power generation facility would be comprised of the following major components: non-reflective PV solar module arrays mounted on fixed-tilt or single-axis trackers and a racking system supported by embedded piers The site would also include approximately 20 inverters on small concrete pads, a switching station in an enclosure measuring approximately 200 by 200 feet in plan view, an unmanned communications enclosure measuring approximately 20 by 30 feet in plan view, two Conex boxes for equipment storage, and buried collector lines. Concrete pads would be sized and installed to accommodate their associated equipment (inverters and switchgear). The top-of-concrete elevation would be 6 inches above-grade-level locally to maintain flow away from the foundation.

The site plan is illustrated in Figure 2 (note: locations of solar panels and other elements within the site may be refined during final design). The layout of the solar panels would be aligned in rows in the north-south direction throughout the site. Each solar panel would be attached to embedded piers using a support structure. The rows of solar panels would be separated by access ways. Internal site circulation would include a 25-foot-wide perimeter gravel road. Maintenance roads with access to the solar panels would be improved (minimally graded, dirt or gravel) to provide truck access. Upon completion of the proposed Project, vegetation or dust palliatives may be used if needed to control wind and water erosion during operations.

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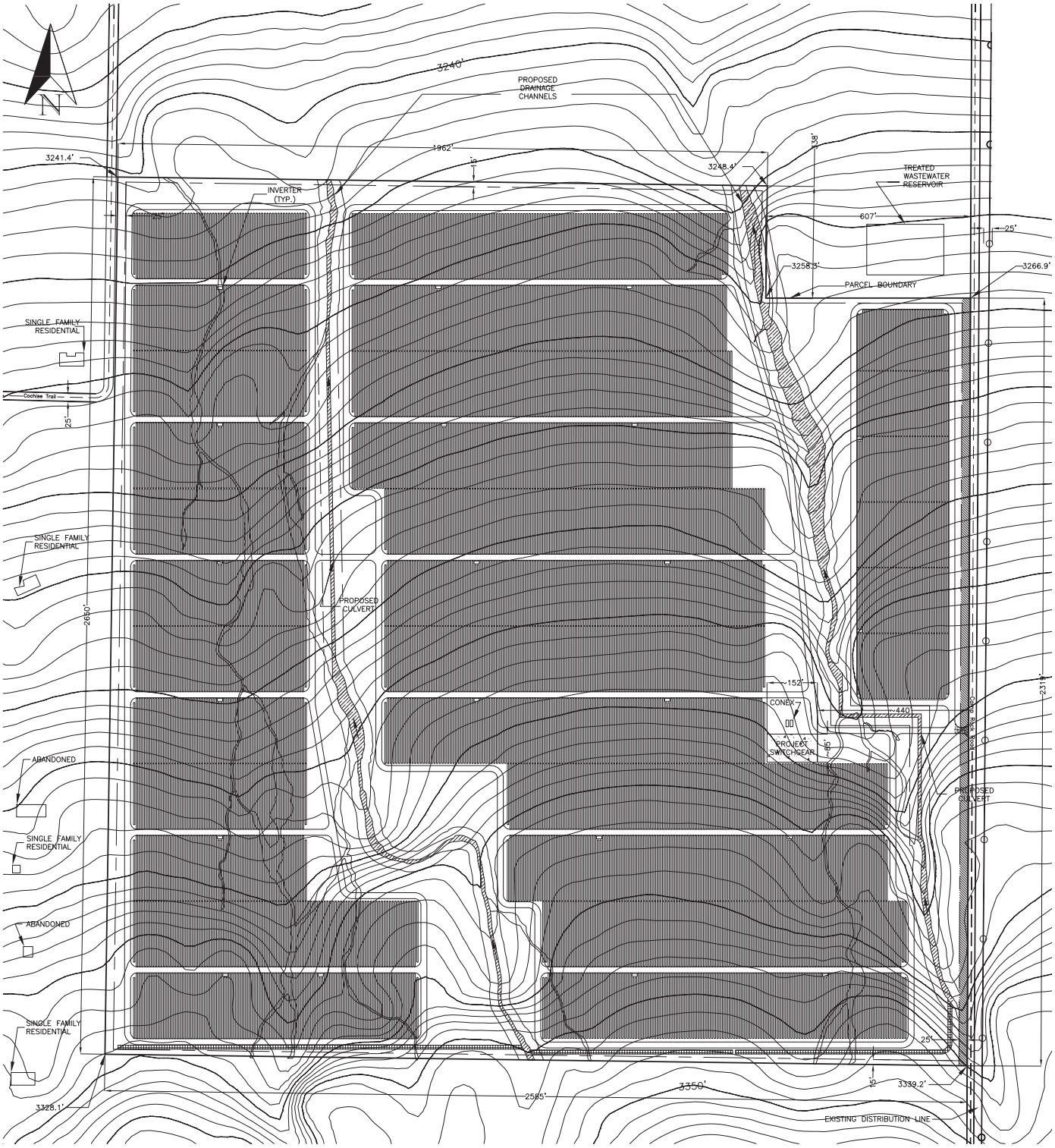


LEGEND

- SETBACK
- ROAD CENTERLINE
- PARCEL BOUNDARY
- PROPOSED DRAINAGE CHANNEL
- CONSTRUCTED CHANNEL
- ASPHALT APRON
- EASEMENT

0 220 440 880

APPROXIMATE SCALE: 1″ = 440′

Site Location

Marathon Solar Project
Focused Burrowing Owl Report
San Bernardino County, CA

URS Corporation

Source:
Lincoln Renewable Energy, LLC
June 2012.
Document Number: D1-0506-002 Rev. E

Figure 2. Proposed Site Plan

2012

No off-site improvements are anticipated with the exception of the development of site access points. Typical site access will be 25 feet wide, accommodating 75-foot turning radii in both directions. The proposed site access will include a 75-foot-long drive apron and a roadway section paved with asphalt. The actual depth of roadway sections would be determined during final design based on anticipated loading and traffic indices. However, it is anticipated that the road base course would be a minimum of six inches thick. The top course thickness would be a minimum of two inches thick.

A six foot high chain link security fence topped with one foot of barbed wire will be installed at the property setback. Signs will be installed to achieve the appropriate safety and security as expected in a solar power plant. Proposed signage includes high voltage danger signs, site under surveillance, caution electric shock, etc. Any signs as required by the National Electrical Code will be installed.

The Project's lighting system will provide operation and maintenance personnel with illumination for both normal and emergency conditions. Lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting will be directed downward and shielded to focus illumination on the desired areas only to avoid light spillage on adjacent properties. Project lighting will be located at each inverter station and switchyard. Lighting will be no brighter than required to meet safety and security requirements, and the lamp fixtures and lumens will be selected accordingly. All project lighting will be switched and without timers.

Several part-time employees would visit the site periodically (e.g., monthly or bi-monthly) and several times a year the employees or a contractor would visit the site to wash the PV panels. Panel washing would require approximately 2 acre-feet of water per year and, based on an assumed use of medium-sized water tankers, would require approximately 130 truckloads (260 truck trips) for delivery of this water. Water would be purchased from a local purveyor. No on-site wells would be used.

2.5 SUPPORT PEDESTAL DRAINAGE AND EROSION DESIGN

The solar panels would drain freely to the ground. They would be almost parallel to the ground with a slight sloping orientation. In general, rain would run off the lower edge of the PV panel. The edge of the panel would be approximately 24 inches above the ground, and the runoff would be approximately 25 gallons in a 10-year storm (5-minute – 10-year rain event per 200 square feet of panels). This volume of water is expected to run off the panels over a 5-minute period. Based on the volume of water falling from each panel, the height of the fall, and the soil conditions, it is not expected that erosion beyond a micro level will occur. It is expected that water will fall from the PV panels and pond at a drip point before infiltrating or gradually migrating into the existing drainage patterns. If, over time, minor erosion were noted at the drip points, small gravel pads could be added to help dissipate the energy of the falling water. If minor erosion were noted near the foundations, minor grading could restore

support for the individual foundations, and keep surface flows from undermining the foundations in future storm events.

2.6 INCREASE IN IMPERVIOUSNESS DUE TO CONSTRUCTION

Increase in impervious area of the site due to the construction is estimated to be minimal, approximately 9 percent.

2.7 SITE DRAINAGE

A flood map search (FEMA 2011) for Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel ID number 06071C6600H confirms the proposed Project site area has not been mapped by FEMA for flood zone hazards, and is therefore classified as an "Undetermined Risk Area." The County of San Bernardino also has no flood zone hazard mapping for this area.

Typical of arid regions, the area experiences short-duration, high-intensity rainfall storm events producing potentially high rates of runoff when the initial infiltration rates are exceeded. During these periods the small, incised washes become conduits for water flow.

The soil in the watershed is predominantly Soil Group D. This soil type is characterized as having high runoff potential due to very slow infiltration rates when thoroughly wetted. It is expected that drainage conditions present at the site, which have been formed by past storm events, would not be disturbed and would continue to convey storm flows following project construction. Because construction essentially leaves flow patterns unaltered, mitigation is considered unnecessary for this site.

