

FOCUSED DESERT TORTOISE SURVEY REPORT

AGINCOURT SOLAR PROJECT

**Cougar Buttes USGS 7.5' quadrangle
Section 34, Township 4 North, Range 1 East
APNs 0449-641-27 and 0449-641-04**

SAN BERNARDINO COUNTY, CALIFORNIA

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Project Number 28907132

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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: _____

SIGNED: _____



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EXECUTIVE SUMMARY

Agincourt Solar, LLC (the Applicant) has retained URS Corporation (URS) to prepare this Focused Desert Tortoise Survey Report for the Agincourt Solar Project (Project), a proposed 10 megawatt (MW) solar photovoltaic (PV) electrical power generating facility on approximately 59 acres in unincorporated San Bernardino County, California. The Project site is approximately 79 acres in size. The proposed Project will connect with an existing Southern California Edison 33-kilovolt transmission line. No new off-site transmission line is proposed.

During USFWS protocol surveys, no live Mojave desert tortoises or signs of recent tortoise presence (burrows, scat, tracks) were found. The only Mojave desert tortoise sign found was a partial skeleton that appeared to be more than four years old, based on the evaluation system developed by Berry and Woodman (1984). Although the site appears to be suitable for this species based on habitat requirements and nearby historical occurrences, survey results indicate that the Mojave desert tortoise does not currently occur within the project site. However, the presence of an aged skeleton suggests that the site was used by this species in the past.

**SECTION 1.0
INTRODUCTION AND BACKGROUND**

1.1 INTRODUCTION

The Applicant proposes to construct and operate a 10 megawatt (MW) solar photovoltaic (PV) electrical power generating facility on approximately 59 acres located in unincorporated San Bernardino County, California. The proposed Agincourt Solar Project (Project) will connect with an existing Southern California Edison (SCE) 33-kilovolt (kV) transmission line. No new off-site transmission line is proposed. The electricity produced by the Solar Project will be marketed to power buyers through a long-term power purchase agreement.

This Focused Desert Tortoise Survey Report presents the results of focused surveys for the Mojave desert tortoise (*Gopherus agassizii*), a federally- and state-listed threatened species, that have been undertaken within the Agincourt Solar Project site, describes the Project's impacts on Mojave desert tortoise, and identifies feasible mitigation measures that would reduce impacts to less than significant levels. **This Focused Desert Tortoise Survey Report and any recommended mitigation measures included do not constitute authorization for incidental take of the Mojave desert tortoise.** In accordance with the U.S. Fish and Wildlife Service's (USFWS) Mojave desert tortoise survey protocol (USFWS 2010), results of this pre-project survey are valid for no more than one year.

The Applicant will submit a Conditional Use Permit (CUP) application to the County of San Bernardino, and the Planning Division of the County Land Use Services Department (Planning) will initiate review of the proposed Project as required under the California Environmental Quality Act (CEQA).

1.2 PROJECT SITE

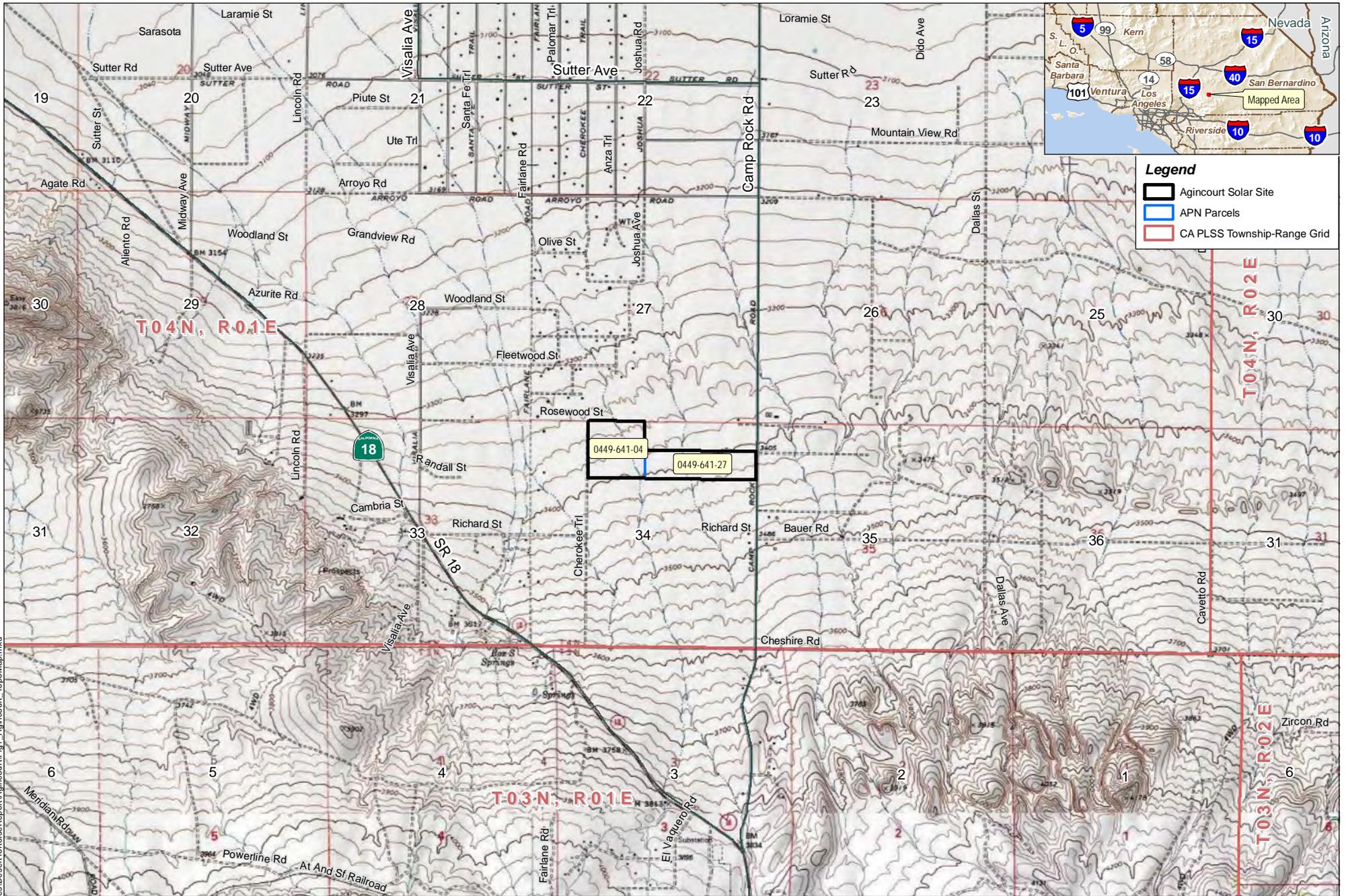
The Project site evaluated in this Focused Desert Tortoise Survey Report comprises approximately 79 acres in the Lucerne Valley, in the western Mojave Desert in unincorporated San Bernardino County. The site is located approximately six miles southeast of the intersection of State Routes 18 and 247, 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. Rosewood Street, an unpaved County road, forms the northern border in the western portion of the site; however, the majority of the northern boundary and the entire western and southern boundaries 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 exhibits a key-like shape, with a wider portion at the western end and a narrow neck extending to the east (see Figure 1).

The project site is comprised of two adjacent parcels, both of which are currently unimproved and vacant. The western portion of the site (parcel 0449-641-04) is zoned

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LV/RL-5 (Rural Living – five-acre parcel minimum). The RL land use zoning district provides sites for rural residential uses, incidental agricultural uses, and similar and compatible uses. The easterly portion of the site (parcel 0449-641-27) is zoned LV/AG, 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. The site is privately owned, and is not within or adjacent to any designated sensitive resource areas, ecological reserves, or other formally protected lands.

