Biological Habitat Assessment For
Proposed 3 MW AC Photovoltaic Solar Array
"Apple Valley East"

(23.4 Acres; APN #s 0438-212-01,-02)
Apple Valley South 7.5 Minute Quadrangle,
Section 14, Township 4 N, Range 3 W
San Bernardino County, California

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Executive Summary:

At the request of Clean Focus Corporation (CFC), Phoenix Biological Consulting (Phoenix) initiated a habitat assessment on 23.4 acres, multiple assessor parcels (APNs 0438-212-01,-02) for which they wish to construct and operate of a 3.0-Megawatt MW AC photovoltaic (PV) solar energy generation facility (the "Apple Valley East Project") on approximately 21.6 acres. The site is located southeast of Apple Valley. The parcels are bordered to the west by Central Road and to the north by Tussing Ranch Road. The parcels are bordered to the west, east and south by vacant land, and to the north by vacant land populated by a single residence. The parcels are within the jurisdiction of the County of San Bernardino and is zoned Rural Living (RL).

The project site was visited on December 9th, 13-14th, 2012 by Sarah Finkbeiner. All 23.4 acres of the site were evaluated for potential impacts from the proposed project including sensitive plant and animal species as well as jurisdictional drainages that could be affected by the development of the project. Any potential sensitive species should be included in additional focused sensitive species surveys, if suitable habitat is present, during the appropriate time of year. Several sensitive species, that are known to occur within a 10 mile radius of the area, were identified through the California Natural Diversity Database (CNDDB) literature/database search. The results of the habitat assessment indicate that portions of the site may have potential habitat for the desert tortoise, burrowing owl, Mohave ground squirrel, nesting birds, and six sensitive plant species. Additionally, 70 Joshua trees were and 35 Mojave Yuccas were recorded during the initial Joshua tree count. Due to the presence of Joshua trees there is a potential for nesting birds in the trees. Although nesting or roosting habitat is not present for several raptor and bat species, limited foraging habitat may be present. All potential bird species should be included in nesting bird survey if ground disturbance occurs in the spring. Representative photographs and maps of the site are included in this report.

Introduction and Purpose:

At the request of Clean Focus, Phoenix initiated a habitat assessment on 23.4 acres, multiple assessor parcels (APNs 0438-212-01,-02) for which they wish to construct and operate of a 3.0-Megawatt MW AC photovoltaic (PV) solar energy generation facility (the "Apple Valley East Project") on approximately 21.6 acres. Site plan is represented in figures G. The parcels are located southeast of Apple Valley and are within the jurisdiction of the County of San Bernardino and is zoned Rural Living (RL).

Per the California Environmental Quality Act (CEQA), the lead agency requires a project proponent to initiate a habitat assessment to identify sensitive biological resources that may have the potential to occur within a site. Any potential sensitive species should be included in additional focused sensitive species surveys, if suitable habitat is present, during the appropriate time of year to determine if species are present on site. Southern California Edison may require line upgrades, telecommunication and interconnection facilities associated with photovoltaic development of the project site that could require installation of riser poles, line extensions, metering boxes, breakers, telecommunication systems, etc. within their pre-existing utility line infrastructure. While any such interconnection improvements onsite will be addressed in the project's CEQA review, no similar environmental review should be required for line improvements and interconnection facilities occurring off the project site, as they would be categorically exempt from CEQA, under 15301 of Title 14 of the California Code of Regulations, Ch.3, Article 19 which includes minor alterations of existing public or private structures and facilities.

The project site was visited on December 9th, 13-14th, 2012 by Sarah Finkbeiner. All 23.4 acres of the parcel were evaluated for potential impacts from the proposed project including sensitive plant and animal species as well as jurisdictional drainages that may be affected by the development of the site. Several sensitive species, that are known to occur within a 10 mile radius of the area, have been identified through the CNDDB literature/database search. The results of the habitat assessment indicate that portions of the site may have potential habitat for the desert tortoise, burrowing owl, Mohave ground squirrel, nesting birds, six sensitive plants and a jurisdictional drainage. Additionally, 70 Joshua trees and 35 Mojave Yuccas were recorded during the initial Joshua tree count. Representative photographs and maps of the site are included in this report.

Project Description:

Clean Focus proposes to construct and operate a 3.0 MW AC photovoltaic solar energy generation facility (the "Apple Valley East") on approximately 21.6 of the 23.4 acre, multiple assessor parcel (APNs 0438-212-01, 02) located south east of Apple Valley. The Apple Valley

East Project will utilize PV modules mounted in rows, on racks with a fixed tilt angle of 20 degrees from horizontal and facing 195 degrees from magnetic north. The modules will be wired together and connected to inverters, which convert Direct Current (DC) into electrical Alternating Current (AC). The electricity will then be stepped up to 12kV and collected via underground lines that terminate at the northwest corner of the parcel, at the point of interconnection to the local electricity grid via the existing Southern California Edison (SCE) Tussing 12kV power line.

Location:

Apple Valley is located in the Victor Valley of San Bernardino County. The site is located southeast of Apple Valley, just outside the city limits. The parcels are bordered to the west by Central Road and to the north by Tussing Ranch Road. The south border is adjacent to an unimproved road paralleling a railroad line. The parcels are bordered to the west, east and south by vacant, undisturbed creosote scrub with medium density Joshua trees interspersed. To the north, the parcels are bordered by vacant land populated by a single residence. Spanning outward, more densely populated residences border the site. Juniper Flats Area of Critical Environmental Concern (ACEC) is located 2.25 miles south of the site and the San Bernardino National Forest boundary is another 3 miles south beyond that (Figure D).

The parcels are within the jurisdiction of the County of San Bernardino, are zoned Rural Living (RL) and are located on the Apple Valley South 7.5 minute quadrangle topographic map (Figure A). The legal description of the parcels is NW ¼, NW ¼ of Section 14, Township 4 N, Range 3 W (Figure F).

Habitat and Land Use:

The 23.4 acre site is situated on relatively level terrain with an elevation of 3,100 feet and is composed of gravelly, loam soils which provide suitable consistency for fossorial reptiles and mammals to create burrows. The vegetation community within the site is comprised of creosote bush scrub (*Larrea tridentata* with Joshua tree (*Yucca brevifolia)* woodland interspersed. Dominant perennials include creosote (*Larrea tridentata*), Cooper's goldenbush *(Ericameria cooperi)*, rabbitbrush *(Chrysothamnus nauseosus),* and Mormon tea *(Ephedra nevadensis).* Six-Weeks Fescue (*Vulpia octoflora)*, buckwheats *(Eriogonum sp.),* and cheatgrass *(Bromus tectorum)* were dominant annuals still present; however, given the time of year that the habitat assessment was conducted, many annuals were absent or unidentifiable. The entire list of vascular plants detected during the habitat assessment, can be found on Table 4.

Multiple two-track, unimproved paths traverse through the site. The northwest corner is particularly disturbed with off road parking, off-highway vehicle (OHV) use, and significant disposed refuse. This scoured area can be seen in the aerial photo represented in Figure B. Refuse is scattered throughout the site, but is most substantial on the western border near

Central road (and in the western portion of the site in general). This western disturbed border also supports a population of the non-native, noxious weed Russian thistle *(Salsola tragus).* The site is bordered by vacant, creosote scrub land on all sides, with the exception of a single residence on the north border. This open territory provides habitat connectivity for species that may disperse or move through the area.

Target Sensitive Species Natural History Description:

Desert Tortoise

The desert tortoise (*Gopherus agassizii*) is a desert dwelling reptile with large elephantine appendages and a dome-shaped shell. Desert tortoise range includes most of the Mojave and Colorado deserts in California. It is inhabits portions of Nevada, Arizona and Mexico. It was listed, by emergency rule, as an endangered species by the USFWS in August 4th, 1989 and later downgraded to threatened status on April 2nd, 1990. It is also listed as threatened species by the California Department of Fish and Game (CDFG). Several human induced factors have led to their demise: urban development in the desert, OHV use, livestock, collecting and poaching and increased common raven (*Corvus corax*) populations which predate on juvenile and immature tortoises. Other factors which have had a negative effect on desert tortoise populations include diseases such as *Mycoplasma agassizii*, herpes virus and shell diseases such as cutaneous dyskeratosis. Although, it is believed these diseases may have been around for several decades, when combined with environmental stress factors such as drought, air pollution and increased predation from ravens and dogs the otherwise and somewhat previous acceptable levels of disease and mortality within the population began to increase rapidly. Large die-offs in the populations were reported in the 1980s and 1990s during study plots conducted by Dr. Kristin Berry and others in the California deserts which has led to further concern for their long-term viability. Natural predators include coyotes, mountain lions and badgers.

Desert tortoise habitat can include desert washes, desert flats, bajadas, alluvial fans, rolling hills, rocky hills and valleys. Vegetation communities that are known to provide suitable habitat include creosote scrub, saltbush scrub, Joshua tree woodlands, Mojave mixed-woody scrub, juniper woodlands and blackbrush scrub within elevations of 300 to 5,000 feet (USFWS, 2010). Preferred tortoise habitat (areas of high density), in the Mojave Desert, typically include areas along mid-upper bajadas with abundant annuals; washes and friable soils for burrow excavation in the 2,500 to 3,500 elevation zone.

Desert tortoises can be active during any month of the year but usually are dormant through most of the winter months and during hottest periods of the summer. Tortoise activity increases significantly with the onset of spring annual vegetation when temperatures range

from the 75-85 °F and during periods of precipitation. Courtship and mating occur during the early spring months and egg-laying can occur during late spring to early summer. Neonates are born in late summer-early fall and usually spend several years occupying rodent burrows and feeding on annuals within close proximity of their natal burrow. Desert tortoises reach sexual maturity around twelve years of age when they reach a mean carapace length of approximately 160 millimeters. Tortoises live in dirt burrows, caliche caves and rock shelters which can be up to 6-9 meters in length. Their home range may extend up to a square mile. Tortoises are thought to live up to 60-80 years in optimum conditions. They are listed as a federally and state threatened species. It is illegal to harass, harm, pursue or take these reptiles without appropriate permits and federal/state authorization.

Mohave ground squirrel

The Mojave ground squirrel (MGS; *Xeropermophilus mohavensis*) is a small, grey squirrel, measuring 8 to 9 inches in length, whose range is confined to the western Mojave Desert. Almost the entire range of MGS lies within the West Mojave Habitat Conservation Plan (WEMO, 2005). WEMO has been approved by the BLM for federal lands but not by the CDFG. MGS is a state threatened species that was listed in January 1, 1985. Prior to 1985, it was listed as a rare species on May 21, 1971 by the Fish and Game Commission (Gustafson, 1993).

The northern range extends to the southern edge of Owens valley. The western range is defined by the Sierra Nevada escarpment and Mojave creosote scrub communities. The southern range occurs in the north facing slopes of the transverse mountains range in San Gabriel Mountains and extends from the town of Palmdale to Apple Valley. The historical Southeastern range extends to the edge of Lucerne valley and upwards along the Mojave River and through Barstow and into the western portions of Fort Irwin Military Training Center. MGS generally occur in flat to moderate sloping terrain. The upper elevation range in the Jawbone area is approximately 5,000 feet and lower life zone ends around 2,000 feet (BLM, 2005). MGS are considered absent from steep terrain, although they can use canyons and passes or areas of unsuitable habitat during dispersal on reproductive years (Labbs, 1998). Typical soil substrates in potential habitat include sandy or loamy soils. Rocky substrates such as cobble, rocky outcrops, cliffs or caliche hardpan are not considered habitat (BLM, 2005). MGS can occur in creosote scrub, mixed woody desert scrub and saltbush scrub at lower elevations and Joshua tree woodlands and monotypic blackbrush scrub at elevations between 4,000 and 6,000 feet (Wessman, 1977).