Based on visual observations during a site visit and the type of facility proposed, it is expected that the proposed solar panel construction would not significantly change offsite runoff characteristics during a major storm event. Because the imperviousness of the site would not be greatly changed as a result of the construction, the impact of increased rainfall runoff due to construction would be negligible. As noted above, the site design indicates that project construction would result in a minor (9 percent) increase in impervious surfaces at the site.

The site topography can be characterized as uniform in surface profile, with a slight slope in a northwesterly direction. Based on field observations, the site is characterized by naturally developed riverine channels that direct rainfall runoff through the site. Some of the existing drainage flow paths would be filled during the development of the site based on the final layout of the solar panels and the project's Conceptual Drainage Plan would redirect their existing flows to other existing drainages. With incorporation of the Conceptual Drainage Plan, the proposed Project is not expected to significantly affect offsite flow patterns.

2.8 PROJECT CONSTRUCTION AND SCHEDULE

Construction of the proposed Project is estimated to require approximately 160-200 workers at its peak. Construction is estimated to start in 2013 and would take approximately nine months to complete. Approximately 80 acre-feet of water would be used during construction for dust suppression and ancillary construction activities. Dust suppression during construction may also involve application of palliatives.

The development of the Project would require limited site grading, with limited impact to existing offsite drainage patterns and overall topography of the site. Minor cuts may be required at the locations of inverters and other equipment to provide level foundations. It is expected that the fill from these cuts will be placed around the pre-cast foundation in order to divert small, localized flows away from the foundation and prevent undermining of the same.

Where grading is required, cut-and-fills are expected be balanced onsite, resulting in minimal import or export of earthen material. A total of approximately 300,000 cubic yards of cut-and-fill may be balanced onsite. Final drainage design will be completed following a detailed topographic site survey overlaid with proposed site development grading.

Areas along major drainage channels outside of the developed footprint will be preserved. Vegetation would be cleared to allow for the construction of the solar panels and access roads. Grubbing would occur on all gravel access roads, and in any areas where the roots would impede the pier structure. The installation of the solar panels also requires trenching along and below access roads for the installation of multiple cable systems. Under and along almost every internal roadway, trenches as deep as 48 inches would house the cables in a sand bed that would be backfilled with excavated material from the site.

Best management practices (BMPs) for erosion control would be used to avoid and minimize impacts on the environment during construction, and, operations and maintenance. For example, gravel pads or other track-out reduction measures at project construction site access points may be used to minimize dirt and mud deposits on public roads, as required to meet stormwater quality regulations and vegetation or dust palliatives may be used if needed to control wind and water erosion during operations. A Water Quality Management Plan that includes a Stormwater Pollution Prevention Plan and an Erosion and Sediment Control Plan would be prepared and implemented to avoid and minimize impacts on water quality during construction and operations.

SECTION 3.0
METHODOLOGY

To document the extent to which burrowing owls utilize habitat within the Marathon site, URS relied upon a review of available literature, seasonally-timed biological field investigations of the site, and extended observations of the two owls detected on-site. The methods employed are described below.

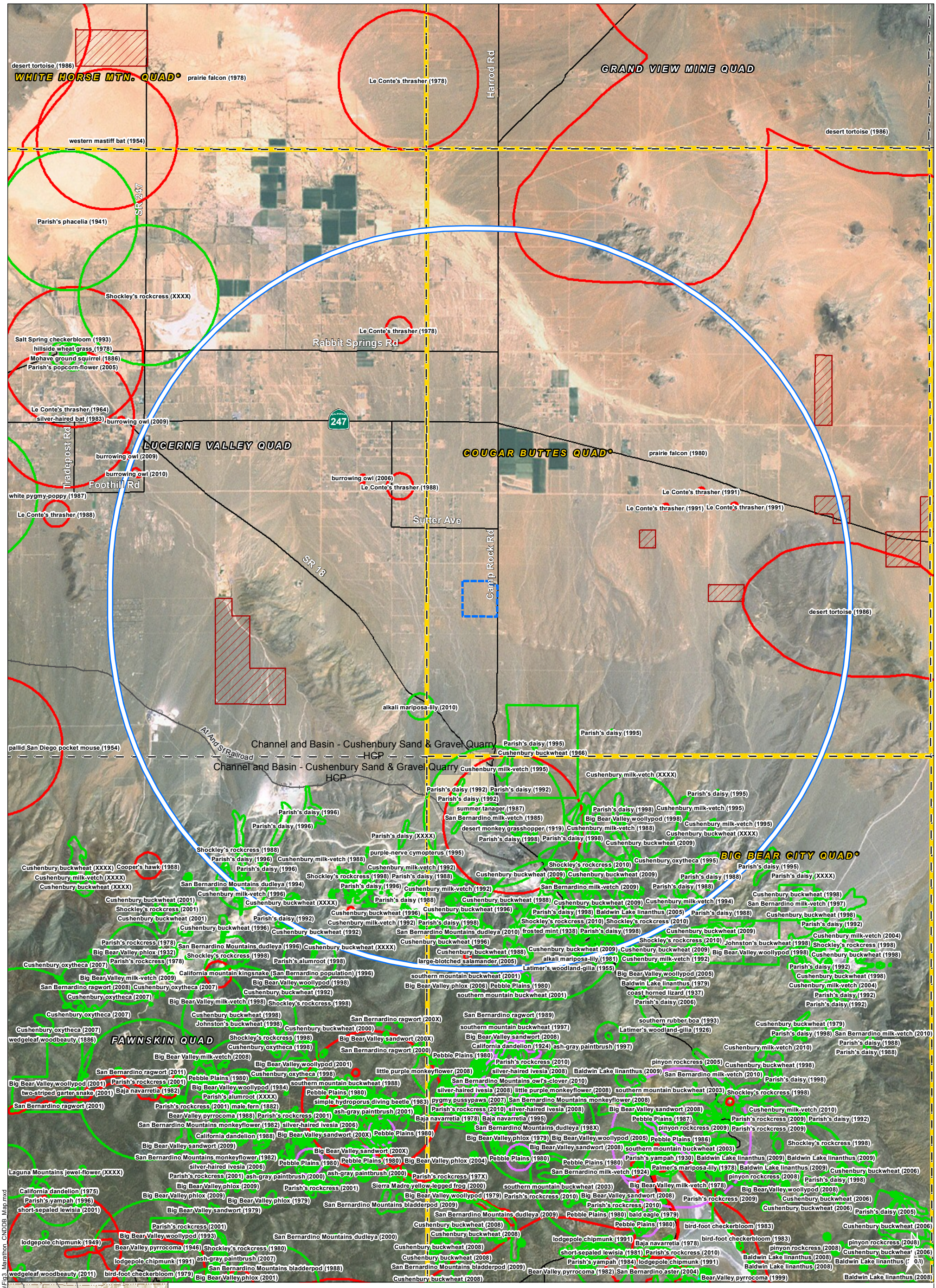
3.1 LITERATURE REVIEW

Prior to conducting biological field surveys within the Marathon site, URS biologists performed a literature review to identify known burrowing owl occurrences and habitat that occur within or in the vicinity of the Project site. The materials reviewed included topographic maps, aerial photographs, species-specific technical literature, and publicly-available environmental documentation for other recent projects in the region. In addition, a five-mile radius query of the California Natural Diversity Database (CNDDB; CDFG 2012) was performed. These resources were used to identify documented occurrences within or in the vicinity of the Project site. The CNDDB five-mile query also provided locations of designated critical habitat for federally listed species, sensitive natural communities, ecologically sensitive areas, and state-managed lands. The results of the CNDDB query are presented on Figure 3.

3.2 PROTOCOL BURROWING OWL SURVEYS

The California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) recommend a four-step approach to surveying for this species. The first phase (Phase I) involves a simple habitat assessment, which was completed during URS' preliminary biological investigations for the project in February 2010 (~1000–1700; Temperature ranged from 15.6°C to 20°C; Wind ranged from calm to 10 mph [NNE]). The site's geographic location, elevation, vegetation, topography, and soil characteristics were evaluated relative to the burrowing owl's habitat requirements. Because the assessment indicated that the site does contain suitable burrowing owl habitat, the remaining three phases of the survey were performed.

Phase II of the survey protocol is comprised of a full-coverage, pedestrian transect survey of the project site. The required survey was performed by URS biologists on April 11 and 12, 2012. The survey dates and times, weather conditions, and names of investigators are presented in Table 1 below. The survey protocol recommends the interval between survey transects should range between 10 and 30 meters, depending upon site conditions such as vegetative cover and visibility. The survey transects were spaced at 10 meter intervals, the most conservative and rigorous interval recommended by the protocol. A team of three



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Marathon Solar Site
Focused Burrowing Owl Report
San Bernardino County

URS Corporation

Source: [1] CNDDB August 2011, [2] LADeptOfRegionalPlanning, 11-26-2007, [3] Tele Atlas North America, Inc./Geographic Data Technology, Inc., ESRI (2005-06-01), [4] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution).