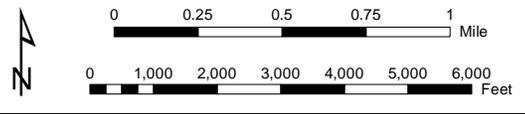
Much of the land surrounding the Project site has been subdivided into large residential lots for rural living, but only a few of these lots have been developed with residences. The closest residence to the Agincourt site is located approximately 0.15 mile north of the site boundary on Rosewood Street near the intersection with Camp Rock Road. Aside from scattered rural residences, the landscape surrounding the Project site is characterized by relatively intact desert vegetation.



Legend

- Agincourt Solar Site
- APN Parcels
- CA PLSS Township-Range Grid

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**Agincourt Solar Project
 Focused Desert Tortoise Report
 San Bernardino County, CA**

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 Assessor, [4] ESRI StreetMap USA (2007).

Figure 1. Topographic Map of Project Area

2012

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**SECTION 2.0
SUMMARY PROJECT DESCRIPTION**

Agincourt Solar, LLC (Applicant) of Santa Barbara, California, proposes a photovoltaic solar facility to be constructed on approximately 79.2 acres. The site is located in the south one half of the north one half of the northeast one quarter of Section 34, Township 4 North, Range 1 East, San Bernardino Base and Meridian, in the Cougar Buttes USGS quadrangle, County of San Bernardino, California.

The site is bounded by Rosewood Street directly to the north, Camp Rock Road directly to the east, Richard Street to the south, and Cherokee Trail to the west. Figure 1 shows the local site vicinity, and the inset on this figure shows a regional map for context.

Elevations within the Project site range from approximately 3,350 to 3,440 feet above mean sea level, with the overall grade sloping gradually to the northwest. 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 several ephemeral drainage channels that traverse the site, but major landforms and topographic features are absent.

Vegetation on-site is comprised of creosote bush-white burr sage scrub and Joshua tree woodland.

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 1.7 miles south of the proposed Project site.

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

- 0449-641-04 (40 acres, NE/4 of NW/4, Section 34, Township 4N, Range 1E)
- 0449-641-27 (39.2 acres, S/2 of N/2 of NE/4, Section 34, Township 4N, Range 1E, excepting 50-foot 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

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3,340 feet above sea level (asl) at its northwest corner up to 3,446 asl at its southeast corner. The topography is generally flat, with a slope of about four percent towards the north-northwest. Numerous small braided channels cross the site.

The Project site is bordered to the north by vacant land and Rosewood Street. Land to the north of Rosewood Street is subdivided into five acre lots, but only a few of these have been developed with residences. To the west, the land is also subdivided with lot sizes ranging from 2.5 to 10 acres. Most of these lots are vacant, and about one dozen homes are located within one-half mile of the northern and western project boundaries. Immediately south of the project site are two large vacant lots. In general terms, land to the south and east is in larger lots with a lower density of development. About one dozen homes are located within one mile of the project to the south and east.

2.3 EXISTING LAND USES

The project site is currently vacant. The western portion of the site (parcel 04) is zoned LV/RL-5 (Rural Living – 5 acre parcel minimum). The RL land use zoning district provides sites for rural residential uses, incidental agricultural uses, and similar and compatible uses. The easterly portion of the site is zoned LV/AG, 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 Chapters 82.03 and 82.04, electrical power generation is defined as a transportation, communications and infrastructure use, and is allowed in the AG and RL-5 zones upon approval of a Conditional Use Permit (CUP).

2.4 PROJECT LAYOUT AND CONSTRUCTION

The proposed 79-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 10 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, a Conex box for equipment storage, and buried collector lines. Concrete pads would be sized and installed to accommodate associated equipment (inverters and switchgear). The top-of-concrete elevation would be approximately 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

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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.

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

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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 of the project embedded piers, is estimated to be minimal, approximately 11 percent.

2.7 SITE DRAINAGE

A flood map search (FEMA 2011) for Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel ID numbers 06071C6575H and 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 (11 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

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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 80-100 workers at its peak. Construction is estimated to start in 2013 and would take approximately nine months to complete. Approximately 40 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 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 little or no import or export of earthen material. A total of approximately 150,000 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, 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.

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**SECTION 3.0
METHODOLOGY**

To document the Mojave desert tortoise use within the Agincourt site, URS relied upon a review of available literature, as well as seasonally-timed biological field investigations of the site. The methods employed are described below.

3.1 LITERATURE REVIEW

Prior to conducting biological field surveys within the Agincourt site, URS biologists performed a literature review to identify known Mojave desert tortoise 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 (CNDDDB; CDFG 2012) was performed. These resources were used to identify documented occurrences within or in the vicinity of the Project site. The CNDDDB 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 CNDDDB query are presented on Figure 3.

**3.2 U.S. FISH AND WILDLIFE SERVICE PROTOCOL MOJAVE DESERT
TORTOISE SURVEYS**

The USFWS Mojave desert tortoise survey protocol (USFWS 2010) requires biologists to conduct pedestrian transect surveys covering the Project's action area to identify potential burrows, sign, and presence of Mojave desert tortoise. The action area is defined by the USFWS protocol "as all areas to be affected directly or indirectly [by the project] and not merely the immediate area involved in the [project]" (USFWS 2010). The objectives of the protocol surveys are to:

- Determine presence or absence of desert tortoises within the action area
- Estimate the number of tortoises (abundance) within the action area
- Assess the distribution of tortoises within the action area to inform take avoidance and minimization

The action area for the Project is defined as the entire Project site which totals approximately 79.2 acres. Since Camp Rock Road is a paved and well-travelled roadway, construction of the proposed solar facility would not result in substantial increases in traffic levels in the site vicinity. Camp Rock Road is therefore not included in the action area. The proposed Project would connect with an existing SCE 33-kilovolt transmission line.