In the northern range, certain indicator plants have been associated with areas where MGS have been trapped consistently over several years (Leitner, 2002). Indicator plants at the long term Coso geothermal study sites include Winterfat (*Krasheninnikovia lanata*) and Spiny hopsage (*Grayia spinosa*). These plants have been present in fecal samples and may play an important role in long term survivability during drought years. It is hypothesized that areas of

sufficient forage plants and/or diversity act as refugia or source populations from which populations may expand and disperse outwards during abundant rainfall years. Due to the MGS ability to forgo reproduction during drought years the populations are expected to contract and then expand after subsequent wet years. This gives local MGS populations a dynamic nature of contraction and expansion throughout its range and may also create a dynamic ebb and flow to portions of the range boundary. Other shrubs that are known to be important source of forage and shelter include boxthorns (*Lycium andersonii* and *L. cooperii*). MGS have been observed perched in *L. cooperii* in Freeman gulch study site and along Highway 14 (Pers. observ.). Annuals that provide an important forage source in reproductive years include eremalche (*Eremalche sp.*), milkvetch (*Astragalus sp.*), goldfields (*Lasthania glabrata*), desert pinchusion (*Chaenactis sp*.), desert dandelion (*Malacothrix glabrata*), *Coreopsis bigelovei*, and devil's lettuce (*Amsinkia tesselata*) flowers tops.

MGS are usually solitary but may form loose colonies in optimum habitat conditions (pers. observ.). Males typically emerge from hibernation in early-mid February and females emerge late February to early March. If rainfall totals are sufficient, approximately 75-80 mm or more, MGS will reproduce. During drought years, adult MGS will merely forage on available shrubs in order to gain enough weight to survive hibernation. In drought years, abundance of suitable forage plants may be the limiting factor in sustaining a local population. Males can begin hibernation as early as June. Females can remain above ground through July in order to gain sufficient fat reserves prior to hibernation. Juveniles emerge from the natal burrows from early to late May. Once juvenile MGS have been weaned, they begin to venture out from the natal burrow area and may disperse up to 3-6 miles. Juveniles may remain above ground as late as August prior to entering hibernation.

Other squirrels which occur within the MGS range include: white tailed antelope squirrel (AGS; *Ammospermophilus leucurus*), California ground squirrel (CGS; *Spermophilus beecheyi*) and round tailed ground squirrel (RTGS; *Spermophilus tereticaudus*). AGS occur throughout the range of MGS. RTGS occur only along the eastern edge of the MGS range, mostly in the vicinity of Barstow, Fort Irwin Military Base and Lucerne Valley. CGS typically occurs near urban environments, near areas of perennial water and forage sources, residential areas and in the foothills surrounding the western Mojave Desert. Key distinguishing features of the MGS include: (1) lack of a white stripe on each side (2) general silver-grey appearance (3) lack of noticeable ears (4) typically solitary (5) active from February to August (6) may emit a high pitched "peep" as an alarm call.

Burrowing Owl

Burrowing owls (*Athene cunicularia*) are a small, long-legged, ground-dwelling owl that occurs from British Columbia, throughout North America and portions of Central and South America. They are typically nocturnal but are also known to be crepuscular (active dawn and

dusk). Typical prey items include invertebrates, small mammals, lizards, snakes and small birds. They nest underground in burrows and clutches range between 9-11 eggs. Burrow entrances and nests area adorned with cow chips, feathers, grass, food items and dog feces. They are typically monogamous and tend to exist in colonies. They exhibit high nest fidelity and will return to the same burrow nest site for multiple years.

Burrowing owls occur in a variety habitat types throughout California; such as, annual and perennial grasslands, agriculture fields, deserts and scrublands characterized by low-growing vegetation (CBOC, 1993). Suitable owl habitat may also include areas with trees and shrubs where canopy cover is less than 30% of ground surface. Suitable burrows may include both artificial and natural burrows that provide shelter from the elements as well as protection from predators. Burrowing owls also use burrows for nesting during spring and early summer months. California ground squirrel (CGS; *Spermophilus beecheyi)* is known to provide suitable burrows as well as inactive coyote, kit fox, badger and desert tortoise burrows. Burrowing owls can also create and/or modify existing burrows. Artificial burrows may include culverts, concrete pipes, wood debris piles and openings beneath cement or asphalt.

In desert scrub habitat, they are usually associated with canid (i.e. fox and coyote) and CGS burrows along mounds that provide vistas for viewing prey and predators. They are also found along washes and wash banks where small mammal and invertebrate abundance is higher. Burrowing owls are a BLM sensitive species and a California species of special concern. They are also protected under the Migratory Bird Treaty Act (MBTA) and within sections 3503, 3503.5 and 3800 of the California Department of Fish and Game Code which prohibits the take, possession, or destruction of birds, their nests or eggs (CBOC, 1993).

American Badger

The American badger (*Taxidea taxus*) is a medium sized mustelid of 24 to 31 inches in length and weighs up to 26 pounds. They have a stout body with a short tail and distinctive black and white striping on their face. A distinct white strip runs, along their spine, from their nose, down their back, to the base of their neck. They have a dense fur coat. They occur throughout California in a variety of open country habitats from mountain meadows to grasslands to deserts. They prefer areas of friable soils to aid in their hunting. They dig multiple burrows within their home range, with the dens located up to 10 feet below the ground surface. Their home range size depends on the sex, season, and geographic region, varying between 300 to 1,500 acres per animal. Badgers undergo torpor in winter months. They are active diggers and evidence of badger activity can be determined by the semi-elliptical forage holes with noticeable claw marks along the burrow walls which they create while hunting for prey. They feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice, and chipmunks. Their primary food source includes small rodents but they may also prey on snakes and lizards. Badgers capture some of their prey above ground by foraging on birds,

eggs, reptiles, invertebrates, and carrion. The males are solitary and the females typically raise a litter independently. The young are born in the spring and a litter can range from 2-5 animals. Badgers can be active during any time of day or night but activity patterns tend to peak in the afternoon.

Badgers were fairly widespread throughout suitable habitat in California. The loss of foraging habitat and widespread, rodent-poisoning campaigns has likely contributed to their decline. Presently, they are uncommon throughout most of the state with the exception of portions of Northern California. They are listed as a species of special concern in California.

CNDDB Rarefind Database and Literature Review Results:

A thorough California natural diversity database (CNDDB) literature review was conducted to determine which species occur within a ten mile search radius (Figure C; Table 1). Fifty-eight sensitive species were detected within the ten mile search radius. Multiple habitat types fall within the ten mile radius. These include Pinyon/Juniper woodlands, coniferous forest and chaparral in the San Bernardino National Forest, riparian habitat along the Mojave River and around Silverwood Lake, as well desert scrub (saltbush, creosote scrub and Joshua tree woodland) habitat. Therefore, thirty-nine species are excluded due to range limitations and/or habitat type. Most records that are out of range fall into the riparian/aquatic habitat in Silverwood Lake, Mojave River and forested habitat in the San Bernardino Mountains. See Table 1 for habitat potential for all 58 species.

Species that are known to occur within 10 miles, with potential habitat type on the site, include Mohave ground squirrel *(Xerospermophilus mohavensis),* Townsend's big eared bat (*Corynorhinus townsendii*), desert tortoise (*Gopherus agassizii*), Le Conte's thrasher *(Toxostoma lecontei),* burrowing owl (*Athene cunicularia*), loggerhead shrike *(Lanius ludovicianus),* and seven sensitive plant species. Though the CNDDB search did not indicate any records of the American badger *(Taxidea taxus)*, habitat type is present on the site and is within the species range.

Desert Tortoise

In addition to the desert tortoise records in the CNDDB database, the West Mojave Plan (WEMO) tortoise range and density map, depicted on Figure D, shows that the Apple Valley East project is situated in the estimated population density range of 1-20 tortoises per square mile on all sides by a 1.5 mile radius to the south and >10 mile radius to the west, north, and east. A focused survey will need to be conducted to determine if this species is present. Table 2 provides an explanation of the survey recommendations and timing period for the surveys.

Reptiles

The CNDDB search indicates records for eight other reptile species, in addition to the desert tortoise, within a 10 mile radius. Seven of these species are limited to either riparian or forest habitat type in the San Bernardino Mountains and therefore do not have potential habitat for this site. The rosy boa *(Charina trivirgata),* a California state listed special of special concern, is known to inhabit a wide range of habitats, including desert scrub, though prefers rocky soil types. The one record of occurrence depicted in the CNDDB search is from the San Bernardino National Forest (NF).

Mohave Ground Squirrel

There are six occurrences of MGS within the 10 mile radius CNDDB database search within a relatively close proximity to the site. In addition to that, the WEMO map (Figure E) shows that the site is within the borders of the MGS range boundary. The habitat present on site is conducive to this state listed threatened species. Focused surveys will need to be conducted prior to ground disturbance to determine presence or absence. Conversely, the project proponent may elect to assume presence for this species and apply for an incidental take permit. Table 2 provides an explanation of the survey recommendations and timing period for the surveys.

Mammals

In addition to the Mohave ground squirrel, there is potential foraging habitat on site for the Townsend's big-eared bat *(Corynorhinus townsendii).* This bat prefers roosting in open areas. This species is also typically found in close proximity to caves. There are no caves on or near the site. If the Townsend's big-eared bat is encountered on site, the roosting habitat shall be avoided during the breeding season. Nesting habitat is not present on site for the hoary bat *(Lasiurus cinereus),* but there is limited potential for foraging habitat. The other four mammal species recorded within a 10 mile radius prefer either riparian or forested habitat which is not present on site. Although the CNDDB search did not indicate records within the search radius for the American badger (*Taxidea taxus*; Species of concern) habitat is present on site. Any active badger burrows shall be avoided or passively relocated from the project site.

Burrowing Owl

There are over two dozen records, in close proximity, according to the CNDDB search database. The map of the CNDDB search results in Figure C indicates several records less than one mile from the site. Potential habitat is present and future focused surveys (Phase II-III surveys) will need to be conducted in order to determine presence or absence on site. Table 2 provides an explanation of the survey recommendations and timing period for the surveys.

Birds

In addition to the burrowing owl, the loggerhead shrike (*Lanius ludovicianus),* a species of special concern, and Le Conte's thrasher *(Toxostoma lecontei*) were detected within the ten mile radius CNDDB database search. Potential for both nesting and foraging habitat is present on site for both of these bird species. All nesting birds are protected by the Migratory Bird Treaty Act (MBTA). Therefore, a nesting bird survey should be conducted prior to any ground disturbance on site during the spring months. The CNDDB database search also showed presence of prairie falcon *(Falco mexicanus)*, Cooper's hawk *(Accipiter cooperii),* and long-eared owl *(Asio otus),* all species of special concern. Although nesting habitat is not present for these species, there is limited potential for foraging habitat. The occurrences of the five other bird species within a 10 mile radius of the site were recorded either from Lake Silverwood or the Mojave River corridor as they prefer to nest and forage in riparian habitats, which is not present on site (Table 1).