Figure 3. Special-status Species in the Project Vicinity

2012

TABLE 1
PHASE II TRANSECT SURVEYS

Date	Time	Weather Conditions	Location (UTM, Zone 11S) and Elevation (m)	Investigators
April 11, 2012	Start: 1130	Start: Temperature 18.0°C, Wind 9–11 mph (W), 20 percent cloud cover	Start: 0513020E, 3807632N, 1,000 m	Christopher Julian Julie Love William Fletcher
	End: 1710	End: Temperature 16.2°C, Wind 10–15 mph (SW), 60 percent cloud cover	End: 0512610E, 3807743N, 990 m	
April 12, 2012	Start: 0815	Start: Temperature 10.5°C, Wind 10–15 mph (W), 1 percent cloud cover	Start:0512600E, 3807740N, 995 m	Christopher Julian Julie Love William Fletcher
	End: 1615	End: Temperature 16.5°C, Wind 9–12 mph (W), 30 percent cloud cover	End: 0512220E, 3807740N, 994 m	

survey biologists, each possessing substantial experience and knowledge of burrowing owl biology, physical indicators of burrowing owl presence, and survey techniques, walked parallel transects across the Marathon site. The surveys were initiated at the northeastern corner of the site, and transects were walked in a north-south orientation to reduce the effects of glare and shadows. Each biologist carried a handheld GPS unit to ensure that the transects were parallel and to maintain the desired spacing and transect orientation. All burrows of sufficient size to harbor burrowing owls (3 inches in diameter or greater) were investigated for signs of use by the species, including presence of pellets, feathers, whitewash, or nearby individuals. Where burrows exhibited signs of use, the burrow locations were recorded using GPS technology.

Photographs were taken, and the nature of each burrow was described by the biologists in written notes. Wildlife and plant species incidentally observed during the surveys were also recorded. Air temperature, wind speed, and wind direction were recorded at the start and end of each survey day using a WindMate 200 thermometer/anemometer. Air temperature was measured approximately five centimeters above the ground in the shade of the observer. Wind speed and direction were measured at approximately five feet above the ground. Following completion of the transect survey, the locations of any burrows detected were plotted on a map for use during the remaining phases of the protocol survey.

Phase III of the survey protocol includes determining burrowing owl use and recording burrowing owl behavior during three observation periods at the burrow location. These observations were conducted on three consecutive days during either the dawn survey period consisting of 1 hour before sunrise to 2 hours after sunrise, or the dusk survey period consisting of 2 hours before sunset to 1 hour after sunset. Fixed points for burrow observation were identified in the field and marked using GPS. Observation points were selected when it was determined that a point was at a reasonable distance from the burrow and that thorough visual coverage of the burrow could be achieved based on the topography of the area surrounding the burrow location. The observation point used by each observer was noted daily. Observers used binoculars and spotting scopes to aid in determining the number of owls using the burrow and surrounding area. Behavior of the burrowing owl was also documented during each survey. Mapping of the territory used by the burrowing owl was conducted when observational data were sufficient. Dates and times for each observation period are shown in Table 2 below.

TABLE 2
PHASE III OWL CENSUS AND OBSERVATION

Date	Time	Weather Conditions	Sunrise or Sunset	Investigators
April 17, 2012	Start: 1723	Start: Temperature 30.0°C, Winds 2–4 mph (W).	Sunset at 1923	Julie Love William Fletcher
	End: 2023	End: Temperature 21.4°C, Winds calm.		
April 18, 2012	Start: 1724	Start: Temperature 27.9°C, Winds 8–14 mph (W).	Sunset at 1924	Julie Love William Fletcher
	End: 2024	End: Temperature 21.2°C, Winds 3–4 mph (W).		
April 19, 2012	Start: 0512	Start: Temperature 13.5°C, Winds calm.	Sunrise at 0612	Julie Love William Fletcher
	End: 0812	End: Temperature 20.1°C, Winds 2–6 mph (SW).		

Phase IV of the burrowing owl survey protocol involves preparing a survey report that presents the results of the protocol surveys. This Focused Burrowing Owl Survey Report constitutes the Phase IV report for the Marathon project.

SECTION 4.0
GENERAL BIOLOGICAL SURVEY RESULTS

This section presents the results of general biological surveys that were conducted within the Marathon site between February 2010 and October 2011. Details for these surveys are reported under separate cover in the General Biological Resources Assessment Report (URS 2012a), but are summarized below to provide the environmental context for the discussion of the burrowing owl surveys described in Section 5.0, below.

4.1 REGIONAL SETTING

The Project site is located in the Lucerne Valley, at the western edge of the Mojave Desert. Because this area is in proximity to montane, foothill, and desert habitats, the Project region contains plants, plant communities, and animals adapted to each of these general habitat classes.

4.1.1 Topography

The Lucerne Valley is located in the western Mojave Desert, and is bounded by the Granite, Ord, and Rodman Mountains to the north and the San Bernardino Mountains to the south. The San Bernardino Mountains are the largest of these ranges, reaching elevations in excess of 11,000 feet at the top of Mt. San Gorgonio, and receive considerable winter snowfall. Because the Marathon site is located within three miles of the northern edge of the San Bernardino Foothills, slope and drainage within the site is influenced by these mountains. The topography of the Marathon site slopes gradually from the southeast to the northwest, away from the San Bernardino Mountains and towards the floor of the Lucerne Valley. Topography of the site is relatively flat, and elevations on-site range from 3,240 to 3,346 feet above mean sea level.

4.1.2 Hydrology

According to the Watershed Boundary Dataset prepared by the California Interagency Watershed Mapping Committee (CalWater), which is responsible for watershed mapping and dataset creation in the state of California, the Project site is within the Lucerne Lake hydrologic unit of the Colorado River hydrologic region. More specifically, the site is within the Lucerne Lake planning watershed in the Lucerne Lake super planning watershed (CalWater 2004)[1]. This watershed is not tributary to the ocean or any other water body;

[1] The California Interagency Watershed Map is the State of California's working definition of watershed boundaries. The California Interagency Watershed Map describes California watersheds, beginning with the division of the State's 101 million acres into ten Hydrologic Regions (HR). Each HR is progressively subdivided into six smaller, nested levels: the Hydrologic Unit (HU, major rivers), Hydrologic Area (HA, major tributaries), Hydrologic Sub-Area (HSA), Super Planning Watershed (SPWS), and Planning Watershed (PWS). At the Planning Watershed level (the most detailed level),

rather, surface water either infiltrates into the groundwater basin, evaporates, or flows toward the dry lakebed of Lucerne Lake located to the northwest of the Project site. All flow channels on-site are intermittent or ephemeral and likely only receive stream flow during and following significant rain events. Drainage patterns within the site are well-defined in most cases, with many tributaries and interconnected/braided systems occurring on-site.

4.1.3 Soils

The Project site is located in the Lucerne Valley, which is characterized by relatively flat-lying topography, punctuated by alluvial systems associated with the southern face of the San Bernardino Mountains. The Soil Survey for the San Bernardino County, California, Mojave River Area (USDA-NRCS SSURGO 2008) indicates that four soil types occur within the Project site, including the Arizo, Cajon, Kimberlina, and Trigger series, which are described below. None of the soil series within the Project site are identified as hydric soils by the Soil Survey. The descriptions of these soils below are abridged from the USDA-NRCS Official Soil Series Description database (USDA-NRCS 2011).

4.1.3.1 Arizo Series

The Arizo series (100) consists of very deep, excessively drained soils that formed in mixed alluvium. Arizo soils occur on recent alluvial fans, inset fans, fan apron, fan skirts, stream terraces, and floodplains of intermittent streams and channels. Slopes range from 0 to 15 percent. The mean annual precipitation is approximately 18 centimeters (7 inches) and the mean annual temperature is about 17°C (62°F). Arizo soils tend to be used for rangeland and wildlife habitat. The associated vegetation is mainly creosote bush and white burr sage. These soils are classified as Sandy-skeletal, mixed, thermic Typic Torriorthents (USDA-NRCS 2011). Arizo soils occur in the southwest portion of the Project site.

4.1.3.2 Cajon Series

The Cajon series (115) consists of very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils occur on alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. Slopes range from 0 to 15 percent. The average annual precipitation is approximately 15.24 centimeters (seven inches) and the mean annual temperature is approximately 18°C (65°F). Cajon soils are used mostly for range, watershed, and recreation. A few areas are irrigated and are used for growing alfalfa and other crops. The associated vegetation is mostly desert shrubs including creosote bush, saltbush (*Atriplex* spp.), Mormon tea (*Ephedra* spp.), Joshua trees, some Indian ricegrass (*Stipa* [*Achnatherum*] *hymenoides*), annual grasses, and forbs. Cajon soils are classified as

where implemented, polygons range in size from approximately 3,000 to 10,000 acres. At all levels, a total of 7,035 polygons represent the State's watersheds (CalWater 2004).

mixed, thermic Typic Torripsamments (USDA-NRCS 2011). Cajon soils occur in the northwest and southeast portions of the Project site.

4.1.3.3 Kimberlina Series

The Kimberlina series (137) consists of very deep, well drained soils that formed in mixed alluvium derived dominantly from igneous and/or sedimentary rock sources. Kimberlina soils occur on flood plains and recent alluvial fans. Slopes range from zero to nine percent. The average annual precipitation is approximately 15.24 centimeters (six inches) and the mean annual temperature is approximately 18°C (64°F). Kimberlina soils are used for growing irrigated field, forage, and row crops. Some areas are used for livestock grazing. When not irrigated, the associated vegetation is annual grasses, forbs, and saltbush (*Atriplex* spp.). Kimberlina soils are classified as coarse-loamy, mixed, superactive, calcareous, thermic Typic Torriorthents (USDA-NRCS 2011). Kimberlina soils occur in a small portion of the eastern side of the Project site.