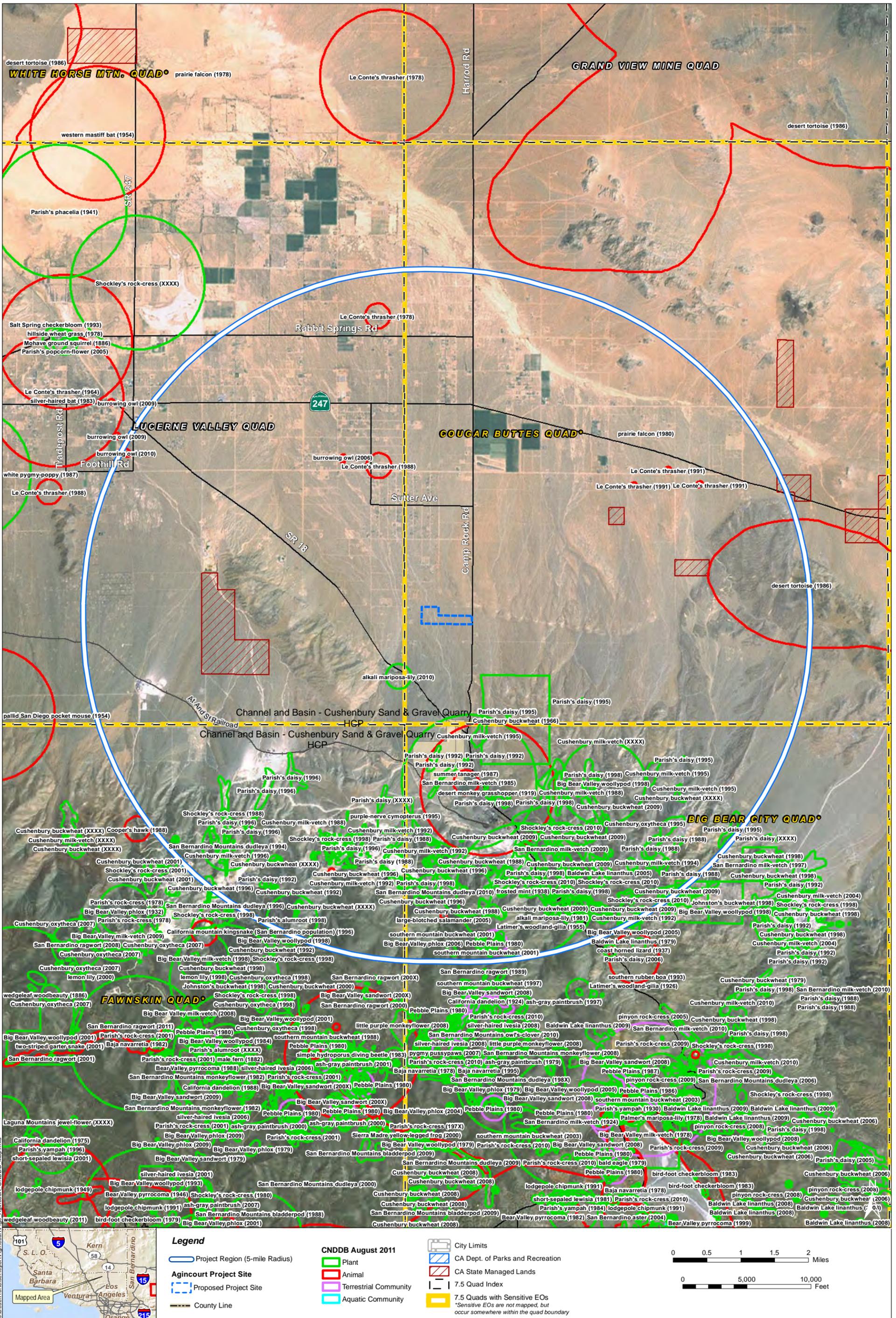


Figure 3. Special-status species in the Project Vicinity

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A full-coverage survey of the action area was conducted from April 9 through April 11, 2012. Surveys were conducted by three URS biologists walking parallel 10-meter wide belt transects over the action area. If present, occurrences of all live Mojave desert tortoise and Mojave desert tortoise sign, including burrows, scat, and carcasses, were recorded on USFWS datasheets and were marked using a Garmin 60CSx GPS unit capable of 3 meter accuracy. Photographs were taken to document any Mojave desert tortoise sign observed (Appendix A). 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. Table 1 provides a summary of the field conditions.

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**TABLE 1
FIELD CONDITIONS SUMMARY**

Date	Time	Weather Conditions	Location (UTM, Zone 11S) and Elevation (m)	Investigators
April 9, 2012	Start: 1400	Start: Temperature 27.2°C, Wind 2.5 mph (NW), 1% cloud cover	Start: 0512220E, 3806425N, 1029m	Christopher Julian Julie Love
	End: 1730	End: Temperature 25.7°C, Wind 7.3 mph (W), 1% cloud cover	End: 0512490E, 3806253N, 1038m	
April 10, 2012	Start: 0830	Start: Temperature 17.5°C, Wind 1 mph (W), 2% cloud cover	Start: 0512500E, 3806307N, 1035m	Christopher Julian Julie Love William Fletcher
	End: 1156	End: Temperature 28.0°C, Wind 5–6 mph (W), 0% cloud cover	End: 0513010E, 3806119N, 1049m	
April 10, 2012	Start: 1315	Start: Temperature 29.7°C, Wind 4–5 mph (W), 0% cloud cover	Start: 0512210E, 3806462N, 1027m	Christopher Julian Julie Love William Fletcher
	End: 1635	End: Temperature 27.7°C, Wind 8–10 mph (SW), 0% cloud cover	End: 0511980E, 3806448N, 1026m	
April 11, 2012	Start: 0830	Start: Temperature 12.5°C, Wind 1–2 mph (W), 85% cloud cover	Start: 0511970E, 3806534N, 1022m	Christopher Julian Julie Love William Fletcher
	End: 1030	End: Temperature 14.5°C, Wind 5–6 mph (SW), 15% cloud cover	End: 0511820E, 3806534N, 1022m	

**SECTION 4.0
GENERAL BIOLOGICAL SURVEY RESULTS**

This section presents the results of general biological surveys that were conducted within the Agincourt 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 environmental context for the Mojave desert tortoise protocol survey discussion in Section 5.0 of this report.

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 larger of these two ranges, reaching elevations in excess of 11,000 feet at the top of Mt. San Gorgonio, and receive considerable winter snowfall. Because the Agincourt 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 Agincourt 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 itself is relatively flat, and elevations on-site range from 3,350 to 3,440 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

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rather, all 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 to 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 three soil types occur within the Project site, including the Arizo, Cajon, 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 (cm) (7 inches [in]), 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. Arizo soils occur in a majority of the Agincourt 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 cm (6 in) 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 mixed, thermic Typic

(PWS). At the Planning Watershed level (the most detailed level), 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).

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Torripsamments. Cajon soils occur in a small portion of the eastern side of the Agincourt site.

4.1.3.3 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 5 to 50 percent. The average annual precipitation is approximately 10.2 cm (4 in) 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. Trigger soils occur in a small portion of the eastern side of the Agincourt 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, 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. (The most 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 COMMUNITIES

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 two distinct plant communities. Within the site's drainages, the vegetation is dominated by shrubs and herbaceous understory and most closely

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corresponds with Sawyer et al.'s (2009) creosote bush-white burr sage scrub (*Larrea tridentata*-*Ambrosia dumosa* shrubland alliance). In the upland portions of the site, vegetation is dominated by shrubs and trees and most closely corresponds with Sawyer et al.'s (2009) Joshua Tree Woodland (*Yucca brevifolia* woodland 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, and acreages are presented in Table 2. Photographs showing the on-site vegetation communities are included in Appendix A.

**TABLE 2
VEGETATION COMMUNITIES WITHIN THE AGINCOURT SITE**

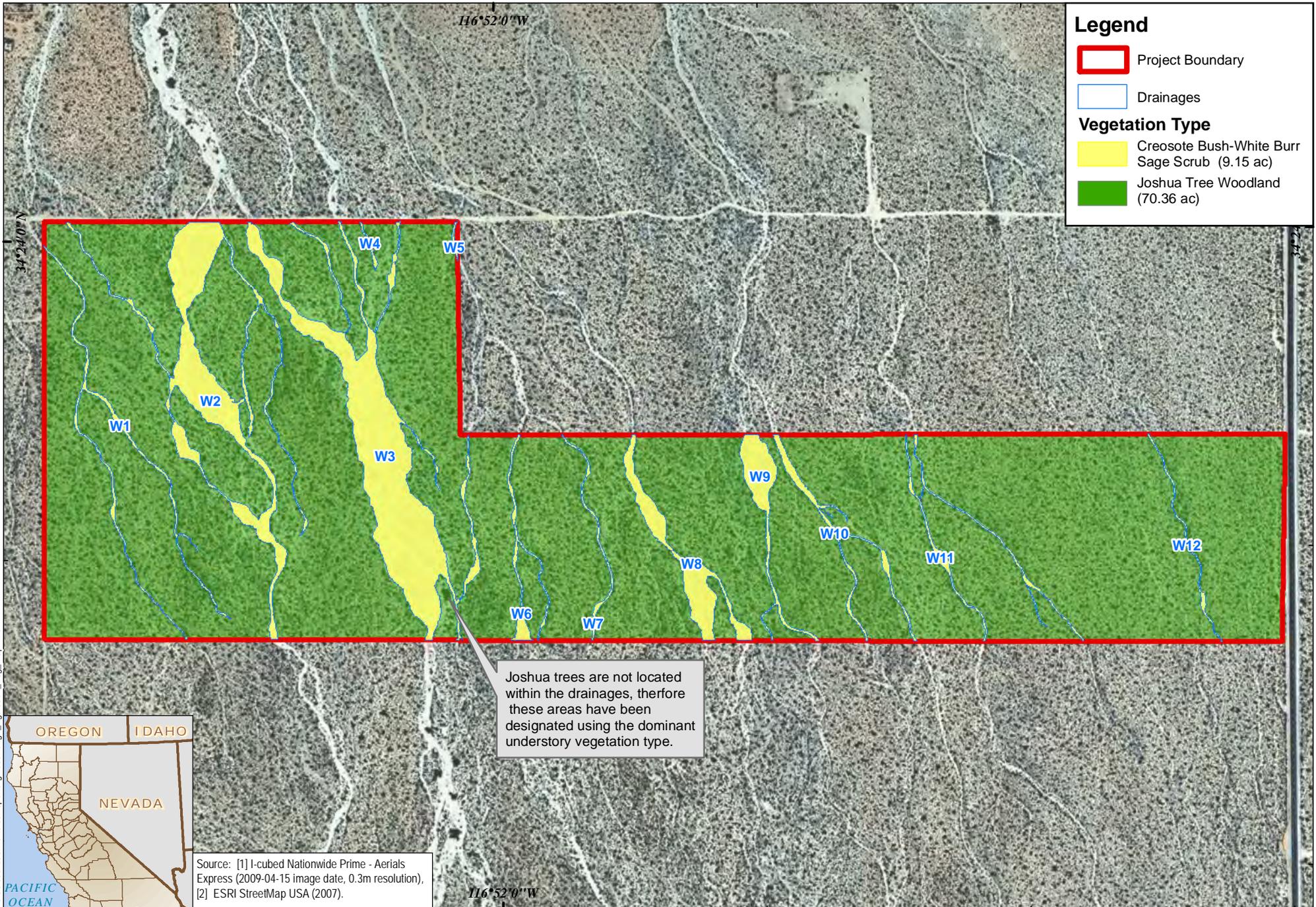
Vegetation Community	Aerial Extent (Acres)	Percent of Site Cover
Joshua Tree Woodland	70.36	88.5
Creosote Bush – White Burr Sage Scrub	9.15	11.5
Total	79.51 ^a	100.0