Fish

Aquatic habitat is not present on the proposed project site therefore the habitat potential for the federally and state endangered Mojave tui chub *(Siphateles bicolor mohavensis)* is not expected.

Invertebrates

Records of two snail species, Victorville shoulderband *(Helminthoglypta mohaveana)* and western fork shoulderband *(Helminthoglypta taylori)* are present within a 10 mile radius, but these species require aquatic environments which are not present on site. A rare butterfly, the San Emigdio blue butterfly *(Plebulina emigdionis),* is also indicated as present in the CNDDB search radius. However, this species requires four winged saltbush *(Atriplex canescens)* as its host species and this perennial native shrub is not present on site.

Rare plants

The California Native Plant Society (CNPS) has created 5 lists (or ranks) in an effort to categorize degrees of concern. Plants that fall under list 1B are plants that rare, threatened, or endangered in California and elsewhere while those falling in the ranks of list 2 are plants that are rare, threatened, or endangered in California, but are more common elsewhere. List 4 represents plants of limited distribution and representative species are on a "watch" list. All of the plants constituting California Rare Plant Ranks 1B and 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. (Tibor, 2001). It is mandatory that they be fully considered during preparation of environmental

documents relating to CEQA. The CNPS Threat Rank is an extension added onto the California Rare Plant Rank and designates the level of endangerment by a .1 to .3 ranking with .1 being the most threatened, .2 being fairly threatened, and .3 being not very threatened.

The CNDDB search depicted a total of 27 sensitive plant species present within a 10 mile radius of the site; however, 21 of these fall out of habitat type range and therefore do not have the potential for presence on site. The remaining six species have potential for presence on site. Parish's daisy *(Erigeron parishii),* and purple nerve cymopterus *(Cymopterus multinervatus)* have all been recorded in gravelly soils in desert scrub habitat. This site consists of gravelly loam soils. Latimer's woodland gilia (*Saltugilia latimeri)* can occur in washes in desert scrub; there is a drainage on site. Booth's evening primrose *(Camissonia boothii)* has been known to occur in Joshua tree woodland, creosote scrub and sandy washes, all of which are present. Cushenbury buckwheat *(Eriogonum ovalifolium var. vineum),* and pinyon rock cress *(Boechera dispar)* have potential for presence on site as they have been recorded in Joshua tree woodland habitats. A botanical survey will need to be conducted during the spring to determine if there are sensitive plant species present. See table 1 for federal and state conservation status as well as CNPS ranking for all 27 species.

Proximity to Conservation Areas

Juniper Flats ACEC is situated approximately 2.25 miles south of the site. The main objective of this ACEC is to protect Cottonwood springs. The San Bernardino National Forest is situated approximately 5.5 miles south of the site. The relatively vacant, open creosote scrub south of the site provides habitat connectivity to the surrounding areas and allows species to move freely in and out of the area (Figure D). However the site is bound by residential homes to the north and private land on all sides. It is not anticipated that the development of the site will significantly any migratory corridors or disrupt biological linkages.

Jurisdictional Drainages

In accordance with Section 1602, the California Department of Fish and Game (CDFG) regulates activities that will substantially divert, obstruct, or substantially change the natural flow or the bed, channel or bank of any river, stream or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. The CDFG jurisdiction extends to the bank of the stream or to the limit of the adjacent riparian vegetation, whichever is greater. There is an intermittent blue line drainage depicted on the topographic map and the aerial photo that flows through the center of the proposed development site (Figures A&B). Photos of this drainage are represented in Figure J though the main channel is difficult to see due to the high density of perennial shrubs. A large culvert exists beneath the railroad line in the center of the southern border of this site. The project proponent will avoid the drainage by creating a solar array that avoids the drainage,

thereby protecting the resources. There are no anticipated impacts to the drainage except for the perimeter fence and access road. At these locations there may be culverts installed along the fence and access road. The project proponent should conduct a jurisdictional delineation to determine the extent of the drainage to ensure no impacts will occur to the drainage. Further mitigation requirement may include a streambed alteration agreement and/or a regional water quality control board permit.

Table 1: CNDDB Ten Miles Search Results & Habitat Potential

	Scientific Name	Common Name	Occurrence #	Federal Status	State Status	CNPS Rank	Habitat Potential
Reptiles	*Anaxyrus californicus*	arroyo toad	94, 92, 28, 96	Endangered	Species of Special Concern	N/A	Habitat is not present for this species. Requires aquatic environments.
	Charina trivirgata	rosy boa	19	None	Species of Special Concern	N/A	Potential habitat is present. This species has been known to inhabit a wide range of habitats, including desert scrubland though prefers rocky habitat.
	Charina umbratica	southern rubber boa	63	None	Threatened	N/A	Habitat is not present on site. This species prefers grassland, meadows, chaparral, deciduous or coniferous forests.
	Emys marmorata	western pond turtle	968, 1173	None	Species of Special Concern	N/A	Habitat is not present for this species. Requires aquatic environments.
	Gopherus agassizii	desert tortoise	20, 245, 68, 67	Threatened	Threatened	N/A	Potential habitat is present for this species. The site is within the species range. It occurs in desert scrub habitat.
	Phrynosoma blainvillii	coast horned lizard	782, 240, 217, 245, 241, 405	None	Species of Special Concern	N/A	Habitat is not present for this species. It occurs in the transverse and coastal mountain range.
	Rana draytonii	California red-legged frog	13, 14	Threatened	Species of Special Concern	N/A	Habitat is not present for this species. Requires aquatic environments.
	Rana muscosa	Sierra Madre yellow-legged frog	25	Endangered	Candidate Endangered	N/A	Habitat is not present for this species. Requires aquatic environments.
	Thamnophis hammondii	two-striped garter snake	123	None	Species of Special Concern	N/A	Habitat is not present for this species. Requires aquatic environments.
Birds	*Accipiter cooperii*	Cooper's hawk	5, 4	None	Species of Special Concern	N/A	Nesting habitat is not present. Foraging habitat may be present.
	Asio otus	long-eared owl	17	None	Species of Special Concern	N/A	Nesting habitat is not present. Foraging habitat may be present.

	Athene cunicularia	burrowing owl	1048, 930, 787, 924, 961, 1049, 1051, 1548, 1050, 1605, 1549, 1543, 1552, 1550, 916, 928, 1545, 923, 772, 960, 1544, 872, 755, 1551, 1043, 1546, 1542	None	Species of Special Concern	N/A	Potential nesting habitat is present. The site is within the species range.
	Coccyzus americanus occidentalis	western yellow-billed cuckoo	138	Candidate	Endangered	N/A	Nesting habitat is not present. This species nests/forages in riparian habitat.
	Empidonax traillii extimus	southwestern willow flycatcher	36	Endangered	Endangered	N/A	Nesting habitat is not present. This species nests/forages in riparian habitat.
	Falco mexicanus	prairie falcon	103, 8, 104, 105	None	Species of Special Concern	N/A	Nesting habitat is not present. Species nests on cliffs and rocky canyons. Foraging habitat may be present.
	Lanius ludovicianus	loggerhead shrike	56, 53	None	Species of Special Concern	N/A	Nesting/foraging habitat is present. All potential bird species should be included in nesting bird survey if project occurs during spring.
	Piranga rubra	summer tanager	18	None	Species of Special Concern	N/A	Nesting habitat is not present. This species nests/forages in riparian habitat.
	Toxostoma lecontei	Le Conte's thrasher	21, 19, 20, 73, 18, 17, 100, 101, 162, 161, 169, 168, 167, 163, 145, 164, 166, 165	None	No longer sensitive species in Mojave desert.	N/A	Potential nesting habitat is present. The site is within the species range.

	Vireo bellii pusillus	least Bell's vireo	265	Endangered	Endangered	N/A	Nesting habitat is not present. This species nests/forages in riparian habitat.
	Vireo vicinior	gray vireo	34, 27	None	Species of Special Concern	N/A	Nesting habitat is not present. This species nests/forages in riparian habitat.
Fish	*Siphateles bicolor mohavensis*	Mohave tui chub	11	Endangered	Endangered	N/A	Habitat is not present for this species. Requires aquatic environments.
Mammals	*Chaetodipus fallax pallidus*	pallid San Diego pocket mouse	61, 59, 60, 49, 58	None	None	N/A	Habitat is not present for this species. It prefers chapparal habitat and brushy slopes rather than low desert.
	Corynorhinus townsendii	Townsend's big-eared bat	18, 77	None	None	N/A	Foraging/roosting habitat may be present as this species roosts in open areas.
	Lasiurus cinereus	hoary bat	90	None	None	N/A	Roosting habitat is not present on site. Foraging habitat may be present.
	Microtus californicus mohavensis	Mohave river vole	1, 6	None	Species of Special Concern	N/A	Habitat is not present for this species. Requires aquatic environments.
	Myotis evotis	long-eared myotis	3	None	None	N/A	Roosting habitat is not present. Species prefers forested habitat in the San Bernardino NF
	Myotis volans	long-legged myotis	3	None	None	N/A	Roosting habitat is not present. Species prefers forested habitat in the San Bernardino NF
	Taxidea taxus	American badger	No occurrence within 10 miles	None	Species of Special Concern	N/A	Habitat is present on site and the site is within the species range.
	Xerospermophilus mohavensis	Mohave ground squirrel	47, 48, 269, 283, 12, 33	None	Threatened	N/A	Potential habitat is present for this species. The site is located along the edge of the species range.
Plants	*Acanthoscyphus parishii var. goodmaniana*	Cushenbury oxytheca	13, 34, 33, 31, 32	Endangered	None	1B.1	Habitat not present. Species prefers pinyon/juniper woodland.

	Astragalus lentiginosus var. sierrae	Big Bear Valley milk-vetch	18, 19	None	None	1B.2	Suitable habitat not present. Known to occur in the San Bernardino National Forest in the Big Bear Valley and Baldwin Lake region. Records are from San Bernardino NF.
	Astragalus leucolobus	Big Bear Valley woollypod	39, 40	None	None	1B.2	Suitable habitat not present. Prefers rocky soil in mountain habitat.
	Boechera dispar	pinyon rock-cress	39, 17	None	None	2.3	Suitable habitat present. This species is known to occur in Joshua tree woodland and Mojave desert scrub.
	Boechera parishii	Parish's rock-cress	2, 3, 4, 5, 6	None	None	1B.2	Suitable habitat not present. Known only from the San Bernardino mtns in rocky or clay soil type
	Boechera shockleyi	Shockley's rock-cress	5, 28, 29	None	None	2.2	Suitable habitat not present. This species prefers rocky soils in pinyon/juniper woodland.
	Calochortus palmeri var. palmeri	Palmer's mariposa-lily	49, 25, 40, 24, 81	None	None	1B.2	Suitable habitat not present. This species prefers chaparral, coniferous forests, meadows or seeps.
	Calochortus plummerae	Plummer's mariposa-lily	32	None	None	1B.2	Suitable habitat not present. This species prefers rocky soils in montane or grassland habitats.
	Camissonia boothii ssp. boothii	Booth's evening-primrose	2, 1, 5, 3	None	None	2.3	Suitable habitat may be present as this species can occur Joshua tree woodland.
	Canbya candida	white pygmy-poppy	5, 8, 2, 1, 3	None	None	4.2	Habitat is not present. Occurs in rocky soils on slopes and drainages.
	Castilleja lasiorhyncha	San Bernardino Mountains owl's-clover	40	None	None	1B.2	Suitable habitat is not present for this species. Does not occur in Joshua tree or creosote scrub. Record is from San Bernardino NF.
	Cymopterus deserticola	desert cymopterus	10	None	None	1B.2	Habitat Is not present. Prefers stabilized dune and sandy soils.