4.1.3.4 Trigger Series

The Trigger series (164) consists of shallow, well drained soils that formed in material weathered from hard sedimentary rocks. Trigger soils occur on uplands. Slopes range from five to 50 percent. The average annual precipitation is approximately 10.2 centimeters (4 inches) and the average annual temperature is approximately 17°C (63°F). Trigger soils are used for wildlife habitat, limited grazing, and recreation. The associated vegetation is creosote bush, cactus, annual grasses, and forbs. Trigger soils are classified as Loamy, mixed, superactive, calcareous, thermic Lithic Torriorthents (USDA-NRCS 2011). Trigger soils occur in the eastern portion of the Project site.

4.1.4 Vegetation Communities in the Project Region

The climate of the western Mojave Desert is characterized by cool winter temperatures, warm summer temperatures that are moderated somewhat by the marine influence, with its rainfall occurring almost entirely in the winter (UCSB 2011). Due to its climate, the western Mojave Desert supports a unique desert plant community. Juniper and pinyon pines are found at higher elevations, while creosote bush scrub, yuccas, Joshua trees, grasslands, and cholla are found at lower elevations. In addition, some of the larger washes within the desert support desert riparian woodlands. However, the Joshua tree (*Yucca brevifolia*) is the signature plant of the Mojave Desert and often defines its boundaries.

In the Lucerne Valley, where the Marathon site is located, vegetation is mainly comprised of creosote bush scrub, a vegetation type that is common and widespread throughout the Mojave Desert. Creosote bush scrub maintains no federal or state sensitivity designation. Joshua trees are a common component of the desert vegetation, and some areas contain sufficient density of these trees to be mapped as Joshua tree woodlands. (A recent vegetation

classification system [Sawyer et al. 2009] requires Joshua tree cover to exceed one percent for an area to qualify as a Joshua tree woodland). Although the Lucerne Valley generally contains habitats that are common and widespread in the region, some types, such as Joshua tree woodlands, are designated by the CDFG as sensitive natural communities (CDFG 2010).

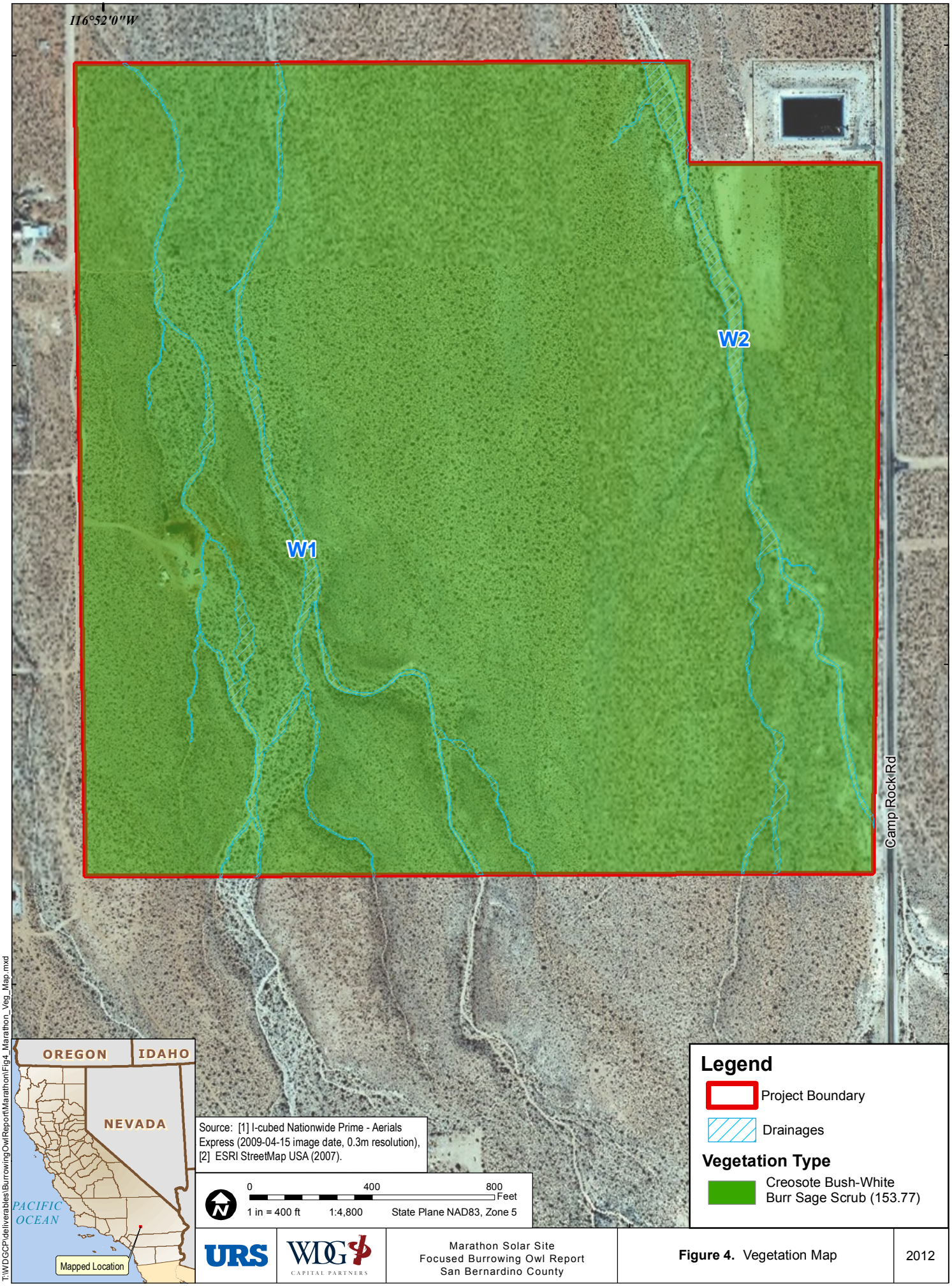
4.2 VEGETATION COMMUNITY

The Project site is located within the Mojave Desert geographical region, a distinct vegetation region (Sawyer et al. 2009). The Project site is relatively undisturbed, and native trees and shrubs are abundant with a low lying understory of native and non-native herbaceous species. Vegetation within the site is relatively homogeneous, and is characterized by the presence of a single plant community. While the site contains two ephemeral drainage channels, the species composition in these areas is not substantially different from that in the surrounding uplands. The vegetation on-site is dominated by shrubs with a herbaceous understory, and most closely corresponds with Sawyer et al.'s (2009) creosote bush-white burr sage scrub (*Larrea tridentata-Ambrosia dumosa* shrubland alliance). More detailed descriptions of the site's vegetation communities are provided below. Figure 4 illustrates the extent and location of vegetation communities within the Project site. Photographs showing the on-site vegetation communities are included in Appendix A.

4.2.1 Creosote Bush-White Burr Sage Scrub

This vegetation community is dominated by shrubs, primarily creosote bush (*Larrea tridentata*) and white burr sage (*Ambrosia dumosa*), which are usually co-dominant in the canopy (Sawyer *et al.* 2009). In California creosote bush-white burr sage scrub is limited to the Mojave Desert, and occurs in Inyo, eastern Kern, northeastern Los Angeles, San Bernardino, Riverside, San Diego, and Imperial counties. This vegetation community usually occurs at elevations between 75 and 1,200 meters (247 and 3,960 feet), and is commonly observed in minor desert washes, alluvial fans, and on upland slopes (Sawyer *et al.* 2009). Creosote bush/white burr sage scrub is a common and widely distributed vegetation type throughout much of the Mojave desert, and this vegetation maintains no federal, state, or local sensitivity designation.

Within the Marathon site, creosote bush-white burr sage scrub occurs in all areas. While Joshua trees are present throughout the site, they are not among the site's dominant plant species. Dominant species on-site include native shrubs such as creosote bush, white burr sage, cheesebush (*Ambrosia* [*Hymenoclea*] *salsola* var. *salsola*), and Mojave yucca (*Yucca schedigera*). The understory is comprised mainly of non-native herbs such as red brome (*Bromus madritensis* ssp. *rubens*), red-stem fillaree (*Erodium cicutarium*), and Mediterranean grass (*Schismus barbatus*).