^a County parcel data indicate the site totals 79.2 acres, but the site has not been professionally surveyed. The slight difference in the site size noted in this table reflects variance between GIS calculations and unsurveyed parcel data.

4.2.1 Joshua Tree Woodland

Joshua tree woodland vegetation is characterized by the dominance of Joshua trees (*Yucca brevifolia*) in the tree stratum, over an understory of shrubs or herbaceous vegetation. To be classified as a woodland, Joshua tree cover must exceed one percent, and pines and junipers, if present, must not exceed one percent of the vegetative cover. The shrub layer is open to intermittent, and the herbaceous layer is open to intermittent with annual and perennial grasses and forbs (Sawyer et al. 2009). This vegetative alliance occurs at elevations between 750 and 1800 meters (2,475 and 5,940 feet). In California, Joshua tree woodlands are distributed within the Mojave Desert and surrounding transitional areas, but are absent from San Diego, Imperial, and the easternmost portions of Riverside and San Bernardino counties. The CDFG's most recent List of California Terrestrial Natural Communities (CDFG 2010) identifies Joshua tree woodlands as a sensitive natural community.

In the Joshua tree woodlands within the Agincourt site, dominant species include native trees such as Joshua trees (*Yucca brevifolia*), native shrubs such as creosote bush (*Larrea tridentata*), white burr sage (*Ambrosia dumosa*), cheesebush (*Ambrosia [Hymenoclea] salsola* var. *salsola*), and Mojave yucca (*Yucca schedigera*), and non-native herbs such as red brome (*Bromus madritensis* ssp. *rubens*), red-stem fillaree (*Erodium cicutarium*), and Arab grass (*Schismus arabicus*). The site contains 792 Joshua trees, distributed approximately evenly throughout the site (excepting the desert washes), and this species exceeds one percent of the site's total vegetative cover.



Legend

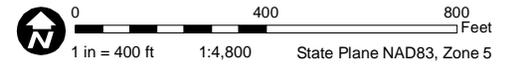
- Project Boundary
- Drainages

Vegetation Type

- Creosote Bush-White Burr Sage Scrub (9.15 ac)
- Joshua Tree Woodland (70.36 ac)

Joshua trees are not located within the drainages, therefore these areas have been designated using the dominant understory vegetation type.

Source: [1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).



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Figure 4. Vegetation Map

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4.2.2 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 Agincourt site, creosote bush-white burr sage scrub occurs along the several desert washes that traverse the site in a north-south direction. Joshua trees are not abundant in these areas, and dominant species 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 Arab grass (*Schismus arabicus*). Desert willows (*Chilopsis linearis*) are also uncommon but present in one of the washes.

4.3 HYDROLOGY

As stated previously, the Agincourt 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 12 ephemeral drainages were mapped. All 12 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 is mild for each drainage, as the channels are relatively straight. The channel bottoms are mostly un-vegetated with upland plant species on the banks and the drainages does 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 (Spatial Climate Analysis Service 1998). 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

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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 Agincourt site is presented in Appendix B.

4.5 WILDLIFE SPECIES

Based on results of the full-coverage pedestrian transect surveys performed within the Agincourt site, wildlife use of this site appears to be limited. The species detected were primarily common insects, birds, mammals, and reptiles. Due to the absence of perennial watercourses, the Agincourt 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 Agincourt site is presented in Appendix C. Results of the USFWS protocol Mojave desert tortoise surveys are presented in Section 5.

**SECTION 5.0
PROTOCOL MOJAVE DESERT TORTOISE SURVEY RESULTS**

Mojave desert tortoise habitat requirements and results of the USFWS protocol surveys are discussed below.

5.1 MOJAVE DESERT TORTOISE HABITAT REQUIREMENTS

The desert tortoise occurs in the Mojave and Sonoran deserts of southeastern California and southern Nevada, and south through Arizona into Mexico. The Mojave population of this species (all tortoises north and west of the Colorado River) is listed as threatened under the Endangered Species Act, and all wild desert tortoises within California are protected under the California Endangered Species Act. Within the known range, typical habitat for the Mojave desert tortoise in the Mojave Desert has been characterized as creosote bush scrub below 1,677 meters (5,500 feet), where precipitation ranges from five to 20 centimeters (two to eight inches), the diversity of perennial plants is relatively high, and production of ephemeral plants is high (USFWS 2011). The dominant shrub commonly associated with Mojave desert tortoise habitat is creosote bush. Other shrubs including white burr sage, cheese bush, desert senna (*Senna armata*), and Mojave prickly-pear (*Opuntia mojavensis*) provide suitable habitat for the Mojave desert tortoise. Mojave desert tortoises spend 95 percent of their lives underground, and moderately friable soil is a requirement for burrow construction. Throughout most of the Mojave Desert, Mojave desert tortoises occur most commonly on gently sloping terrain with soils ranging from sand to sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Mojave Desert tortoises can also be found in steeper, rockier areas throughout their range (USFWS 2011).

According to maps shown in the USFWS' (2011) *Revised Recovery Plan for the Mojave Population of the Desert Tortoise*, the Project site is not within designated critical habitat for this species. The closest designated critical habitat unit to the project site is the Ord-Rodman unit, located in the Ord-Rodman Mountains approximately 25 miles north of the site. However, habitat suitability maps indicate that the site vicinity is highly suitable for use by the Mojave desert tortoise (USFWS 2011), and a known historic occurrence of this species (dating from 1986) is located within five miles of the site (CDFG 2012). Lands covered by the Cushenbury Sand and Gravel Quarry Habitat Conservation Plan, a private agreement between the quarry and the USFWS intended to protect the Mojave desert tortoise, are located approximately two miles south of the site in the northern foothills of the San Bernardino Mountains. The Agincourt site is privately owned, and does not include any lands designated as Desert Tortoise Conservation Areas, including Areas of Critical Environmental Concern, Desert Wildlife Management Areas, or other designations.