	Cymopterus multinervatus	purple-nerve cymopterus	4	None	None	2.2	Suitable habitat is present for this species. Known to occur in gravelly, sandy soils in desert scrub habitat.
	Deinandra mohavensis	Mojave tarplant	1	None	Endangered	1B.3	Suitable habitat not present on site. This species prefers chaparral or riparian or coastal scrub.
	Dudleya abramsii ssp. affinis	San Bernardino Mountains dudleya	12	None	None	1B.2	Suitable habitat is not present on site. This species is known only from the San Bernardino Mtns.
	Eremogone ursina	Big Bear Valley sandwort	54, 53	Threatened	None	1B.2	Suitable habitat is not present on site. This species is known only from the San Bernardino Mtns.
	Erigeron parishii	Parish's daisy	29	Threatened	None	1B.1	Suitable habitat may be present on site as this species is known to occur in Mojavean desert scrub.
	Eriogonum ovalifolium var. vineum	Cushenbury buckwheat	10, 17, 26, 36	Endangered	None	1B.1	Suitable habitat may be present on site as this species is known to occur in Joshua tree woodland and desert scrub.
	Ivesia argyrocoma var. argyrocoma	silver-haired ivesia	35, 41	None	None	1B.2	Suitable habitat not present on site. This species prefers coniferous forests and meadows and seeps
	Lilium parryi	lemon lily	66, 53, 54	None	None	1B.2	Habitat is not present on site. This species prefers coniferous forest, riparian forest, meadows and seeps.
	Loeflingia squarrosa var. artemisiarum	sagebrush loeflingia	20	None	None	2.2	Habitat is not be present. Species prefers hard-packed sandy soils along dirt roads, blow-sand, stabilized dunes.
	Mimulus mohavensis	Mojave monkeyflower	44	None	None	1B.2	Habitat is not present on site for this species. Prefers fine, rocky alluvium near desert washes.

	Opuntia basilaris var. brachyclada	short-joint beavertail	15, 14, 13, 61	None	None	1B.2	Habitat is not present. Prefers decomposed granitic soils in the transverse range foothills.
	Saltugilia latimeri	Latimer's woodland-gilia	14	None	None	1B.2	Habitat may be present. This species has been known to sometimes occur in washes in Mojave desert scrub.
	Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	15, 33	None	None	1B.2	Suitable habitat is not present. This species prefers coniferous, chaparral woodland habitat.
	Southern Sycamore Alder Riparian Woodland	Southern Sycamore Alder Riparian Woodland	231	None	None		Riparian woodland habitat is not present.
	Symphyotrichum defoliatum	San Bernardino aster	39	None	None	1B.2	Habitat is not present. This species prefers woodland, montane forest, coastal scrub, meadows, and springs.
Invertebrates	*Helminthoglypta mohaveana*	Victorville shoulderband	3	None	None	N/A	Habitat is not present for this species. Requires aquatic environments.
	Helminthoglypta taylori	westfork shoulderband	2	None	None	N/A	Habitat is not present for this species. Requires aquatic environments.
	Plebulina emigdionis	San Emigdio blue butterfly	5, 6	None	None	N/A	Habitat is not present. This host species is *Atriplex canescens* which is not present on site.

Habitat Assessment Results:

The results of the habitat assessment indicate that the area proposed for development is situated within creosote scrub with low density Joshua tree woodland vegetative community. Vacant, open creosote scrub borders all side of the site with the exception of a single residence on the north side. There is refuse and disturbed areas within the site, especially in the northwestern corner and along the western border. The site is southeast of Apple Valley, outside of the city limits, and because of the open surrounding land, provides habitat connectivity for potential sensitive species to move freely in and out of the area. Due to the time of year, many birds and animals have migrated through or are in hibernation or torpor and were not detectable during the site visit (Table 3). Annual grasses and forbs were either absent or unidentifiable therefore the vascular plant list is hereby incomplete (Table 4). Due to the reduced level of detectability of both plants and animals, the species list that was generated is incomplete of the total species present. According to the CNDDB results, WEMO's density and range map, and habitat types present the proposed site is located within the range of the desert tortoise, burrowing owl, American badger, Mohave ground squirrel, loggerhead shrike, Le Conte's thrasher, Townsend's big-eared bat and eight sensitive plant species (Table 1, Figures C-E). Due to these findings the site will require focused surveys for desert tortoise, burrowing owl, the Mojave ground squirrel and botanical surveys during the appropriate time of year (Table 2). The American badger should be include in the desert tortoise survey. All potential bird species should be included in a nesting bird survey if project occurs during the spring. Due to the number of Joshua trees on site (70 Joshua trees counted during census), the project proponent will need to develop a Joshua tree management and relocation plan since this species is protected under the San Bernardino County code and the Desert Native Plant Protection Act. The Townsend's big-eared bat should be included in the Joshua tree census to determine if any bats are roosting in the Joshua trees. A streambed alteration agreement will also be required for any impacts to the intermittent blue line drainage in the central portion of the site if a project design modification is not possible (Figures A, B&J).

Joshua Tree Census

The purpose of this section is to document the Joshua tree woodland that is present on the site. The San Bernardino County's Joshua tree reporting requirements are outlined in the county's development code, Chapter 88.01 and described in detail below. Additionally, the Joshua tree is a sensitive resource which needs to be addressed through California Environmental Quality Act (CEQA) initial study submission. While this report does not satisfy the County's full reporting requirements under the County Development Code, Title 8 *Development Code*, Chapter 88.01 *Plant Protection and Management* (Ordinance), it has been determined that this section would be sufficient for initial project review pending a full-scale survey at a future date as a part of the conditions of approval (CUP) permit.

Pursuant to Section 88.01.050 *Tree or Plant Removal Permits*, a Tree or Plant Removal Permit is required for the removal of a regulated tree or plant, including Joshua trees. Subsection 88.01.050(f)(1) *Findings for removals in the Valley Region, Mountain Region, and Desert Region* states one of the following findings must be made before a permit may be issued:

a) The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other improvement or ground disturbing activity that there is no other alternative feasible location for the improvement.
b) The location of the regulated tree or plant and/or its dripline interferes with the planned improvement of a street or development of an approved access to the subject or adjoining private property and there is no other alternative feasible location for the improvement.
c) The location of the regulated tree or plant is hazardous to pedestrian or vehicular travel or safety.
d) The regulated tree or plant or its presence interferes with or is causing extensive damage to utility services or facilities, roadways, sidewalks, curbs, gutters, pavement sewer line(s), drainage or flood control improvements, foundations, existing structures, or municipal improvements.
e) The condition or location of the regulated tree or plant is adjacent to and in such close proximity to an existing or proposed structure that the regulated tree or plant has or will sustain significant damage.

Additionally, Subsection (3) states that in the desert region, the Review Authority shall also make the following findings:

a. Joshua trees that are proposed to be removed will be transplanted or stockpiled for future transplanting wherever possible.
b. In the instance of stockpiling, the permittee has complied with Department policy to ensure that Joshua trees are transplanted appropriately. Transplanting shall comply with the provisions of the Desert Native Plants Act (Food and Agricultural Code Section 80001 et seq.), as required by Subsection 88.01.060(d) (Compliance with Desert Native Plants Act).

The initial Joshua tree census and mapping field efforts have determined that there are 70 records of Joshua trees on site. Several of the records are from clonal groups of Joshua trees which is defined as two or more trees within five feet of a parent tree or several trees clumped in a ring or group. This increases the total number of trees to 106 individuals. The Joshua trees are uniformly disturbed throughout the site and are depicted on figure B. The Joshua tree woodland would be considered medium density. There are 4.4 Joshua trees for every acre. The average tree height is 5.3 feet. The average tree diameter is 6.5 inches. The results of the census are tabulated on table 5. There are also thirty-five Mojave yuccas on site as well.

It is recommended that the project proponent develop a Joshua tree relocation and management plan to address the removal and relocation of the trees on site in order to minimize the impacts to a less than significant level and ensure the survival of this sensitive resource.

Mitigation Measure (MM) and Avoidance Recommendations:

The results of the habitat assessment indicate that the habitat on site and the surrounding area have the potential to harbor several sensitive species. In order to mitigate potential impacts from the project development, focused surveys are required during the spring months. Once the impacts and sensitive resources are properly evaluated the mitigation measures can be incorporated into a conditional use permit. Several mitigation measures and/or avoidance options are presented to address the project impacts. The first mitigation option is to avoid impacts whenever possible. Avoidance could include project modification or re-design to avoid areas of significant value, such as a burrowing owl nesting site, a raptor nest or desert tortoise burrow. When avoidance is not an option, the impacts to the resources should be mitigated in order to reduce the impacts to a less than significant level.

The mitigation measures, listed below, are recommended to (1) prevent species such as the desert tortoise from entering onto the site during the construction phase and (2) minimize the potential for take.

- **MM-01: Conduct a Desert Tortoise Survey.** A desert tortoise survey should be conducted during the months of April through May or in October. The presence/absence survey should be conducted by a qualified desert tortoise biologist and should include pedestrian surveys using ten meter wide belt transects throughout the entire site. The biologist should document any live/dead tortoises, scat, bones, shell fragments, courtship rings, burrows and drinking depressions. The results should be incorporated into a biological technical report and submitted to the lead agency to use in mitigating the impacts to any desert tortoise, if present. The survey recommendations are summarized on Table 2. If desert tortoises are present, a desert tortoise translocation plan, a habitat conservation plan, acquisition of mitigation lands, avoidance measures and an incidental take permit may be needed.
- **MM-02: Conduct a Burrowing Owl Survey.** The burrowing owl survey effort consists of four phases: (1) Phase one is the habitat assessment to determine if potential burrowing owl habitat is present. This portion of burrowing survey effort can be any time of year. This report satisfies the phase one requirement. (2) Phase two includes conducting pedestrian belt transects surveys at 30 meter intervals throughout the project site to determine if owls are utilizing the site. The surveyor should be a qualified biologist and they should record any burrow owls that are encountered, burrows, owl scat, owl whitewash and feathers. A burrowing owl survey should be conducted during the period of April 15th and July 15th. (3) Phase three includes burrowing owl census and mapping. Phase three involves four separate site visits to determine the extent of owls using the size, mapping territories and breeding status of the owls. A burrowing owl census and

mapping should be conducted during the period of April 15th and July 15th. (4) Phase four is the burrowing owl report that is prepared and submitted to the planning department. If burrowing owls are present the project proponent will need to either avoid or mitigate the impacts, prepare a burrowing owl mitigation and management plan, passively relocate the owls and acquire mitigation lands to offset the impacts associated with the loss of owl habitat. The survey recommendations are summarized on Table 2.