116°52'0"W
W1
W2
Camp Rock Rd
OREGON
IDAHO
NEVADA
PACIFIC OCEAN
Mapped Location
Source: [1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).
0
400
800
Feet
1 in = 400 ft
1:4,800
State Plane NAD83, Zone 5
Legend
Project Boundary
Drainages
Vegetation Type
Creosote Bush-White Burr Sage Scrub (153.77)
URS
WDG
CAPITAL PARTNERS
Marathon Solar Site
Focused Burrowing Owl Report
San Bernardino County
Figure 4. Vegetation Map
2012
T:\WDGCP\deliverables\BurrowingOwlReport\Marathon\Fig4_Marathon_Veg_Map.mxd

4.3 HYDROLOGY

As stated previously, the Marathon site is located within the Lucerne Lake watershed. This watershed is not tributary to the ocean or any other water body; rather, all surface flows in the watershed either infiltrate into the groundwater basin, evaporate, or flow toward the dry lakebed of Lucerne Lake to the northwest of the Project site. During a field delineation of jurisdictional features within the site a total of two ephemeral drainages were mapped, traversing the site in a south-north direction. Both drainages originate off-site (south) and convey flows northwest (downstream) and off-site. Drainage banks vary from defined cut banks to gradual sloped banks, and widths and heights vary greatly. Sinuosity of each drainage is minor as the channels are relatively straight. The channel bottoms are mostly un-vegetated with upland plant species on the banks and the drainages do not support any riparian vegetation (with the exception of a few desert willows in one of the drainages). The substrate within the channel bottoms is composed mostly of sand with some cobble and boulders. Locations of these drainages are illustrated on Figure 4.

The Lucerne Valley is an arid region, receiving only about 7.5 inches of precipitation annually (PRISM 2010). As a result, the majority of the stream channels that traverse this area exhibit ephemeral hydrology, containing surface flows for only a short duration following storm events. The region's low gradient topography and porous, sandy soils contribute to this phenomenon, as these factors increase the rate at which surface flows infiltrate into the substrate. The absence of relatively permanent surface flows limits the suitability of the on-site drainages for use by wildlife. Use of these features as a source of drinking water is limited to the periods when surface flows are present, and the flow duration is not sufficient to support aquatic and semi-aquatic species such as fishes and amphibians. However, the site's drainages provide topographic structure in an otherwise uniform environment, and these features may be used as travel routes by wildlife crossing the site.

4.4 PLANT SPECIES

In general, the plant species found on the Project site were native shrubs and trees, with an understory of native and non-native grasses and forbs. No special-status plant species were detected on-site, with the exception of the silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), cottontop cactus (*Echinocactus polycephalus*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), Joshua tree, and Mojave yucca, which maintain no formal sensitivity designation but are granted protection under the California Desert Native Plants Act and the San Bernardino County Development Code. A complete list of the plant species observed within the Marathon site is presented in Appendix B.

4.5 WILDLIFE SPECIES

Based on results of the full-coverage pedestrian transect surveys performed within the Marathon site, wildlife use of this site appears to be limited. The species detected were primarily common, birds, mammals, and reptiles. Due to the absence of perennial watercourses, the Marathon site does not contain suitable habitat for aquatic or semi-aquatic animals such as fishes and amphibians. A complete list of the wildlife species observed within the Marathon site is presented in Appendix C. Results of the protocol burrowing owl surveys are presented in Section 5.

SECTION 5.0
PROTOCOL BURROWING OWL SURVEY RESULTS

Results of the protocol burrowing owl surveys are presented below.

5.1 PHASE I HABITAT ASSESSMENT RESULTS

During the Phase I habitat assessment, physical and biological characteristics of the Marathon site were compared to burrowing owl habitat requirements in an effort to determine whether the site is suitable for this species. The Marathon site is within the geographic range of the burrowing owl, as depicted on current range maps, and on-site elevations are within the range occupied by the species (Haug et al. 1993). Vegetation on-site is composed of creosote-white burr sage scrub, a community that is well represented throughout the Mojave desert and that is known to be capable of supporting burrowing owls. Based on this information, the Marathon site contains suitable habitat for the burrowing owl.

5.2 PHASE II TRANSECT SURVEY RESULTS

During Phase II transect surveys, the overall density of animal burrows within the Marathon site was observed to be low. Occasional small mammal burrows, likely those of kangaroo rats (*Dipodomys* spp.) and/or antelope squirrels (*Ammospermophilus* spp.), were observed, but were not of sufficient size to accommodate a burrowing owl. A total of two larger burrows were detected, and two burrowing owls were observed flushing from the first burrow location identified during Phase II observations. Fresh whitewash and several fresh pellets containing a mix of small mammal parts and beetle parts were also observed around the burrow entrance. No burrowing owls were observed at the second of the two identified burrows, but several fresh pellets containing a mix of beetle parts and small mammal parts at the burrow entrance suggested recent visitation by this species. From the results of the transect survey, it was determined that these two burrows should be monitored during the Phase III census and observation.

5.3 PHASE III OWL CENSUS AND OBSERVATION RESULTS

The two potentially active burrowing owl burrows within the Marathon site were monitored for three hours at dawn or dusk on three separate days, as described in Section 3.2 above. Owl movements and behaviors observed near each of the burrows are described below.

5.3.1 Burrowing Owl Activity near Burrow #1

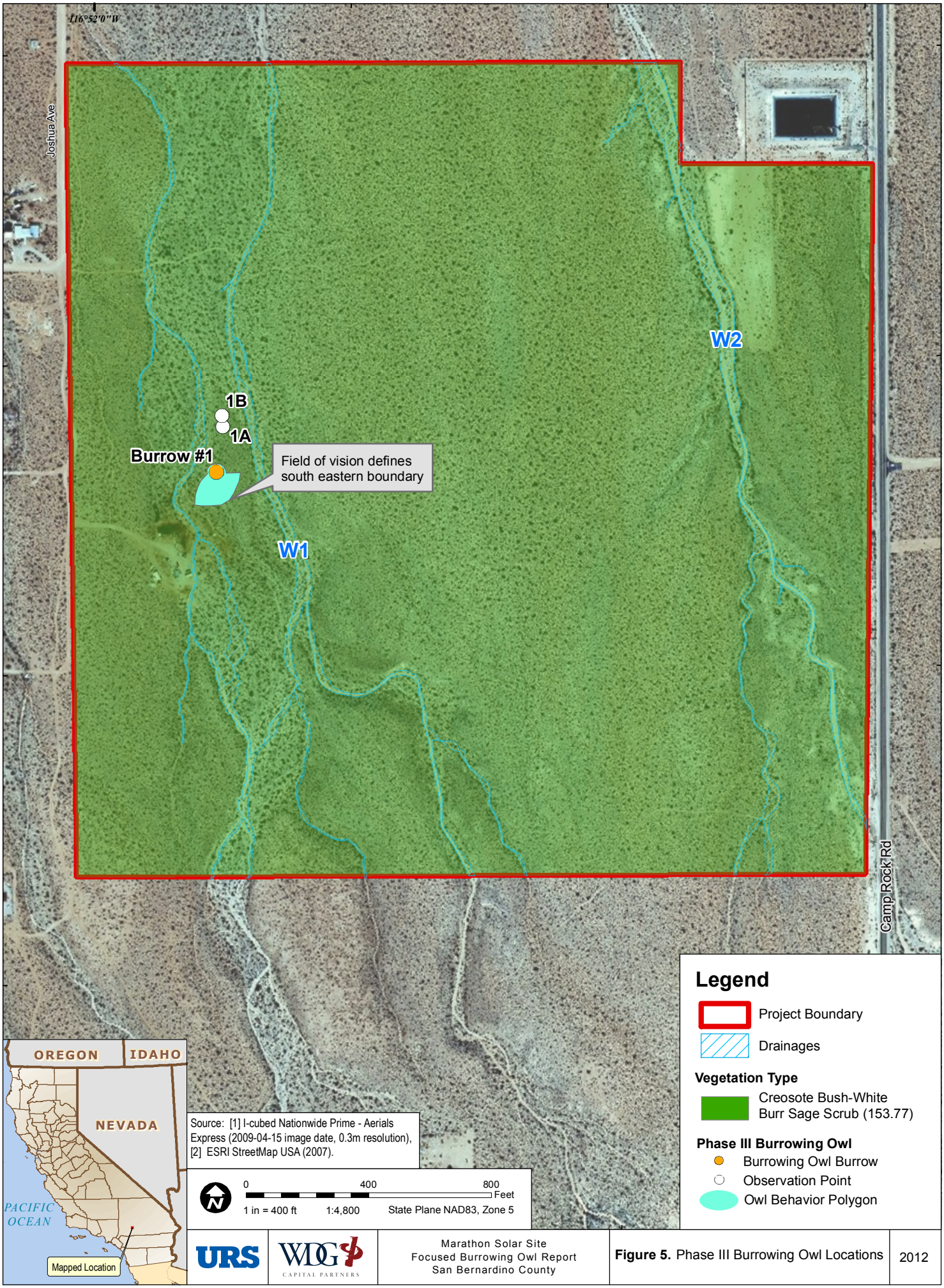
The following burrowing owl activity was observed near Burrow #1:

- April 17, 2012:

- 1723 hours: Start of survey, observers at Observation Point 1A (see Figure 5). Burrowing owl observed roosting on fallen Joshua tree outside of burrow entrance.
- 1745 hours: 1 observer relocated to Observation Point 1B (see Figure 5).
- 1755 hours: Sighting of a second burrowing owl roosting, using fallen Joshua tree as cover.
- 1806 to 1938 hours: Both burrowing owls rotated around several perching points on the fallen Joshua tree outside of the burrow. Perching also observed on a 3-foot-tall stump of a Joshua tree approximately 1 meter west of the burrow entrance.
- 1938 hours: Both burrowing owls observed flushing southwest, toward abandoned shed on-site.
- 2003 hours: One burrowing owl returned to fallen Joshua tree outside of burrow, approached the burrow from the south. Began a series of calls that lasted approximately 20 seconds.
- 2009 hours: Burrowing owl flushed east, exact distance and range unclear due to diminished visibility because of darkness.
- 2023 hours: end of survey.