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5.2 SURVEY RESULTS

During the 2012 USFWS protocol surveys, no live Mojave desert tortoises or recent sign were found within the Agincourt site. However, the scattered skeletal remains of one tortoise were detected. The remains consisted of what appeared to be the posterior plastron of a Mojave desert tortoise in four large pieces, among other smaller and less distinguishable bone fragments. It is most likely that the remains were those of a female, judging by the posterior portion of the plastron, although the bones were highly disarticulated and comprised less than 25 percent of a complete skeleton (photographs are included in Appendix A). The bones were very bleached. No scutes or other parts of the animal were observed, and the bones were scattered over a patch of ground measuring approximately 4 feet by 4 feet adjacent to a dead Joshua tree. In an effort to determine the age of the skeleton, the *Key to Estimating Time since Death for Shell-Skeletal Remains* (Berry and Woodman 1984) included in the Arizona Game and Fish Department’s survey protocol (Averill-Murray 2000) for Morafka’s [Sonoran] desert tortoise (*Gopherus morafkai*, a closely-related species) was used. This dichotomous key is generally capable of assessing time since death for skeletal remains up to four years deceased, and suggested that the bones found at Agincourt were more than four years old (the oldest age category included in the key). The find occurred in Joshua tree woodland habitat in the southwestern portion of the Agincourt site; the location is depicted graphically on Figure 5. A CNDDDB form for this occurrence is included in Appendix D, and the USFWS 2010 Desert Tortoise Pre-project Survey Data Sheet is included in Appendix E.

In accordance with the USFWS survey protocol, the following equation was used to calculate the estimated number of tortoises within the action area based on survey results:

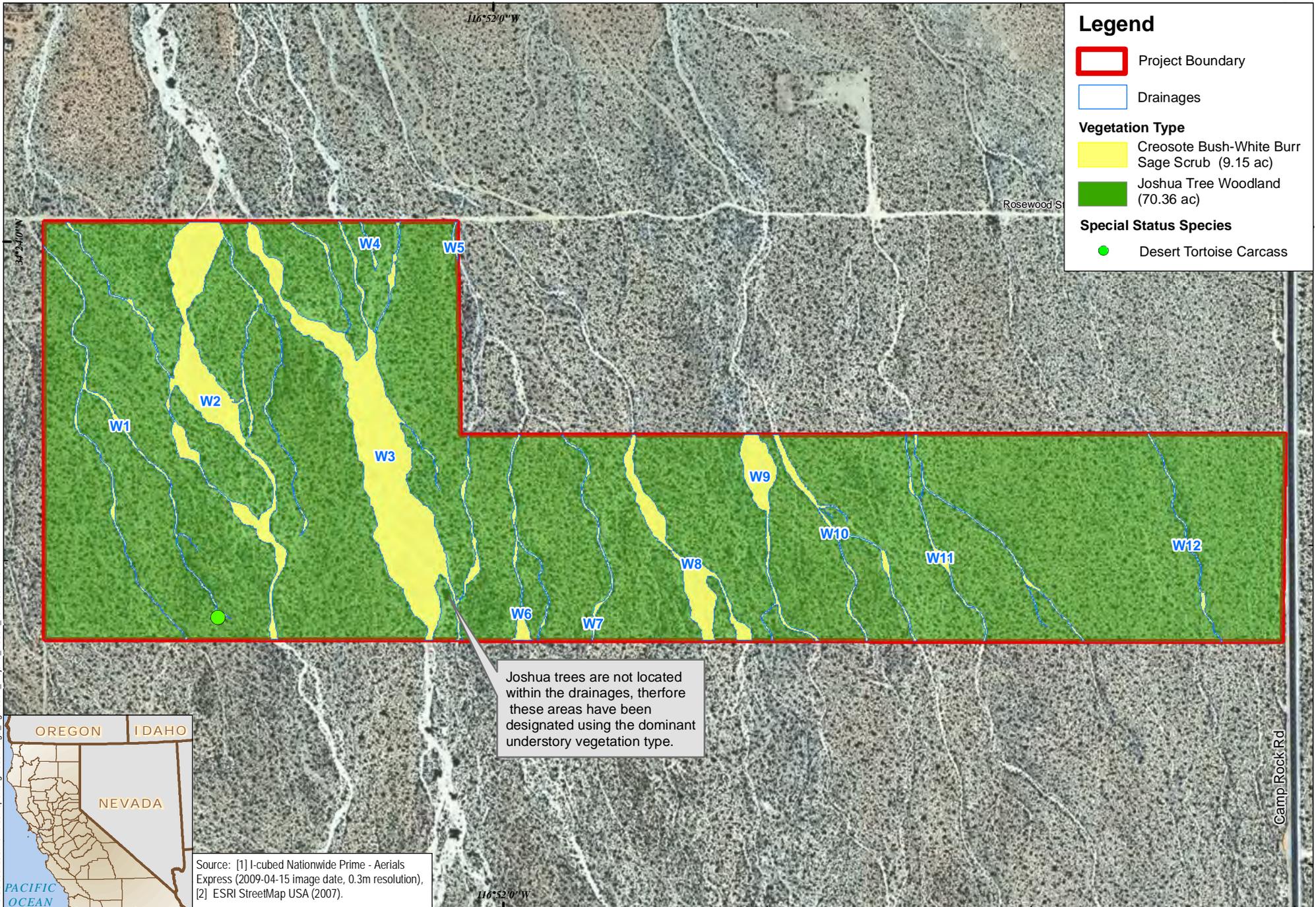
$$\left(\begin{array}{c} \text{Estimated number} \\ \text{of tortoises} \\ \text{within action area} \end{array} \right) = \frac{\left(\begin{array}{c} \text{Number of tortoises} \\ \text{observed above ground} \end{array} \right)}{\left(\begin{array}{c} \text{Probability that} \\ \text{a tortoise is} \\ \text{above ground (Pa)} \end{array} \right) \left(\begin{array}{c} \text{Probability of} \\ \text{detecting a tortoise,} \\ \text{if above ground (Pd)} \end{array} \right)} \left(\begin{array}{c} \text{Size of action area} \\ \text{Size of area surveyed} \end{array} \right)$$

Inputting the appropriate information and survey results into the equation produces the following²:

$$(0) = \frac{(0)}{(0.64)(0.63)} \left(\frac{72.9ac}{72.9ac} \right)$$

Because the estimated tortoise abundance is directly proportional to the number of tortoises observed above ground, and because no tortoises were observed during the protocol survey,

² Precipitation data was not available for the Victorville CA Airport; precipitation data from the Daggett-Barstow Airport in California was used to calculate P_a (Weather Underground 2012).



Joshua trees are not located within the drainages, therefore these areas have been designated using the dominant understory vegetation type.

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Rosewood St

Camp Rock Rd

116°52'0"W

34°24'0"N

116°52'0"W



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the estimated number of tortoises with the action area as calculated by the USFWS survey protocol equation is zero.

Although the Agincourt site appears to be suitable for the Mojave desert tortoise based on habitat requirements and nearby historical occurrences, survey results indicate that the Mojave desert tortoise does not currently occur within the project site. Further, the absence of any recent tortoise sign suggests that if Mojave desert tortoise occupy neighboring lands, their use of the Agincourt site for transitory purposes is extremely limited. However, the presence of an aged skeleton suggests that the site was used by this species in the past.

**SECTION 6.0
PROJECT IMPACTS TO THE MOJAVE DESERT TORTOISE**

Impacts of the proposed Agincourt Solar Project on the Mojave desert tortoise are addressed below.

6.1 IMPACTS TO INDIVIDUAL MOJAVE DESERT TORTOISES

As described more fully in Section 4.0 of this Focused Desert Tortoise Survey Report, the Project site is a fairly representative sample of the western Mojave Desert from a biological perspective. However, as described in Section 5.1, protocol-level surveys for this species in the spring of 2012 were negative, and Mojave desert tortoise are not believed to occupy the site. Because this species is understood to be absent, the potential for project-related impacts to Mojave desert tortoises would be limited to individuals that either occupied the site but went undetected during protocol surveys or that were not present on-site during the surveys but colonized the area subsequently. Although unlikely, these impacts would be potentially significant, absent mitigation, due to the very high level of statutory protection afforded this species.

To reduce the likelihood of project-related impacts to Mojave desert tortoise individuals during construction, it is recommended that pre-construction surveys for this species be conducted as described in mitigation measure BIO-1. Biological monitoring and worker training (mitigation measures BIO-2 and BIO-3) would further reduce this impact. With implementation of mitigation measures BIO-1, BIO -2, and BIO -3, impacts to Mojave desert tortoise individuals would be less than significant.