- **MM-03: Conduct a Mohave Ground Squirrel Survey and/or Apply for an Incidental Take Permit.** A Mohave ground squirrel survey should be conducted during the period of March 15th to July 15th by a qualified biologist. The site would require one trapping grid which would be trapped during three sessions (5 days each) during the survey period to determine if Mohave ground squirrels are present on site. If they are present the project proponent would need to apply for an incidental take permit. Alternatively, the applicant may assume presence and apply for an incidental take permit and mitigate the impacts by acquiring suitable habitat offsite.
- **MM-04: Conduct a Rare Plant Survey.** A rare plant survey should be conducted during the spring months (April-May) to determine if rare plants are present. Three site visits would be required to detect any rare plants that may be present. In addition, a reference site population should be visited, whenever possible, prior to each site visit, to determine the phenology (growth status) of the target species and whether they are detectable at the time the survey is conducted. The results should be compiled into a biological technical report and submitted to the planning department. The results would be used to develop an avoidance or mitigation strategy for rare plants that are detected.
- **MM-05: Joshua Tree Relocation and Management Plan.** Due to the presence of Joshua Trees, the trees should be censused and mapped. In addition, to mapping the trees, they should be flagged and measured. A health assessment should be conducted to determine if the trees are capable of transplanting. This report includes the census & mapping portion of this mitigation measure. A relocation and management plan should be completed that addresses avoidance and relocation of the Joshua trees present. The plan may also address a Joshua tree adoption program and methods of transplanting.
- **MM-06: Worker Awareness Education:** Construction workers should be provided with an information pamphlet on general tortoise and burrowing owl biology, how to recognize and avoid desert tortoises and burrowing owls, authorized speed limits while working within the project site, trash abatement and checking under parked vehicles and equipment prior to moving.
- **MM-07: Submit a California Natural Diversity Database (CNDDB) Form:** A CNDDB form should be submitted for any tortoises, carcasses, active burrowing owl burrows and any

other sensitive species encountered in order to provide the resource agency personnel & biological consultants with a better understanding of tortoise and owl distribution in this area.

- **MM-08: Provide a Trash Abatement Program** with sealed trash containers on site to prevent unwanted tortoise predators such as ravens and coyotes.
- **MM-09: Vehicle Speeds:** Vehicular speed limits of 15 miles per hour on all project related access roads and work areas.
- **MM-10: Avoid Off-Road Travel:** Utilize existing roads, whenever possible, to minimize disturbance to potential DT habitat.
- **MM-11: Burrowing Owl Preconstruction Survey:** Conduct a thirty (30) day preconstruction survey to determine if any burrowing owls have moved onto the site since the completion of the field work for this report. The site and buffer zone should be surveyed using 20 meter belt transects across the project foot print. Any detection of burrowing owls should be recorded along with behavior of owls sighted. The CDFW would need to be notified within 48 hours after owls have been detected on site to determine the appropriate mitigation measures and potential habitat compensation that may be needed. If owls are detected, potential mitigation measures may include:

On-site mitigation measures may include:

1) No disturbance should occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding Season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding Season of February 1 through August 31. A minimum of 6.5 acres of foraging habitat should be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird

2) On-site passive relocation should be implemented if Item #1 avoidance requirements cannot be fulfilled. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 meters from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls. Relocation of owls should only be implemented during the non-breeding season. On-site habitat should be preserved in a conservation easement and managed to promote owl use. Owls should be excluded from burrows in the immediate impact zone and within a 50 meter buffer zone by installing one-way doors in burrow entrances: One-way doors should be left in place 48 hours to insure owls have left the burrow before excavation. One alternate natural or artificial

burrow should be provided for each burrow that will be excavated in the project impact zone. The project area should be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation.

Off-site mitigation should use one of the following ratios:

1) Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.
2) Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.
3) Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.

- **MM-12: Nesting Bird Survey:** To comply with the Migratory Bird Treaty Act (MBTA), if any ground disturbance is anticipated during the nesting bird season (February-August) the project proponent will initiate a breeding/nesting bird survey to ensure no nesting birds are impacted. If a nesting bird is detected, the area will be avoided and a 50 meter buffer will be installed until the nesting birds have fledged and have been observed to be foraging independently.

- **MM-13: Avian Mortality Monitoring.** In an effort to contribute meaningful data regarding the effects of industrial-scale photovoltaic solar projects on migratory birds, the Applicant will perform construction-phase and operations-phase avian mortality monitoring at the project site. Prior to issuance of a grading permit for the project, the Applicant will submit an Avian Protection Plan to the County of San Bernardino and the U.S. Fish & Wildlife Service (USFWS) ensuring that any birds encountered dead or injured on the project site are documented. At a minimum, the plan will include the following elements:

  1. Bird Encounter Protocol during Construction

  This section of the plan will include a protocol to be used upon discovery of a dead or injured bird during project construction to ensure timely and consistent data collection. At a minimum, the plan will require the Applicant and on-site biological monitor to determine pertinent information, such as the following:

  - The species, life stage (adult or juvenile), and sex (if practical) of the bird
  - The likely cause of injury or death, if apparent; and,

- The approximate date of death, for individuals that have been dead for a period prior to discovery.

2. Construction-Phase Reporting Requirements

This section of the plan will require that avian injury/mortality data be compiled and transmitted to the County of San Bernardino and the USFWS on a periodic basis, and will specify the frequency and method by which this notification should be made. However, in the event that avian species listed as Threatened or Endangered under the Endangered Species Act are encountered, the plan will require that the USFWS be notified immediately. Additionally, the applicant will not destroy, collect, or remove bird remains from the site without first obtaining any required permits from the USFWS and/or California Department of Fish & Wildlife (CDFW).

3. Operations-Phase Mortality Monitoring

This section of the plan will require that the Applicant retain a qualified biologist to conduct periodic avian mortality monitoring during operations at the site, and will detail the methods by which this monitoring should be conducted. The plan will require monitoring for a minimum period of two years following completion of construction. A minimum of five monitoring events must be conducted during each year, and will be scheduled to coincide with peak migration periods. At least one monitoring event each year will be conducted during the winter months (November through January), to assess any mortality of wintering birds.

4. Adaptive Management

This section of the plan will set forth a process through which changes to the monitoring schedule or methods may be implemented if warranted due to unforeseen circumstances or other factors. During the construction- and operations-phase avian mortality monitoring, the Applicant and monitoring biologist will keep the County of San Bernardino and USFWS informed of monitoring progress and will alert these agencies if it appears that changes to the monitoring schedule or methods are needed. If it is apparent that substantial project-related injury or mortality of birds may be occurring, or if there are substantial unresolved questions regarding the project's effects on avian species, then the monitoring period, methods, or frequency may be modified to address these concerns. In addition, if specific project elements are resulting in substantial avian injury or mortality, the plan will direct that the Applicant work with the USFWS to identify and implement reasonable measures to modify these elements in a manner that lessens the effects on migratory birds.

- **MM-14: Raven Management.** The project will implement the following measures to mitigate impacts that could result in a local increase in common ravens:

  Construction Phase:

  - Dispose of all trash and food-related waste in secure, self-closing receptacles to prevent the introduction of subsidized food resources for common ravens.
  - Use water for construction, operation and maintenance in a manner that does not result in creating areas of standing water.
  - The biological monitor will be present during the clearing, grubbing, grading, and construction to implement the following at the project site:
    - Remove and dispose of road kills of common wildlife species from the project site and access road from soil disturbance and road kill (e.g., small mammals, insects, etc.). No species subject to the Endangered Species Act may be removed. Removal and disposal of all wildlife species can only be accomplished by an individual that possess a Scientific Collecting Permit issued by California Department of Fish & Wildlife.
    - Remove any food sources and attractants from human and animal food and waste.
    - Document common raven use of the project site and access road on a daily basis. If frequently used perching locations are identified, use physical, auditory or visual bird deterrents to discourage use by common ravens.
    - Remove any inactive raven nests in the project site or along the access road.

  Operation Phase:

  - Raven nest removal must be conducted on all property structures for the life of the project. In the event that a nest is located with eggs, the nest will be removed following the completion of the nesting cycle unless, current implementation standards of the regional raven management plan allow for immediate removal.
  - Monitoring must occur at least four times per year, with one visit every three months.
  - Monitoring stations will in most cases be associated with structures or elements where Best Management Practices (BMPs) have been utilized or potential raven attractants are expected
  - Southern California Edison will address common raven nests according to existing procedures or permits applicable to powerline upgrades and maintenance activities.

  Decommissioning Phase:

- The project site must be monitored to ensure BMP compliance and document any raven use. If a component of decommissioning is identified as providing subsidies or attracting ravens, immediate steps should be taken to address the subsidies through an adaptive management program.
- A biological monitor must be present to ensure that none of the following activities contribute to raven presence: surface disturbance unearthing food sources, ponding water, human and animal food and waste management, temporary and permanent nesting, perching, and roosting sites, landscaping, restoration, re-vegetation, and/or reclamation activities.

Survey Recommendations:

The following table provides a list of protocol survey recommendations for the site based on the habitat assessment results. CEQA requires that potential impacts are identified and, if present, mitigated to less than significant level whenever possible. In order to identify potential impacts, focused survey efforts are required. Survey periods may differ for each species. It is recommended the project proponent discusses the requirements with the lead agency and/or responsible agency (CDFW/USFWS) prior to initiating these studies.

Table 2: Survey Recommendations and Periods

Species	Federal Status	State Status	Survey Requirements	Legal Authority
Desert tortoise	Threatened	Threatened	Presence/Absence Surveys: Belt transects. 10 meters wide. **Survey Period: April thru May OR September thru October.** Clearance Surveys (if needed)**:** Initiated prior to disturbance	Federal & State Endangered Species Act. Fish and Game Code. California Environmental Quality Act.
Mohave Ground Squirrel	N/A	Threatened	**Two Options:** **Option 1:** Survey during March 15 to July 15. Three survey periods during this window to determine presence. **Option 2:** Assume presence and apply for an incidental take permit (ITP) with the CA Dept. of Fish and Game	State Endangered Species Act. Fish and Game Code. California Environmental Quality Act.
Burrowing Owl	N/A	Species of Special Concern	**Phase I:** Habitat Assessment. Survey Period: **Anytime.** **Phase II:** Anytime. **Phase III:** Owl Census & Mapping. Survey Period: **April 15-July 15** **Phase IV:** Report. Anytime	Fish and Game Code. Sections 3503, 3503.5, and 3800. Migratory Bird Species Act. California Environmental Quality Act.
Nesting Birds	N/A	Species of Special Concern	No ground disturbance to occur during nesting season without a clearance survey to ensure site is clear of nesting birds.	Migratory Bird Species Act. California Environmental Quality Act.
Rare Plants	Known endangered or threatened species have potential to occur within the area.	N/A	Three site visits during the spring flowering period (April-May) and a reference site visit to determine phenology.	California Environmental Quality Act.

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This concludes the habitat assessment for the 23.4 acre survey (Apple Valley East Solar Project; APN #0428-212-01,-02) within San Bernardino County, California.