- April 18, 2012:

  - 1724 hours: Start of survey, observers at Observation Point 1B. One burrowing owl observed perching on the east end of the fallen Joshua tree directly outside of the burrow.
  - 1727 hours: Second burrowing owl observed, presumably exited burrow. Fallen Joshua tree obstructing direct view of burrow opening.
  - 1727 to 1800 hours: Both burrowing owls roosting on the east side of the downed Joshua tree (approximately 1 meter from burrow entrance).
  - 1800 to 1855 hours: Both burrowing owls maintained the same roosting locations directly outside of the burrow entrance.
  - 1855 to 1900 hours: Burrowing owl 1 moved to slightly higher perch point on the downed Joshua tree, burrowing owl 2 remained mostly concealed on east side of log near burrow entrance.
  - 1900 to 1910 hours: Burrowing owl 1 moved to highest perch point of the forked limb of the downed Joshua tree. Burrowing owl 2 remained mostly concealed near burrow entrance.
  - 1910 to 1915 hours: Burrowing owl 1, perched on highest fork, was observed preening.


116°52'0"W
Joshua Ave
Camp Rock Rd
W2
W1
1B
1A
Burrow #1
Field of vision defines south eastern boundary
Legend
Project Boundary
Drainages
Vegetation Type
Creosote Bush-White Burr Sage Scrub (153.77)
Phase III Burrowing Owl
Burrowing Owl Burrow
Observation Point
Owl Behavior Polygon
OREGON
IDAHO
NEVADA
PACIFIC OCEAN
Mapped Location
Source: [1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).
0
400
800
Feet
1 in = 400 ft
1:4,800
State Plane NAD83, Zone 5
URS
WDG
CAPITAL PARTNERS
Marathon Solar Site
Focused Burrowing Owl Report
San Bernardino County
Figure 5. Phase III Burrowing Owl Locations
2012
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- 1916 to 1923 hours: Burrowing owl 2 disappeared from field of view, presumably retreated into burrow.
- 1923 to 1927 hours: Burrowing owl 2 came back into view, moved to perch point on top of Joshua tree stump 1 meter east of downed Joshua tree.
- 1927 hours: Burrowing owl 2 flushed from stump, vanished from view.
- 1928 hours: Burrowing owl 2 reappeared; both burrowing owls shared perch point on forked Joshua tree limb briefly.
- 1929 to 1933 hours: Burrowing owl 1 dropped down behind forked limb, returned back to share limb with burrowing owl 2.
- 1933 to 1937 hours: Burrowing owl 2 flushed west and circled back from the south, returned to perch on forked limb.
- 1937 to 1944 hours: Burrowing owls rotated between various perching points around the burrow, occasionally out of view as they moved to roosting areas behind the downed Joshua tree.
- 1944 hours: Burrowing owl flushed west from Joshua tree stump, vanished from view.
- 1945 hours: Both burrowing owls visible again, appear from behind downed Joshua tree near burrow entrance and move back to perch points: 1 on the forked limb and one burrowing owl on top of the Joshua stump.
- 1946 hours: Burrowing owl flushed out of view of the observer. Flushed southwest from forked limb toward abandoned building on-site.
- 1948 hours: No burrowing owls remained at the burrow location.
- 2000 hours: One burrowing owl arrived back at burrow location, direction of approach unclear due to diminished visibility. Moved from forked limb of Joshua tree, to the area around the burrow entrance, and back the peak of the forked limb of the Joshua tree.
- 2001 hours: Burrowing owl vocalized briefly.
- 2002 to 2008 hours: Burrowing owl continued to move around between the various roosting areas and surrounding vegetation west of the burrow, within ten feet of the burrow location.
- 2008 hours: The remaining burrowing owl flushed out of the view of the observer. Unable to determine direction and distance that the owl flushed due to darkness.
- 2008 to 2024 hours: No burrowing owl observed at the burrow location or nearby perch points.
- 2024 hours: end of survey.

- April 19, 2012:
  - 0512 hours: Start of survey, observers at Observation Point 1B (see Figure 5).
  - 0512 to 0535 hours: No burrowing owl activity observed.
  - 540 hours: Possible sighting of burrowing owl (presumed to be the male) on the top fork of the fallen Joshua tree in front of the burrow entrance. Possible sighting of burrowing owl flying off towards the east.
  - 0541 to 0547 hours: No burrowing owl activity.
  - 0547 to 0628 hours: Burrowing owl perched on fallen Joshua tree fork. No observation of a second burrowing owl yet.
  - 0628 to 0745 hours: Observed the second burrowing owl (presumed to be the female), own the ground slightly east of the other burrowing owl individual. Bushes obscured view of second owl, possible that it had been there for some time.
  - 0745 hours: Burrowing owl 1 observed preening.
  - 0745 to 0800 hours: Both burrowing owls visible, burrowing owl 1 observed roosting on fallen Joshua tree while burrowing owl 2 remained on the ground.
  - 0800 to 0807 hours: Burrowing owl 1 flew off of perch, out of sight of observer. Owl 2 remained in place.
  - 0807 to 0812 hours: Observer spotted burrowing owl 1 roosting on fallen Joshua tree, just west of fork in tree.
  - 0812 hours: end of survey.

Because a pair of burrowing owls was observed near this burrow consistently during the nesting season, and because the pair remained close to the burrow throughout all three of the observation periods conducted, it is possible that nesting activity may be occurring at Burrow #1. The locations where the owls were observed, and the habitat features used, are illustrated graphically on Figure 5. A CNDDB field survey form for the occurrence is included in Appendix D.

5.3.2 Burrowing Owl Activity near Burrow #2

The following burrowing owl activity was observed near Burrow #2:

- April 17,2012:
  - 1723 hours: Start of survey, observers at Observation Point 2A. No burrowing owl activity observed.

- 1756 to 1800 hours: A desert kit fox (*Vulpes macrotis arsipus*) emerged from burrow and remained at the burrow entrance watching the observer.
- 1800 to 1821 hours: The desert kit fox remained in front of the den entrance. The fox was unbothered by horse riding activity in the drainage to the west of the burrow from 1810-1811 hours).
- 1821 to 1925 hours: The desert kit fox got up to stretch, and then sat back down approximately one foot to the east.
- 1925 to 1940 hours: The fox again got up to stretch, then sat back down in its original location one foot to the west.
- 1940 hours: The desert kit fox got up, stretched, and departed to the east presumably to forage. The fox was not visible after 10 meters due to the shrub cover and lack of light.
- 2023 hours: No activity at the burrow. No desert kit fox or burrowing owl present.
- 2023 hours: End of survey.

Following completion of the burrowing owl observation session on April 17, 2012, it was determined that Burrow #2 is currently occupied by a desert kit fox, and that the burrow is not utilized by burrowing owls at the present time. No further observations were conducted.

The information gathered during the Phase III burrowing owl census and observation at the Marathon site suggests that only one of the two burrows on-site is currently occupied by burrowing owls. Burrowing owl use was observed at Burrow A during all three Phase III observation periods. Two owls, presumably a nesting pair, were observed using this burrow location as their primary burrow during the Phase III observation period. The owl pair was observed perching, roosting, and flushing to the surrounding area occasionally presumably for foraging purposes.

SECTION 6.0
PROJECT IMPACTS TO THE BURROWING OWL

Impacts of the proposed Marathon Solar Project on the burrowing owl are addressed below. Impacts to individual burrowing owls are described separately from losses of suitable habitat, because of the differences in the nature (i.e., short-term construction related vs. long-term changes in land use) of these impacts.

6.1 IMPACTS TO INDIVIDUAL BURROWING OWLS

Within the Marathon site, approximately 130 acres of existing natural habitat would be permanently removed during construction. Impacts would result from grading and site preparation activities, including the filling and alteration of some of the site's ephemeral drainages. The single active burrowing owl burrow that was detected, and at which two burrowing owls were observed during protocol surveys, would be removed during site preparation. Since burrowing owls nest and roost underground, it is possible that construction activities could kill or injure any adult and juvenile/nestling owls that may be present and could destroy any eggs present. If construction occurs when nestlings are present, adult owls might have the ability to escape but nestlings likely would not. In addition, disturbances from construction could potentially cause burrowing owls to abandon their nest burrows, leaving nestlings unattended and exposed to injury and mortality. The impacts of the Marathon project on burrowing owl individuals would be significant, absent mitigation. These impacts would be reduced to a less than significant level through the incorporation of Mitigation Measures BIO-1, BIO-2, and BIO-3, which would require pre-construction surveys and avoidance/relocation, biological monitoring, and worker environmental training during the construction phase of the project. These measures are described below in Section 7.0.