6.2 IMPACTS RELATED TO LOSS OF SUITABLE HABITAT

As described in Section 4.2 above, the Agincourt site contains a total of 79.51 acres of natural vegetation, of which 9.15 acres are comprised of creosote bush-white burr sage scrub and the remaining 70.36 acres contain Joshua tree woodland. To facilitate development of the Agincourt project site, existing vegetation within the development envelope would need to be removed. Taller-growing species, such as Joshua trees, inhibit installation of solar panels due to their height and would be removed during site preparation. Lower-growing species, such as grasses, forbs, and shrubs, would not be removed specifically but would be uprooted or buried during the minor grading activities proposed. Because development of the site would involve soil movement and compaction, and because the proposed solar panels would create shade over much of the site, it is unlikely that new growth of vegetation would occur within the solar arrays following completion of the project. Thus, vegetation losses in the development footprint are presumed to be permanent.

In total, implementation of the proposed Project would result in the permanent loss of 63.88 acres of natural habitats suitable for Mojave desert tortoise within the Agincourt site, and this

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conversion would preclude the recovery or re-establishment of the Mojave desert tortoise within the site. However, because the area proposed for removal is not presently occupied, is not within designated critical habitat or within a designated Desert Tortoise Conservation Area, and is very small compared to the overall range of this species, impacts related to losses of Mojave desert tortoise habitat from project implementation would be less than significant.

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**SECTION 7.0
MITIGATION MEASURES**

Below are recommended mitigation measures to offset potentially significant impacts on the Mojave desert tortoise. The measures are provided to inform the County's environmental analysis of the Project under CEQA.

BIO-1 Pre-construction Surveys. Pre-construction surveys for Mojave desert tortoise shall be conducted prior to the commencement of Project-related ground disturbance. Appropriate survey methods and timeframes shall be established, to ensure that chances of detecting the target species are maximized. In the event that Mojave desert tortoises are encountered, construction will not commence or proceed until authorization from the USFWS and CDFG has been obtained. Pre-construction surveys shall encompass all areas within the potential footprint of disturbance, as well as all other areas controlled by the applicant, including all drainages that would be preserved within the fenced facility.

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 Mojave desert tortoises are not impacted by the project. If any Mojave desert tortoises are observed, the biological monitor shall have the authority to halt construction activities to avoid damaging sensitive resources or violating applicable laws.

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**SECTION 8.0
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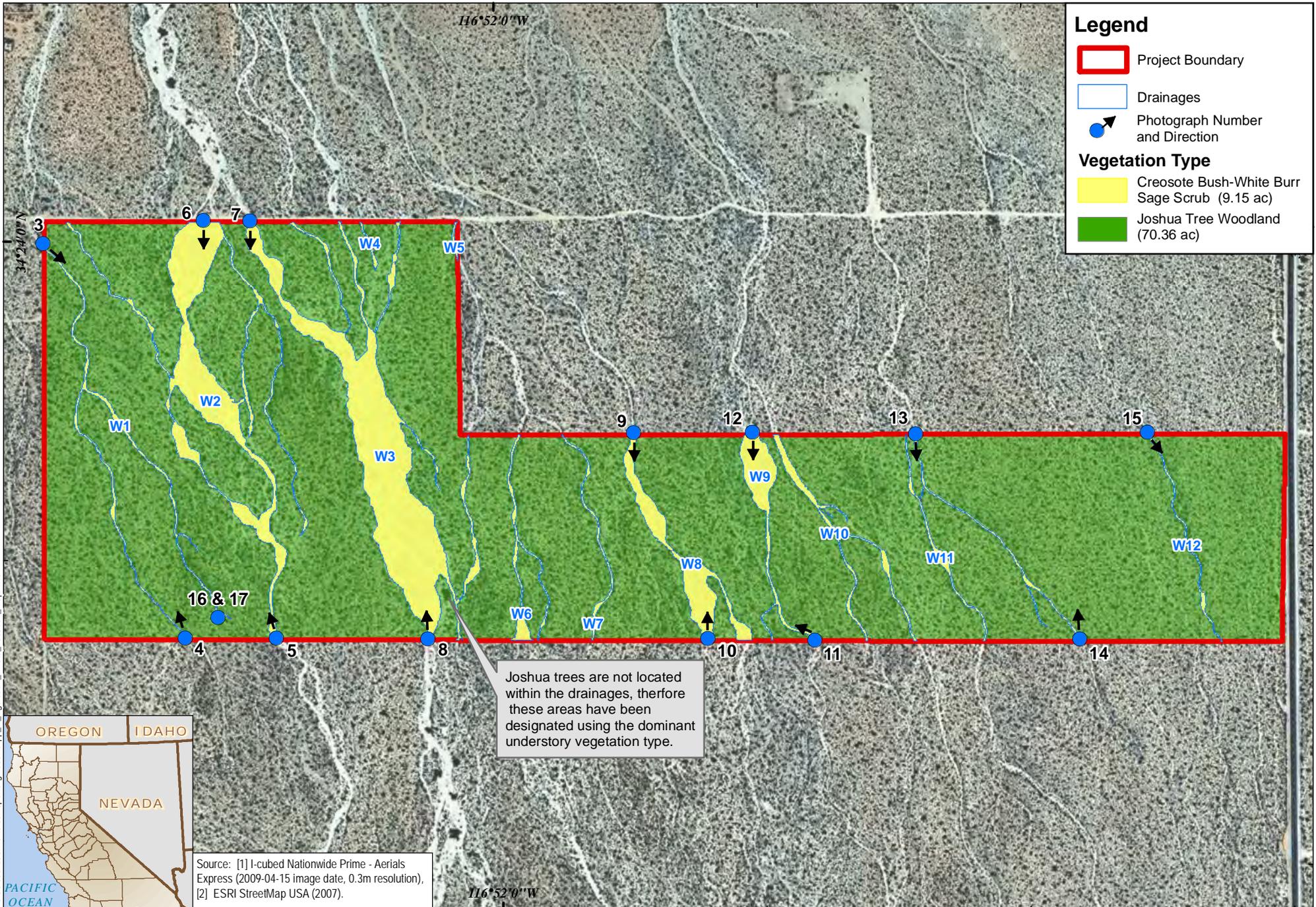
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**APPENDIX A
PHOTOGRAPH LOCATION MAP AND SITE PHOTOGRAPHS**



Legend

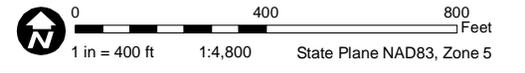
- Project Boundary
- Drainages
- ↑ Photograph Number and Direction

Vegetation Type

- Creosote Bush-White Burr Sage Scrub (9.15 ac)
- Joshua Tree Woodland (70.36 ac)

Joshua trees are not located within the drainages, therefore these areas have been designated using the dominant understory vegetation type.

Source: [1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).



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 San Bernardino County, CA

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**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 1. February 2010.
Overview of the project site.



Photograph 2. February 2010.
Overview of the project site.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 3. September 12, 2011.
View to the south, taken from northern project boundary.
Drainage W1, facing upstream. APN 0449-641-04.



Photograph 4. September 12, 2011.
View to the north, taken from southern project boundary.
Drainage W1, facing downstream. APN 0449-641-04.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 5. September 12, 2011.
View to the north, taken from southern project boundary.
Drainage W2, facing downstream. APN 0449-641-04.



Photograph 6. September 12, 2011.
View to the south, taken from northern project boundary.
Drainage W2, facing upstream. APN 0449-641-04.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 7. September 12, 2011.
View to the south, taken from northern project boundary.
Drainage W3, facing upstream. APN 0449-641-04.



Photograph 8. September 12, 2011.
View to the north, taken from southern project boundary.
Drainage W3, facing downstream. APN 0449-641-04.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 9. September 12, 2011.
View to the south, taken from northern project boundary.
Drainage W8, facing upstream. APN 0449-641-27.