Certification: *I hereby certify that the statements furnished above and in the attached exhibits present the data and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this report was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project. Any federally and/or state threatened/endangered species cannot be taken under State and Federal law. The report and recommended mitigation measures included in this report do not constitute authorization for incidental take of the desert tortoise or any other sensitive species.*

Field Work Performed BY:

Date: December 9 & 13-14, 2012 Signature: _____

Sarah Finkbeiner, Associate Biologist

Biological Technical Report Prepared BY:

Date: January 9, 2013 Signature: _____

Sarah Finkbeiner, Associate Biologist

Date: December 23, 2013 Signature: _____

Ryan Young, Senior Biologist & Principal

Figure A: Topographic View of Apple Valley East Solar Project Parcel Boundaries

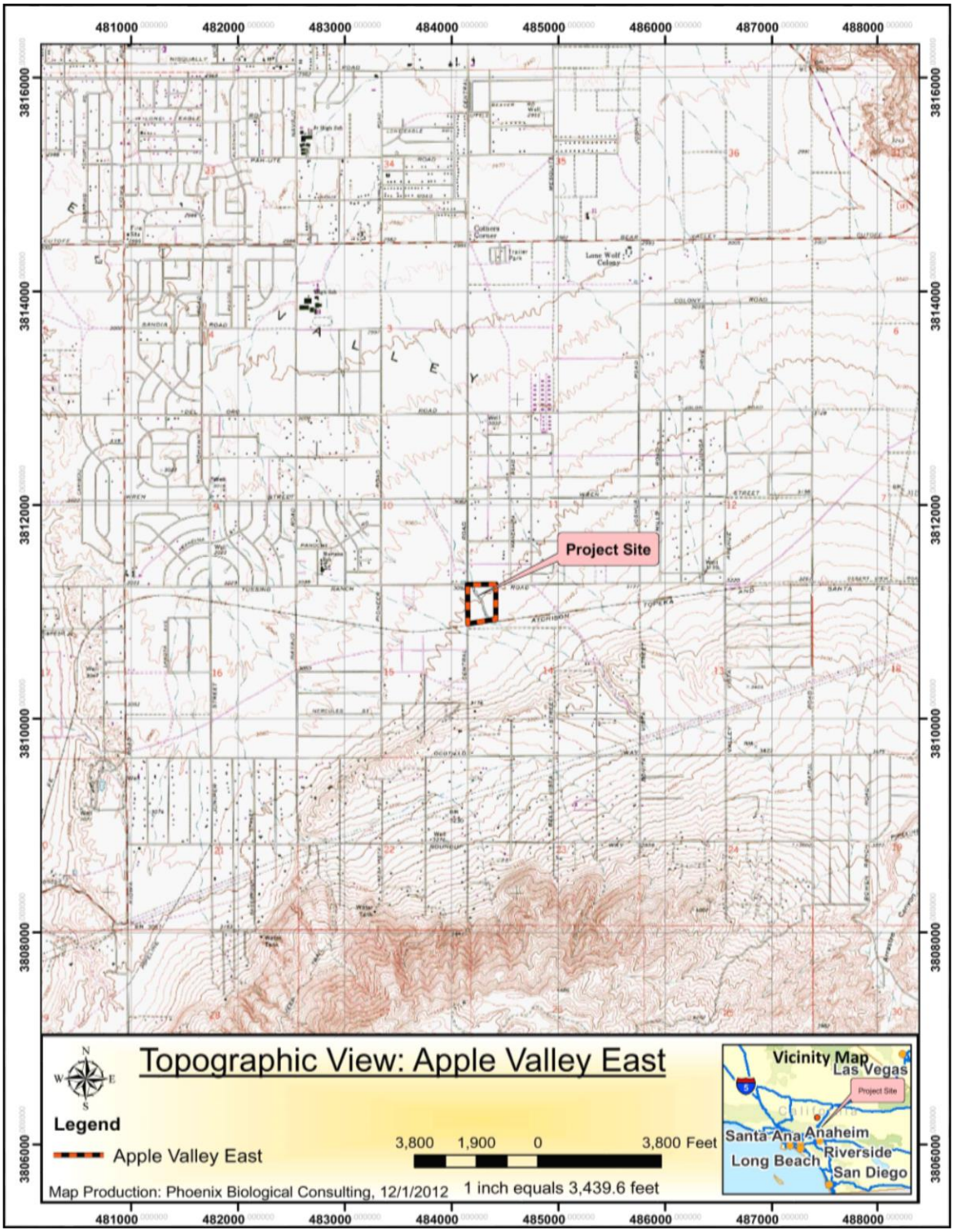


Figure B: Aerial View of Apple Valley East Solar Project Parcel Boundaries

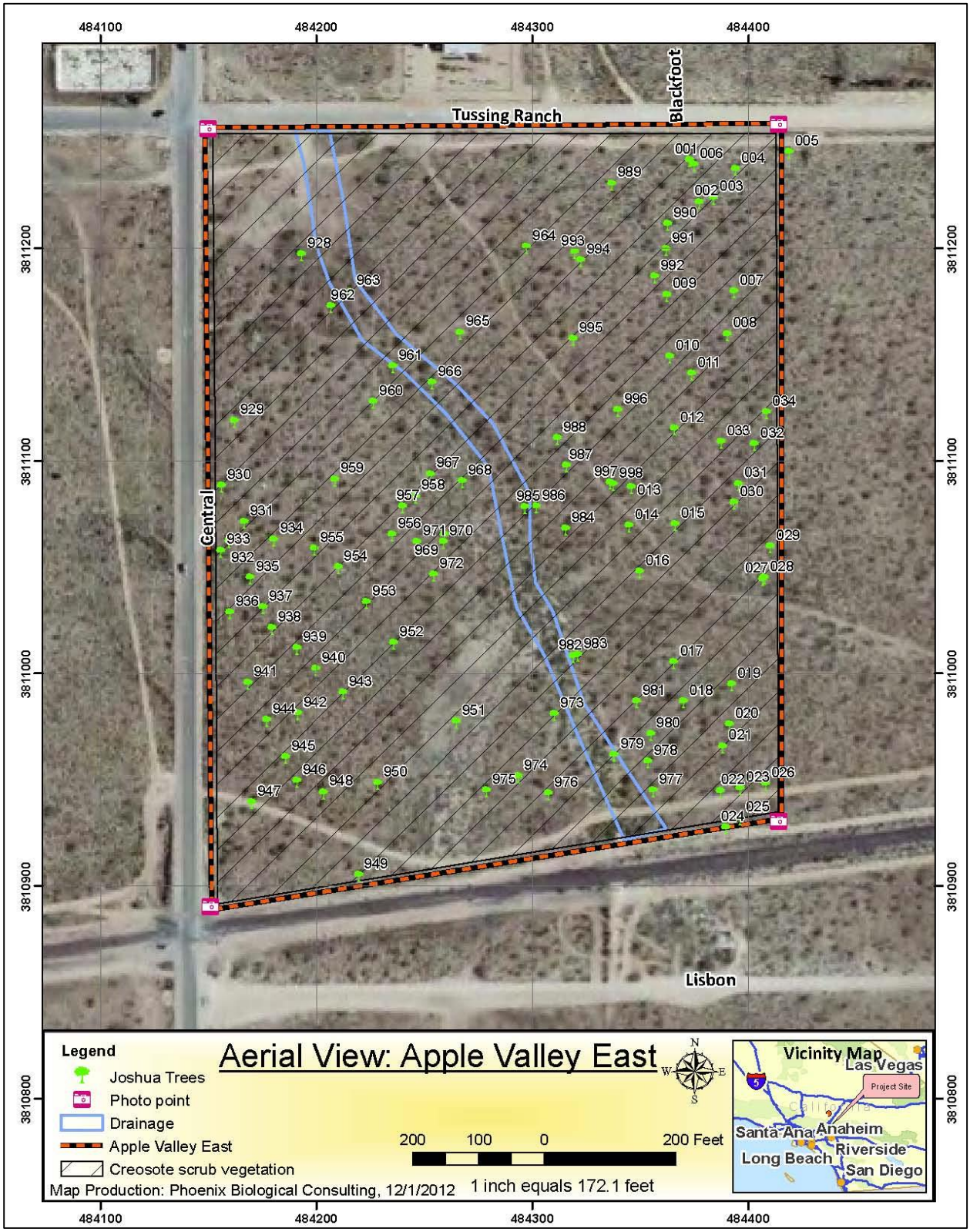


Figure C: 10 Mile CNDDB Search Results

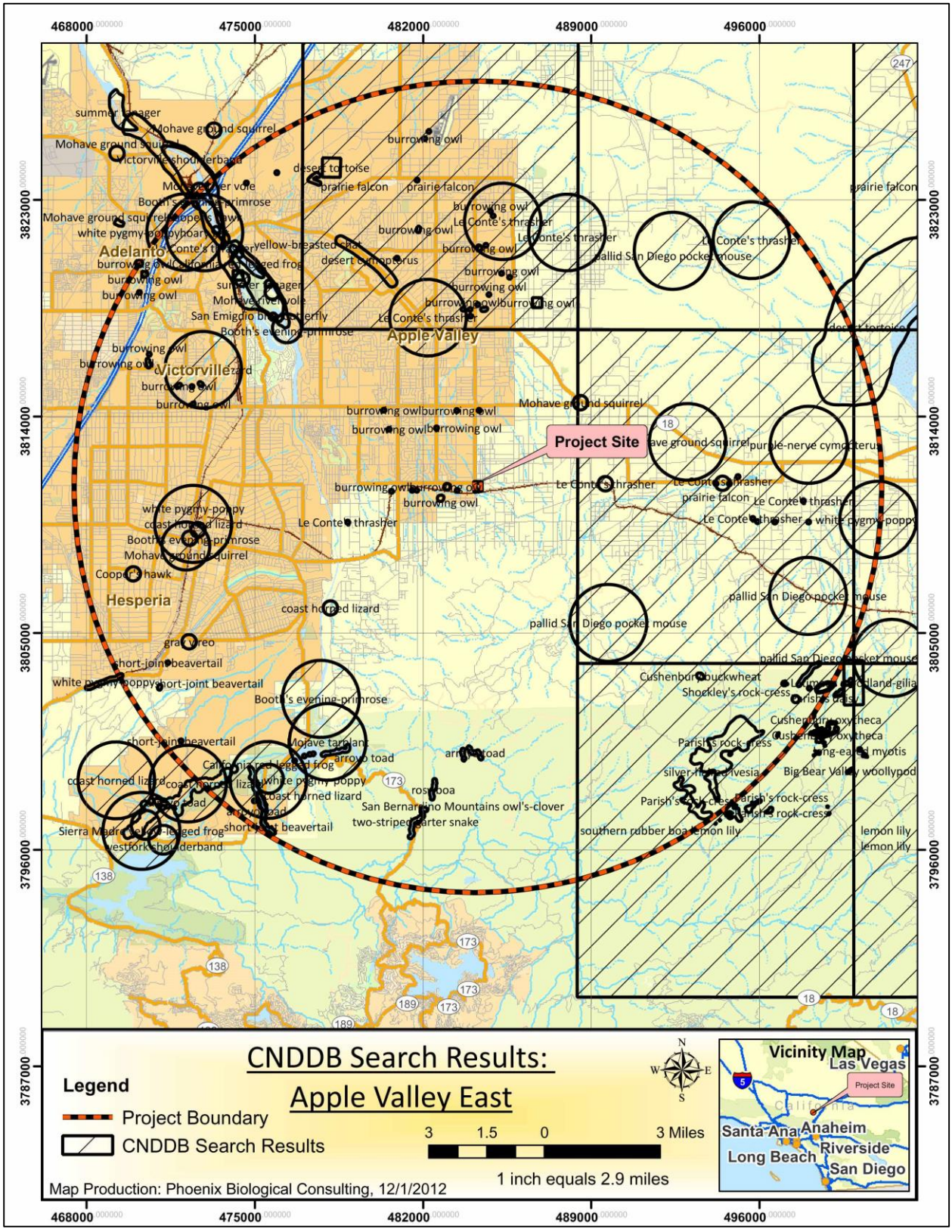


Figure D: MGS, Tortoise Range & ACEC Proximity to Apple Valley East Solar Project