6.2 IMPACTS RELATED TO LOSS OF SUITABLE HABITAT

The Project would permanently remove approximately 130 acres of existing creosote bush-white burr sage scrub vegetation identified as suitable burrowing owl habitat during the Phase I habitat assessment. Areas where vegetation is permanently eliminated would be made permanently unsuitable for burrowing owl foraging, roosting, and nesting. Based on the proposed site layout, the Marathon project would leave approximately 28.77 acres of the site in an undeveloped state. Because the CDFG's (1995) Staff Report on Burrowing Owl Mitigation recommends that a minimum of 6.5 acres of on-site mitigation land should be provided for each individual burrowing owl or pair on-site, the project's preservation of 28.77 acres of suitable burrowing owl habitat would be consistent with the mitigation guidelines. Impacts associated with losses of burrowing habitat would therefore be less than significant.

SECTION 7.0
MITIGATION MEASURES

Mitigation measures to offset potentially significant impacts on the burrowing owl are presented below. The measures are provided to inform the County's environmental analysis of the Project under CEQA.

BIO-1 **Pre-construction Burrowing Owl Surveys.** If construction or site preparation activities are scheduled during the non-nesting season of the burrowing owl (typically September through January), the Applicant shall retain a qualified biologist to conduct wintering burrowing owl surveys for all areas in the footprint of disturbance, as well as other areas controlled by the Applicant, including all drainages that would be preserved within the fenced facility. The survey shall be conducted no more than 21 days prior to commencement of construction activities in the area. During the construction period, the results of the surveys, including graphics showing the locations of any active burrows detected and any avoidance measures required, shall be submitted to the County on a monthly basis. If active burrows are detected, the required avoidance measures shall conform to the following:

- If burrowing owls are observed using burrows during the non-breeding season, occupied burrows shall be left undisturbed, and no construction activity shall take place within 300 feet of the burrow where feasible (see below).
- If disturbance of owls and owl burrows is unavoidable, owls shall be excluded from all active burrows through the use of exclusion devices placed in occupied burrows in accordance with CDFG protocols (CDFG 1995). Specifically, exclusion devices, utilizing one-way doors, shall be installed in the entrance of all active burrows. The devices shall be left in the burrows for at least 48 hours to ensure that all owls have been excluded from the burrows. Each of the burrows shall then be excavated by hand and refilled to prevent reoccupation. Exclusion shall continue until the owls have been successfully excluded from the disturbance area, as determined by a qualified biologist.

If construction activities must be initiated in any area of the site during the burrowing owl breeding season (typically February through August), pre-construction surveys for burrowing owls shall be conducted. Any active burrowing owl burrows found at this season shall not be disturbed. Construction activities shall not be conducted within 300 feet of an active burrow during this season.

BIO-2 **Worker Environmental Awareness Program.** The biological monitor shall conduct an initial training for all construction workers on the biological resources that require protection during construction activities as well as the measures that must be implemented to protect those resources. The biological monitor shall maintain a list of personnel that have received the training and any new personnel shall receive the training prior to commencing construction activities.

BIO-3 **Biological Monitoring.** A biological monitor shall be present during all ground disturbing construction activities to ensure that burrowing owls are not impacted by the project and to administer passive relocation of owls, if required. Of burrowing owls are observed, the biological monitor shall have the authority to halt construction activities to avoid damaging sensitive resources or violating applicable laws.

SECTION 8.0
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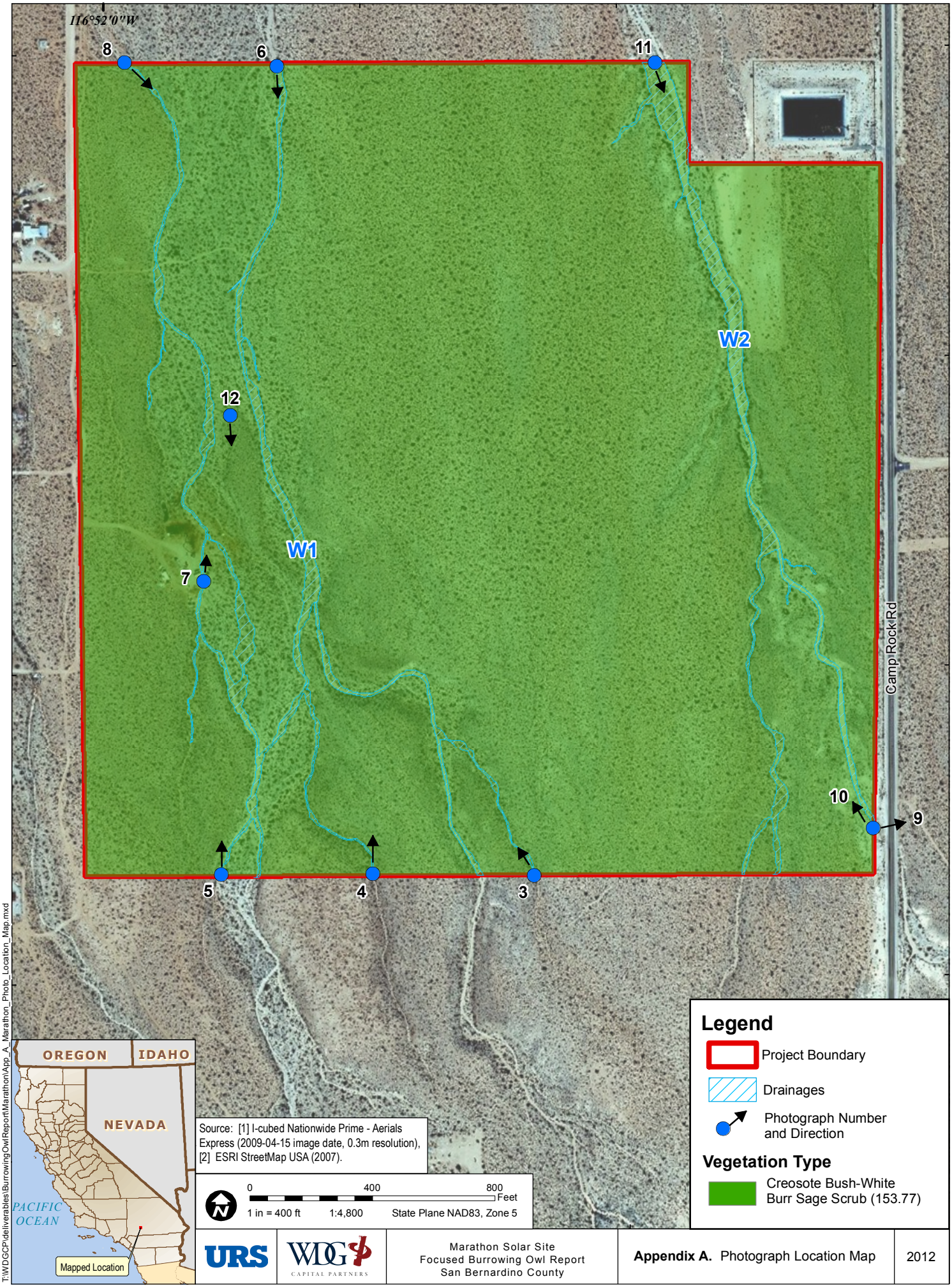
APPENDIX A
SITE PHOTOGRAPHS


116°52'0"W
8
6
11
W2
12
W1
7
Camp Rock Rd
10
9
5
4
3
Legend
Project Boundary
Drainages
Photograph Number and Direction
Vegetation Type
Creosote Bush-White Burr Sage Scrub (153.77)
OREGON
IDAHO
NEVADA
PACIFIC OCEAN
Mapped Location
Source: [1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).
0
400
800
Feet
1 in = 400 ft
1:4,800
State Plane NAD83, Zone 5
URS
WDG
CAPITAL PARTNERS
Marathon Solar Site
Focused Burrowing Owl Report
San Bernardino County
Appendix A. Photograph Location Map
2012
T:\WDGCP\deliverables\BurrowingOwlReport\Marathon\App_A_Marathon_Photo_Location_Map.mxd

Photograph 1. February 2010.
Overview of the project site, view to north.

Photograph 2. February 2010
Overview of the project site, view to south.

Photograph 3. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W1 (east fork), facing downstream. APN 0449-631-02.

Photograph 4. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W1 (middle fork), facing downstream. APN 0449-631-02.

Photograph 5. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W1 (west fork), facing downstream. APN 0449-631-02.

Photograph 6. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W1 (east fork), facing upstream. APN 0449-172-75.

Photograph 7. September 13, 2011.
View to the north, domicile on left.
Drainage W1, facing downstream. APN 0449-172-75.

Photograph 8. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W1 (west fork), facing upstream. APN 0449-172-75.

Photograph 9. September 13, 2011.
Culvert allowing Drainage W2 to pass under Camp Rock Road and enter the site.
APN 0449-631-02.

Photograph 10. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W2, facing downstream. APN 0449-631-02.

Photograph 11. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W2 (west side of drainage), facing upstream. APN 0449-172-75.

Photograph 12. April 17, 2012.
View to the south, taken from Burrow 1 observation point. View of the pair of burrowing owls observed at Burrow 1. The burrowing owls are roosting on a dead Joshua tree located at the entrance to their burrow. APN 0449-631-02.