Photograph 10. September 12, 2011.
View to the north, taken from southern project boundary.
Drainage W8, facing downstream. APN 0449-641-27.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 11. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W9, facing downstream. APN 0449-641-27.



Photograph 12. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W9, facing upstream. APN 0449-641-27.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 13. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W11, facing upstream. APN 0449-641-27.



Photograph 14. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W11, facing downstream. APN 0449-641-27.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**



Photograph 15. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W12, facing upstream. APN 0449-641-27.



Photograph 16. April 10, 2012.
Mojave desert tortoise carcass. APN 0449-641-04.

FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT



Photograph 17. April 10, 2012.
Mojave desert tortoise carcass. APN 0449-641-04.

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

**APPENDIX B
PLANT SPECIES OBSERVED WITHIN THE AGINCOURT SITE**

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

**TABLE B-1
PLANT SPECIES OBSERVED WITHIN THE AGINCOURT SITE**

Scientific Name	Common Name	Family	Growth Habit	Dominant Species?
<i>Ambrosia acanthicarpa</i>	Annual Burr Sage	Asteraceae	AH	N
<i>Ambrosia dumosa</i>	White Burr Sage	Asteraceae	S	Y
<i>Ambrosia (Hymenoclea) salsola</i> var. <i>salsola</i>	Cheesebush	Asteraceae	S	Y
<i>Amsinckia tessellata</i> ssp. <i>tessellata</i>	Desert Fiddleneck	Boraginaceae	AH	N
<i>Atriplex canescens</i>	Four-wing Saltbush	Chenopodiaceae	S	N
<i>Brassica tournifortia</i> ¹	Sahara Mustard	Brassicaceae	AH	N
<i>Bromus madritensis</i> ssp. <i>rubens</i> ¹	Red Brome	Poaceae	AG	Y
<i>Bromus tectorum</i> ¹	Soft Chess	Poaceae	AG	N
<i>Calycoseris parryi</i>	Yellow Tack-stem	Asteraceae	AH	N
<i>Camissonia boothii</i> ssp. <i>desertorum</i>	Booth's Shredding Primrose	Onagraceae	AH	N
<i>Castilleja angustifolia</i>	Desert Indian Paintbrush	Orobanchaceae	PH	N
<i>Chaenactis macrantha</i>	Mojave Pincushion	Asteraceae	AH	N
<i>Chaenactis stevioides</i>	Desert Pincushion	Asteraceae	AH	N
<i>Chilopsis linearis</i>	Desert Willow	Bignoniaceae	S	N
<i>Chorizanthe brevicornu</i> var. <i>brevicornu</i>	Brittle Spineflower	Polygonaceae	AH	N
<i>Cryptantha echinella</i>	Hedgehog Forget-Me-Not	Boraginaceae	AH	N
<i>Cryptantha micrantha</i>	Eremocarya Forget-Me-Not	Boraginaceae	AH	N
<i>Cylindropuntia (Opuntia) echinocarpa</i>	Wigin's Cholla	Cactaceae	S	N
<i>Cylindropuntia ramosissima</i>	Pencil Cholla	Cactaceae	S	N
<i>Datura wrightii</i>	Jimsonweed	Solanaceae	PH	N
<i>Delphinium parishii</i> ssp. <i>parishii</i>	Parish's Larkspur	Ranunculaceae	PH	N
<i>Descurainia californica</i>	California Tansy Mustard	Brassicaceae	AH	N
<i>Echinocereus engelmannii</i>	Hedgehog Cactus	Cactaceae	S	N
<i>Echinocactus polycephalus</i>	Cotton Top Cactus	Cactaceae	S	N
<i>Elymus elymoides</i> ssp. <i>elymoides</i>	Squirreltail	Poaceae	PG	N
<i>Encelia farinosa</i>	Brittlebush	Asteraceae	S	N
<i>Encelia frutescens</i>	Desert Brittlebush	Asteraceae	S	N
<i>Ephedra californica</i>	California Ephedra	Ephedraceae	S	N
<i>Ephedra nevadensis</i>	Nevada Ephedra	Ephedraceae	S	N
<i>Ericameria cooperi</i> var. <i>cooperi</i>	Cooper's Goldenbush	Asteraceae	S	N
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	Desert Wild Buckwheat	Polygonaceae	S	N

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

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

Scientific Name	Common Name	Family	Growth Habit	Dominant Species?
<i>Eriogonum inflatum</i> var. <i>inflatum</i>	Desert Trumpet	Polygonaceae	AH	N
<i>Eriogonum pusillum</i>	Yellow Turbans	Polygonaceae	AH	N
<i>Eriophyllum pringlei</i>	Pringle's Woolly Daisy	Asteraceae	AH	N
<i>Eriophyllum wallacei</i>	Wallace's Woolly Daisy	Asteraceae	AH	N
<i>Erodium cicutarium</i> ¹	Redstem Filaree	Geraniaceae	AH	Y
<i>Gilia</i> sp.	Gilia	Polemoniaceae	AH	N
<i>Ferocactus cylindraceus</i>	Barrel Cactus	Cactaceae	S	N
<i>Glyptopleura marginata</i>	Prickly Leaf Sculpted Fruit	Asteraceae	AH	N
<i>Grayia spinosa</i>	Hop Sage	Chenopodiaceae	S	N
<i>Krameria</i> sp.	Ratany	Krameriaceae	S	N
<i>Kraschennikovia lanata</i>	Winter Fat	Chenopodiaceae	S	N
<i>Larrea tridentate</i>	Creosote Bush	Zygophyllaceae	S	Y
<i>Lepidium fremontii</i> var. <i>fremontii</i>	Fremont Peppergrass	Brassicaceae	S	N
<i>Lepidospartum squamatum</i>	Scale Broom	Asteraceae	S	N
<i>Linanthus aureus</i> ssp. <i>aureus</i>	Desert Gold	Polemoniaceae	AH	N
<i>Loeseliastrum schottii</i>	Schott's Calico	Polemoniaceae	AH	N
<i>Lycium andersonii</i>	Anderson's Desert Thorn	Solanaceae	S	N
<i>Malacothrix californica</i>	California Desert Dandelion	Asteraceae	AH	N
<i>Mentzelia jonesii</i>	Jones' Stickleaf	Loasaceae	AH	N
<i>Mirabilis</i> sp.	Wishbone Bush	Nyctaginaceae	PH	N
<i>Opuntia basilaris</i> ssp. <i>basilaris</i>	Beavertail Cactus	Cactaceae	S	N
<i>Pectocarya heterocarpa</i>	Chuckwalla Pectocarya	Boraginaceae	AH	N
<i>Peritoma (Isomeris) arborea</i>	Bladderpod	Cleomaceae	S	N
<i>Petalonyx thurberi</i>	Sandpaper Plant	Loasaceae	PH	N
<i>Phacelia crenulata</i> var. <i>ambigua</i>	Purplestem Scorpionweed	Boraginaceae	AH	N
<i>Phacelia tanacetifolia</i>	Tansy Phacelia	Boraginaceae	AH	N
<i>Pleuraphis (Hilaria) rigida</i>	Galleta grass	Poaceae	PG	N
<i>Rafinesquia neomexicana</i>	Desert Chicory	Asteraceae	AH	N
<i>Salsola tragus</i> (<i>S. kali</i>)	Russian Thistle	Chenopodiaceae	AH	N
<i>Schismus arabicus</i> ¹	Arab Grass	Poaceae	AG	Y
<i>Scutellaria (Salazaria) mexicana</i>	Paper Bag Bush	Lamiaceae	S	N
<i>Sphaeralcea ambigua</i> var. <i>rugosa</i>	Desert Mallow	Malvaceae	PH	N
<i>Stephanomeria pauciflora</i>	Wire Lettuce	Asteraceae	PH	N
<i>Stipa (Achnatherum) hymenoides</i>	Indian Rice Grass	Poaceae	PG	N