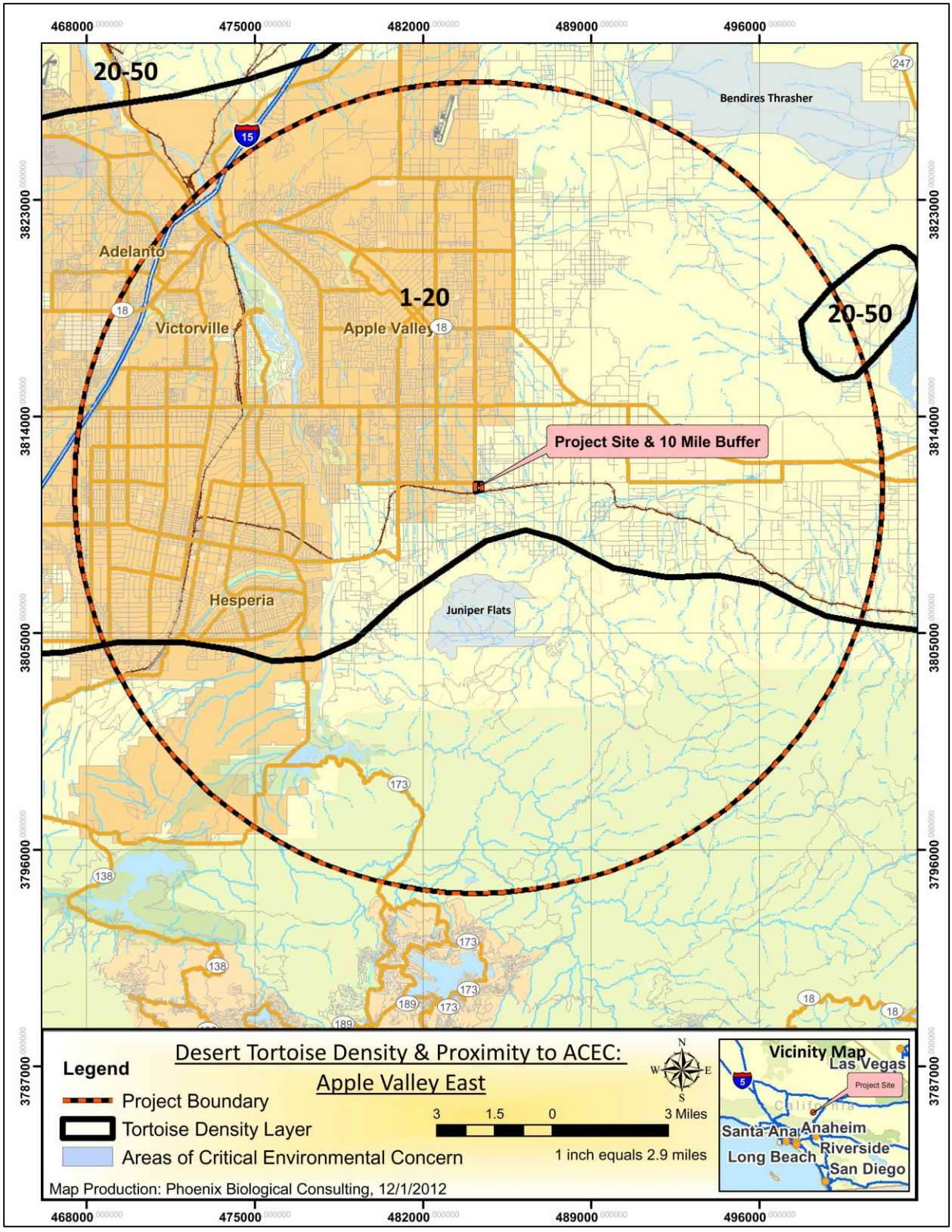


Figure E: MGS Range Boundary

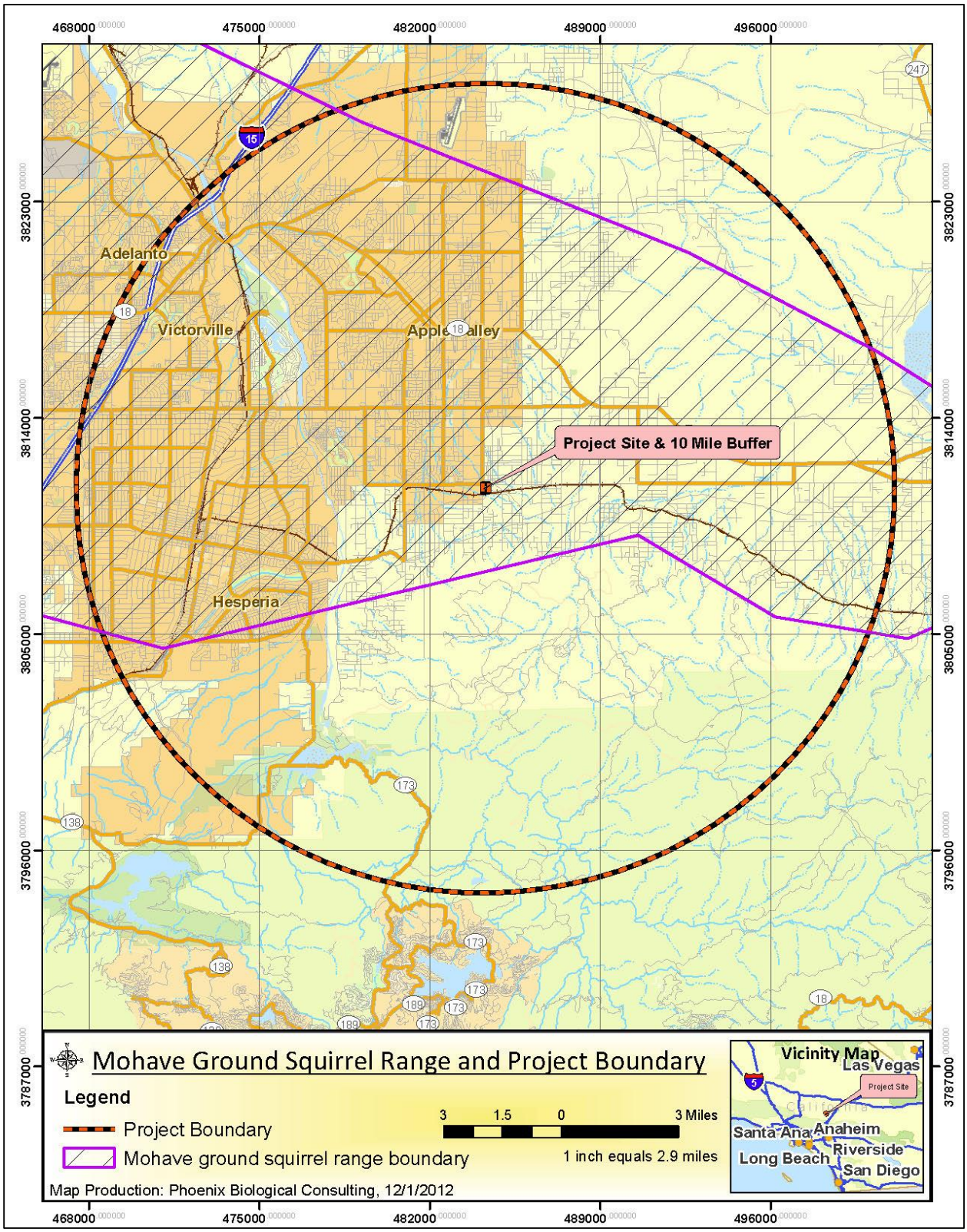


Figure F: Parcel Map

Figure G: Apple Valley East Site Plan

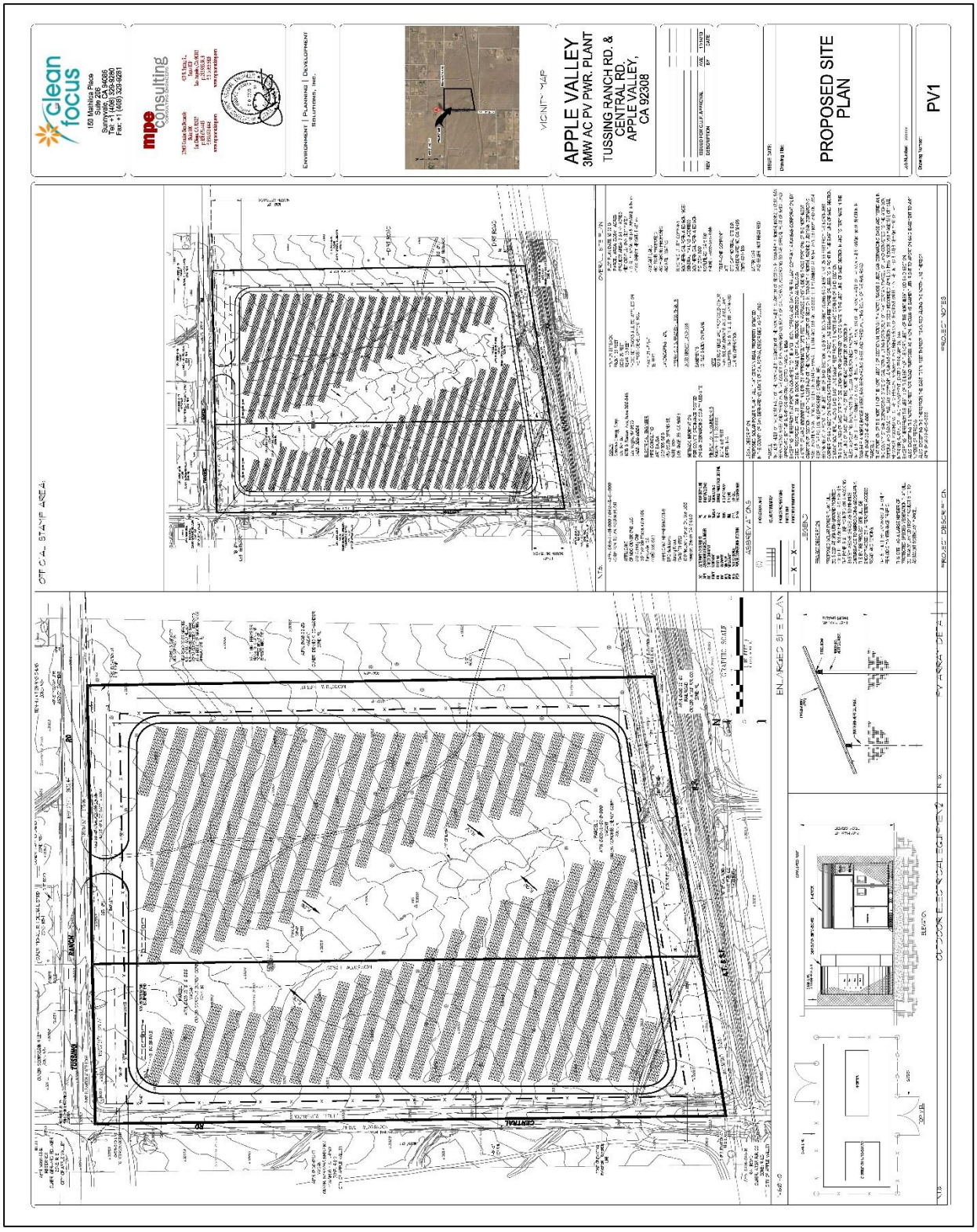


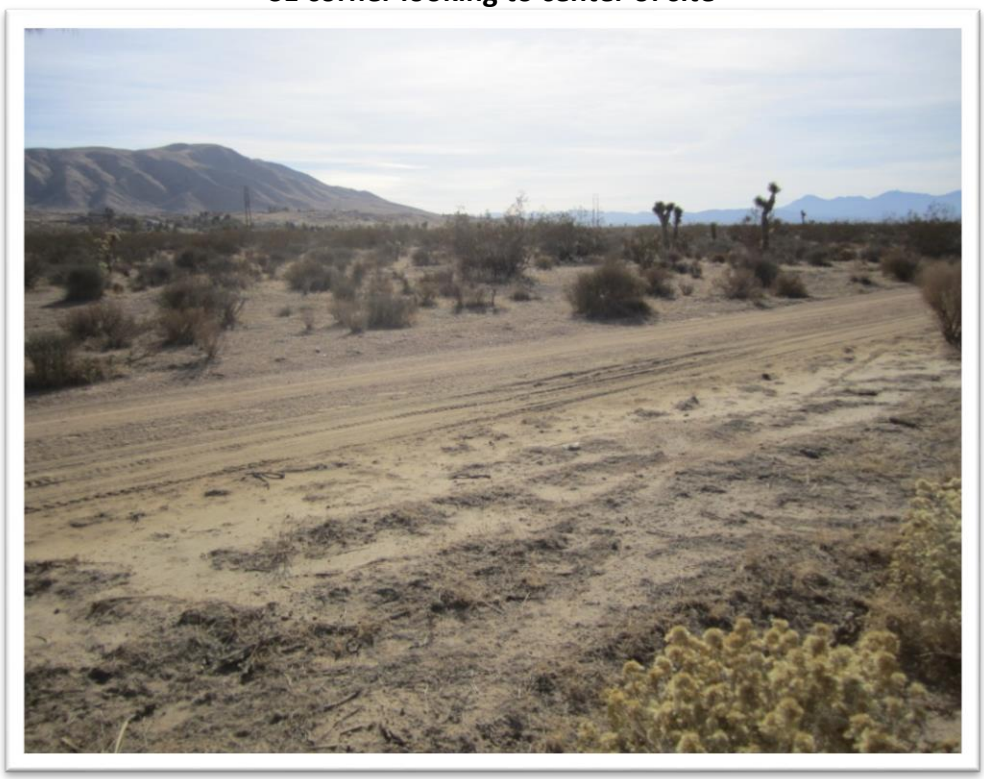
Figure H: Site Photos (Corners)

NW Corner looking to center of site

SW corner looking to center of site

Figure I: Site Photos (Corners)

SE corner looking to center of site



NE corner looking to center of site

Figure J: Site Photos (Drainage)

Intermittent drainage (from topo map), standing on south end of site looking north

Same drainage, standing on north end looking south

Table 3: Vertebrates Detected During Site Visit

Mammals	
Black tailed jack rabbit (*Lepus californicus*)	
Desert Kangaroo rat (*Dipodomys deserti*)	tracks only

Table 4: Vascular Plants Detected During Site Visit

FAMILY Species	Common Name	Habit
ASTERACEAE		
Ambrosia acanthacarpa	Annual bur-sage	annual
Ambrosia dumosa	Burrobush	shrub
Chrysothamnus nauseosus	Rubber rabbitbrush	shrub
Ericameria cooperi	Cooper's goldenbush	shrub
Gutierrezia microcephala	Snakeweed	perennial
Hymenoclea salsola	Cheesebush	shrub
Tetradymia sp.	Horsebrush	shrub
CACTACEAE		
Opuntia acanthocarpa	Buckhorn cholla	perennial
Opuntia ramosissima	Pencil cholla	perennial
CHENOPODIACEAE		
Salsola tragus	Russian thistle/tumbleweed	annual
EPHEDRACEAE		
Ephedra nevadensis	Mormon tea	shrub
FABACEAE		
Senna armata	Desert Senna	shrub
LILIACEAE		
Yucca brevifolia	Joshua tree	perennial
Yucca shidigera	Mojave yucca	perennial
POACEAE		
Achnatherum speciosum	Desert needle grass	perennial bunchgrass
Bromus rubens	Red brome	annual
Bromus tectorum	Cheatgrass	annual
Vulpia octoflora	Six-weeks fescue	annual
POLYGONACEAE		
Eriogonum fasciculatum	California buckwheat	shrub
Eriogonum sp.		annual
ZYGOPHYLLACEAE		
Larrea tridentata	Creosote	shrub

Table 5: Joshua Tree Census

NAME	DATE/TIME	UTM E	UTM N	HEIGHT (feet)	DIAMETER (inches)	HEALTH CONDITION	# OF TREES	SPECIES
928	13-Dec-12, 15:29	484193	3811197	5	5	Good	10	Joshua tree
929	13-Dec-12, 15:40	484162	3811118	5	10	Good	2	Mojave Yucca
930	13-Dec-12, 15:43	484156	3811088	7	6	Good	6	Joshua tree
931	13-Dec-12, 15:45	484166	3811071	3	7	Good	9	Mojave Yucca
932	13-Dec-12, 15:46	484159	3811062	3	6	Good	9	Mojave Yucca
933	13-Dec-12, 15:48	484155	3811057	4	7	Good	8	Mojave Yucca
934	13-Dec-12, 15:48	484180	3811063	4	7	Good	3	Mojave Yucca
935	13-Dec-12, 15:56	484169	3811044	5	8	Good	6	Mojave Yucca
936	13-Dec-12, 15:57	484159	3811028	3	6	Good	9	Mojave Yucca
937	13-Dec-12, 15:59	484175	3811031	5	8	Good	9	Mojave Yucca
938	13-Dec-12, 16:00	484179	3811021	4	6	Good	6	Mojave Yucca
939	13-Dec-12, 16:01	484191	3811011	5	7	Good	8	Mojave Yucca
940	13-Dec-12, 16:03	484199	3811002	13	9	Good	1	Joshua tree
941	13-Dec-12, 16:04	484168	3810995	2	6	Good	1	Mojave Yucca
942	13-Dec-12, 16:09	484191	3810981	3	6	Good	1	Mojave Yucca
943	13-Dec-12, 16:09	484212	3810990	1.5	3.5	Good	2	Joshua tree
944	13-Dec-12, 16:10	484177	3810978	4	8	Good	11	Mojave Yucca
945	13-Dec-12, 16:12	484185	3810960	3	6	Good	8	Mojave Yucca
946	13-Dec-12, 16:13	484191	3810949	2.5	6	Good	3	Mojave Yucca