APPENDIX B
PLANT SPECIES OBSERVED WITHIN THE MARATHON SITE

TABLE B-1
PLANT SPECIES OBSERVED WITHIN THE MARATHON SITE

Scientific Name	Common Name	Growth Habit	Dominant Species?
Family Agavecea – Agave			
Yucca brevifolia	Joshua tree	T	N
Yucca schidigera	Mojave yucca	T	Y
Family Asteracea – Asters, Daisies, and Sunflowers			
Acamptopappus sphaerocephalus	Goldenhead	S	N
Ambrosia acanthicarpa	Annual burr sage	AH	N
Ambrosia dumosa	White burr sage	S	Y
Baileya pleniradiata	Woolly desert marigold	PH	N
Chaenactis carphoclinia	Pebble pincushion	AH	N
Encelia farinosa	Brittlebush	S	N
Eriophyllum wallacei	Wallace's woolly daisy	AH	N
Hymenoclea salsola	Cheesebush	S	Y
Malacothrix glabrata	Desert dandelion	AH	N
Perityle sp.	Rockdaisy	AH	N
Rafinesquia neomexicana	Desert chicory	AH	N
Stephanomeria exigua	Wirelettuce	AH	N
Stephanomeria pauciflora	Desert straw	PH	N
Xylorhiza tortifolia	Mohave aster	PH	N
Family Anacardiacea – Sumacs			
Rhus trilobata	Skunkbrush	S	N
Family Boraginacea – Borages			
Amsinckia tessellata	Fiddleneck	AH	N
Cryptantha circumscissa	Cushion cryptantha	AH	N
Nama demissum	Purple mat	AH	N
Phacelia crenulata	Notch leaved phacelia	AH	N
Family Brassicacea – Mustards			
Brassica tournefortii	Sahara mustard	AH	N
Descurainia pinnata	Yellow tansy mustard	AH	N
Lepidium fremontii	Desert allysum	PH	N
Lepidium nitidum	Pepperweed	AH	N
Sisymbrium sp.	Tumble mustard	AH	N
Stanleya pinnata	Desert princesplume	PH	N
Family Cactacea – Cacti			
Cylindropuntia bigelovii	Teddybear cholla	S	N

TABLE B-1 (CONTINUED)
PLANT SPECIES OBSERVED WITHIN THE MARATHON SITE

Scientific Name	Common Name	Growth Habit	Dominant Species?
Cylindropuntia ramocissima	Pencil cholla	S	N
Echinocactus polycephalus	Many-headed barrel cactus	S	N
Ferocactus cylindraceus	Barrel cactus	S	N
Opuntia basilaris	Beavertail cactus	S	N
Family Chenopodiacea – Goosefoots			
Grayia spinosa	Hop sage	S	N
Krascheninnikovia lanata	Winterfat	S	N
Cucurbitaceae – Cucumber			
Cucurbita palmata	Coyote melon	PH	N
Family Ephedracea – Ephedras			
Ephedra sp.	Ephedra	S	N
Family Euphorobiacea – Spurges			
Croton californicus	Doveweed	PH	N
Family Fabacea – Legumes			
Psorothamnus arborescens	California dalea	S	N
Psorothamnus fremontii	Fremont indigobush	S	N
Family Geraniacea – Geraniums			
Erodium cicutarium	Red-stem fillaree	AH	Y
Family Krameriacea – Rhatanies			
Krameria erecta	Little leaved ratany	S	N
Family Lamiaceae – Mint			
Scutellaria (Salazaria) mexicana	Paper bag bush	S	Y
Family Loasacea – Eveningstars			
Mentzelia albicaulis	Small flowered blazing star	AH	N
Petalonyx thurberi	Sandpaper plant	AH	N
Family Malvacea – Mallows			
Sphaeralcea ambigua	Apricot mallow	PH	N
Family Nyctaginacea – Four O'Clock			
Abronia villosa	Desert sand verbena	AH	N
Mirabilis multiflora	Desert four o'clock	PH	N
Family Onagracea – Evening Primroses			
Camissonia boothii	Booth's evening primrose	AH	N
Family Orobanchacea – Broomrapes			
Orobanche cooperi	Desert broomrape	PH	N

TABLE B-1 (CONTINUED)
PLANT SPECIES OBSERVED WITHIN THE MARATHON SITE

Scientific Name	Common Name	Growth Habit	Dominant Species?
Family Papaveracea – Poppies			
Eschscholzia minutiflora	Pygmy poppy	AH	N
Family Poacea – Grasses			
Achnatherum speciosum	Desert needlegrass	PG	N
Achnatherum hymenoides	Indian ricegrass	PG	N
Bromus madritensis ssp. rubens	Red brome	AG	Y
Bromus tectorum	Cheatgrass	AG	N
Pleuraphis rigida	Woolly galleta	PG	N
Schismus barbatus	Mediterranean grass	AG	Y
Family Polemoniacea – Phloxes			
Eriastrum eremicum	Desert woollystar	AH	N
Linanthus filiformis	Yellow gilia	AH	N
Loeseliastrum matthewsii	Desert calico	AH	N
Family Polygonacea – Knotweeds			
Chorizanthe brevicornu	Brittle spineflower	AH	N
Eriogonum fasciculatum var. *polifolium*	California buckwheat	S	N
Eriogonum inflatum	Desert trumpet	PH	N
Eriogonum mohavense	Western Mohave buckwheat	AH	N
Family Ranunculacea – Buttercups			
Delphinium parishii	Parish's delphinium	PH	N
Family Scrophulariacea – Figworts			
Castilleja exserta	Purple owl's clover	AH	N
Family Solanacea –Nightshades			
Datura wrightii	Western jimsonweed	PH	N
Lycium andersonii	Anderson thornbush	S	N
Family Zygophyllacea – Caltrops			
Larrea tridentata	Creosote bush	S	Y

[1] Non-native species.

Notes:
Scientific nomenclature, native status, and habit follows Hickman 1993.
Habit definitions:

AG = annual grass or graminoid	PG = perennial grass or graminoid	S = shrub
AH = annual herb	PH = perennial herb	T = tree

APPENDIX C
WILDLIFE SPECIES OBSERVED WITHIN THE MARATHON SITE

TABLE C-1
WILDLIFE SPECIES OBSERVED WITHIN THE MARATHON SITE

Common Name	Scientific Name	Applicable Regulatory Status (Federal/State)
Reptiles		
Western side-blotched lizard	*Uta stansburiana elegans*	None/None
Desert spiny lizard	*Sceloperus magister*	None/None
Zebra-tailed lizard	*Callisaurus draconoides*	None/None
Great Basin whiptail	*Aspidoscelis tigris tigris*	None/None
Birds		
Burrowing owl	*Athene cunicularia*	None/CSC
Red-tailed hawk	*Buteo jamaicensis*	None/None
Turkey vulture	*Cathartes aura*	None/None
Common raven	*Corvus corax*	None/None
Horned lark	*Eremophila alpestris*	None/None
Loggerhead shrike	*Lanius ludovicianus*	None/CSC
Mourning dove	*Zenaida macroura*	None/None
Mammals		
Desert kit fox	*Vulpes macrotis arsipus*	None/None[1]
Desert woodrat	*Neotoma lepida lepida*	None/None
Desert cottontail	*Sylvilagus audobonii*	None/None
Black-tailed jackrabbit	*Lepus californicus*	None/None

[1] The desert kit fox maintains no applicable sensitivity designation; however, CDFG's regulations at 14 CCR 460 prohibit take of this species.

APPENDIX D
CALIFORNIA NATURAL DIVERSITY DATABASE FORM

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Date of Field Work (mm/dd/yyyy): 04/17/2012

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing owl

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 2 Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Christopher Julian, URS Corporation
Address: 130 Robin Hill Road, Suite 100
Santa Barbara, CA 93117
E-mail Address: Christopher.Julian@urs.com
Phone: (805) 692-6000

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

2 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☑ burrow site ☐ other

***Location Description* (please attach map AND/OR fill out your choice of coordinates, below)**

The site is located at APNs 0449-631-02 and 0449-172-75. The site is bounded by Camp Rock Road directly to the East and Joshua Avenue to the West.

County: San Bernardino Landowner / Mgr.: WDG Capital

Quad Name: Cougar Buttes Elevation: 3291 ft

T 4N R 1E Sec 17, ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS

T____ R____ Sec ____, ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model Garmin 60CSX

DATUM: **NAD27** ☐ **NAD83** ☐ **WGS84** ☑ Horizontal Accuracy 3 meters meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☑ ***OR*** Geographic (Latitude & Longitude) ☐

Coordinates: 512370, 3807333

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

A pair of burrowing owls was discovered occupying a burrow during focused Phase III surveys. The owl pair was observed perching, roosting, and flushing to the surrounding area occasionally presumably for foraging purposes. The owl pair was observed on all 3 days of of observation during the Phase III survey. The on-site habitat/vegetation communities: 1) creosote bush-white burr sage scrub, dominant species include creosote bush (Larrea tridentata), white burr sage (Ambrosia dumosa), cheesebush (Ambrosia salsola var. salsola), Mojave yucca (Yucca schedigera), red brome (Bromus madritensis ssp. rubens), and red-stem fillaree (Erodium cicutarium), and Mediterranean grass (Schismus barbatus)

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: The site is vacant, the site is zoned agriculture

Visible disturbances: A few small rural residences nearby

Threats: the parcels are proposed for development

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: Identification in the field by qualified biologists

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☑ no ☐