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

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

Scientific Name	Common Name	Family	Growth Habit	Dominant Species?
<i>Xylorhiza tortefolia</i> var. <i>tortefolia</i>	Desert Aster	Asteraceae	PH	N
<i>Yucca brevifolia</i>	Joshua Tree	Agavaceae	T	Y
<i>Yucca schidigera</i>	Mojave Yucca	Agavaceae	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

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

**APPENDIX C
WILDLIFE SPECIES OBSERVED WITHIN THE AGINCOURT SITE**

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

**TABLE C-1
WILDLIFE SPECIES OBSERVED WITHIN THE AGINCOURT SITE**

Common Name	Scientific Name	Applicable Regulatory Status (Federal/State)
Insects		
Pollen wasp	<i>Pseudomasaris maculifrons</i>	None/None
Say's stink bug	<i>Chlorocroa sayi</i>	None/None
Flower fly	Family syrphidae	None/None
Weevil	Family curculionidae	None/None
Aphid	Family aphididae	None/None
Tenebrionid beetle	Family tenebrionidae	None/None
Flower beetle	Suborder Polyphaga	None/None
Reptiles		
Southern desert horned lizard	<i>Phrynosoma platyrhinos calidiarum</i>	None/None
Western side-blotched lizard	<i>Uta stansburiana elegans</i>	None/None
Western zebra-tailed lizard	<i>Callisaurus draconoides rhodostictus</i>	None/None
Birds		
Burrowing owl	<i>Athene cunicularia</i>	None/CSC
Barn swallow	<i>Hirundo rustica</i>	None/None
Cactus wren	<i>Campylorhynchus brunneicapillus</i>	None/None
Common raven	<i>Corvus corax</i>	None/None
Sage sparrow	<i>Amphispiza belli</i>	None/None
Swallow sp.	Family Hirundinidae	–
Western gull	<i>Larus occidentalis</i>	None/None
Mammals		
Kangaroo rat	<i>Dipodomys sp.</i>	None/None
Black-tailed jackrabbit	<i>Lepus californicus</i>	None/None
Ground squirrel	Family Sciuridae	None/None

Regulatory Status:

FT = Federally listed threatened

ST = State-listed threatened

CSC = California Species of Special Concern

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

**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: CNDDDB@dfg.ca.gov

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

Date of Field Work (mm/dd/yyyy): _____

California Native Species Field Survey Form

Scientific Name: _____	
Common Name: _____	
Species Found? <input type="radio"/> Yes <input type="radio"/> No _____ <small>If not, why?</small> Total No. Individuals _____ Subsequent Visit? <input type="radio"/> yes <input type="radio"/> no Is this an existing NDDDB occurrence? _____ <input type="radio"/> no <input type="radio"/> unk. <small>Yes, Occ. #</small> Collection? If yes: _____ <small>Number Museum / Herbarium</small>	Reporter: _____ Address: _____ _____ E-mail Address: _____ Phone: _____

Plant Information	Animal Information															
Phenology: _____% vegetative _____% flowering _____% fruiting	<table style="width: 100%; text-align: center;"> <tr> <td>_____ # adults</td> <td>_____ # juveniles</td> <td>_____ # larvae</td> <td>_____ # egg masses</td> <td>_____ # unknown</td> </tr> <tr> <td><input type="radio"/> wintering</td> <td><input type="radio"/> breeding</td> <td><input type="radio"/> nesting</td> <td><input type="radio"/> rookery</td> <td><input type="radio"/> burrow site</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td><input type="radio"/> other</td> </tr> </table>	_____ # adults	_____ # juveniles	_____ # larvae	_____ # egg masses	_____ # unknown	<input type="radio"/> wintering	<input type="radio"/> breeding	<input type="radio"/> nesting	<input type="radio"/> rookery	<input type="radio"/> burrow site					<input type="radio"/> other
_____ # adults	_____ # juveniles	_____ # larvae	_____ # egg masses	_____ # unknown												
<input type="radio"/> wintering	<input type="radio"/> breeding	<input type="radio"/> nesting	<input type="radio"/> rookery	<input type="radio"/> burrow site												
				<input type="radio"/> other												

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

County: _____ Landowner / Mgr.: _____

Quad Name: _____ Elevation: _____

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): _____

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: **NAD27** **NAD83** **WGS84** Horizontal Accuracy _____ meters/feet

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

Coordinates: _____

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):

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: _____

Visible disturbances: _____

Threats: _____

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: _____	Photographs: (check one or more) Slide Print Digital Plant / animal Habitat Diagnostic feature May we obtain duplicates at our expense? yes no
---	--

**FOCUSED DESERT TORTOISE SURVEY REPORT
AGINCOURT SOLAR PROJECT**

**APPENDIX E
USFWS 2010 DESERT TORTOISE
PRE-PROJECT SURVEY DATA SHEET**

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 10 April 2012 Survey biologist(s): Julie Love julie.love@urs.com, (805) 692-0630
(day, month, year) (name, email, and phone number)

Site description: Agincourt, 72.9 acres, southeast of Apple Valley
(project name and size; general location)

County: San Bernardino Quad: Cougar Buttes Location: 4N1E 34SEC, WGS84
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 72.9 acres Transect #: 1 Transect length: 1100m

GPS Start-point: 512220E, 3806425N, 1029m Start time: 1400 am/pm
(easting, northing, elevation in meters)

GPS End-point: 512490E, 3806253N, 1038m End time: 1730 am/pm
(easting, northing, elevation in meters)

Start Temp: 27.2 °C End Temp: 25.7 °C

Live Tortoises

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	none observed					
2						
3						
4						
5						
6						
7						
8						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 10 April 2012 Survey biologist(s): Julie Love julie.love@urs.com, (805) 692-0630
(day, month, year) (name, email, and phone number)

Site description: Agincourt, 72.9 acres, southeast of Apple Valley
(project name and size; general location)

County: San Bernardino Quad: Cougar Buttes Location: 4N1E 34SEC, WGS84
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 72.9 acres Transect #: 2 Transect length: 1100m

GPS Start-point: 512500E, 3806307N, 1035m Start time: 0830 am/pm
(easting, northing, elevation in meters)

GPS End-point: 513010E, 3806119N, 1049m End time: 1156 am/pm
(easting, northing, elevation in meters)

Start Temp: 17.5 °C End Temp: 28.0 °C

Live Tortoises

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	none observed					
2						
3						
4						
5						
6						
7						
8						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 10 April 2012 Survey biologist(s): Julie Love julie.love@urs.com, (805) 692-0630
(day, month, year) (name, email, and phone number)

Site description: Agincourt, 72.9 acres, southeast of Apple Valley
(project name and size; general location)

County: San Bernardino Quad: Cougar Buttes Location: 4N1E 34SEC, WGS84
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 72.9 acres Transect #: 3 Transect length: 1100m

GPS Start-point: 512210E, 3806462N, 1027m Start time: 1315 am/pm
(easting, northing, elevation in meters)

GPS End-point: 511980E, 3806448N, 1026m End time: 1635 am/pm
(easting, northing, elevation in meters)

Start Temp: 29.7 °C End Temp: 27.7 °C

Live Tortoises

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

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2	511982	3806150	Carcass	The carcass was disarticulated, scattered,
3				white, and no scutes were present. Most
4				likely a female, most likely the posterior
5				plastron of the animal.
6				
7				
8				

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 10 April 2012 Survey biologist(s): Julie Love julie.love@urs.com, (805) 692-0630
(day, month, year) (name, email, and phone number)

Site description: Agincourt, 72.9 acres, southeast of Apple Valley
(project name and size; general location)

County: San Bernardino Quad: Cougar Buttes Location: 4N1E 34SEC, WGS84
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 72.9 acres Transect #: 4 Transect length: 1100m

GPS Start-point: 511970E, 3806534N, 1022m Start time: 0830 am/pm
(easting, northing, elevation in meters)

GPS End-point: 511820E, 3806534N, 1022m End time: 1030 am/pm
(easting, northing, elevation in meters)

Start Temp: 12.5 °C End Temp: 14.5 °C

Live Tortoises

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	none observed					
2						
3						
4						
5						
6						
7						
8						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				