947	13-Dec-12, 16:15	484170	3810939	5	9	Good	18	Mojave Yucca
948	13-Dec-12, 16:17	484203	3810944	4	7	Good	11	Mojave Yucca
949	13-Dec-12, 16:19	484219	3810905	4	7	Good	17	Mojave Yucca
950	13-Dec-12, 16:20	484228	3810948	8	7.5	Good	1	Joshua tree
951	13-Dec-12, 16:23	484264	3810977	4	6	Good	5	Mojave Yucca
952	13-Dec-12, 16:24	484236	3811014	3	6	Good	6	Mojave Yucca
953	13-Dec-12, 16:26	484223	3811033	4	6	Fair	7	Mojave Yucca
954	13-Dec-12, 16:27	484210	3811049	11	6.5	Good	1	Joshua tree
955	13-Dec-12, 16:29	484199	3811058	5	5	Good	7	Joshua tree
956	13-Dec-12, 16:30	484235	3811065	12	8	Good	1	Joshua tree
957	13-Dec-12, 16:31	484240	3811078	5.5	12	Good	2	Mojave Yucca
958	13-Dec-12, 16:32	484246	3811083	3	6	Good	5	Mojave Yucca
959	13-Dec-12, 16:33	484208	3811091	1	3	Good	1	Mojave Yucca
960	13-Dec-12, 16:34	484226	3811127	2.5	3.5	Good	1	Joshua tree
961	13-Dec-12, 16:36	484235	3811144	2	3.5	Good	2	Joshua tree
962	13-Dec-12, 16:39	484207	3811172	3	5	Good	3	Joshua tree
963	13-Dec-12, 16:40	484215	3811179	5	5	Good	1	Joshua tree
964	13-Dec-12, 16:43	484297	3811200	4.5	5.5	Good	1	Joshua tree
965	13-Dec-12, 16:45	484266	3811160	7	6.5	Good	1	Joshua tree
966	13-Dec-12, 16:47	484253	3811136	2	3.5	Good	1	Joshua tree
967	13-Dec-12, 16:49	484252	3811093	2.5	3.5	Good	1	Joshua tree
968	13-Dec-12, 16:49	484267	3811090	1.5	3	Good	2	Joshua tree
969	13-Dec-12, 16:51	484259	3811065	3.5	5	Poor	1	Joshua tree
970	13-Dec-12, 16:51	484259	3811061	3	4.5	Good	1	Joshua tree
971	13-Dec-12, 16:52	484246	3811062	2.5	3.5	Good	1	Joshua tree
972	13-Dec-12, 16:53	484254	3811046	5.5	5	Good	1	Joshua tree
973	13-Dec-12, 16:56	484310	3810980	10	8	Good	1	Joshua tree
974	13-Dec-12, 16:57	484293	3810951	2.5	4	Good	1	Joshua tree
975	13-Dec-12, 16:58	484278	3810944	3	6	Good	11	Mojave Yucca

976	13-Dec-12, 16:59	484307	3810943	10	7	Good	1	Joshua tree
977	13-Dec-12, 17:01	484356	3810944	3	6	Good	3	Mojave Yucca
978	13-Dec-12, 17:02	484353	3810958	4	6	Good	4	Mojave Yucca
979	13-Dec-12, 17:03	484338	3810961	2	3	Good	2	Joshua tree
980	13-Dec-12, 17:04	484354	3810971	2	3	Good	2	Joshua tree
981	13-Dec-12, 17:05	484348	3810986	3	4	Good	1	Joshua tree
982	13-Dec-12, 17:08	484319	3811008	5	6	Good	3	Joshua tree
983	13-Dec-12, 17:08	484321	3811008	2.5	4	Good	1	Joshua tree
984	13-Dec-12, 17:11	484315	3811068	7.5	6.5	Good	1	Joshua tree
985	13-Dec-12, 17:13	484296	3811078	2.5	4	Good	1	Joshua tree
986	13-Dec-12, 17:14	484301	3811078	12	7	Good	1	Joshua tree
987	13-Dec-12, 17:15	484315	3811097	6	6	Good	1	Joshua tree
988	13-Dec-12, 17:16	484311	3811110	1	2	Good	1	Joshua tree
989	13-Dec-12, 17:18	484336	3811230	10	7.5	Good	1	Joshua tree
990	13-Dec-12, 17:20	484362	3811211	4	7.5	Good	1	Mojave Yucca
991	13-Dec-12, 17:21	484361	3811199	1.5	2	Good	1	Joshua tree
992	13-Dec-12, 17:22	484356	3811186	7	6	Good	1	Joshua tree
993	13-Dec-12, 17:23	484319	3811198	2.5	5	Good	1	Joshua tree
994	13-Dec-12, 17:23	484322	3811194	12	7	Good	1	Joshua tree
995	13-Dec-12, 17:24	484319	3811157	1.5	2.5	Good	1	Joshua tree
996	13-Dec-12, 17:25	484339	3811123	10	8	Good	1	Joshua tree
997	13-Dec-12, 17:27	484336	3811089	6	6	Good	1	Joshua tree
998	13-Dec-12, 17:28	484337	3811089	2.5	5	Good	1	Joshua tree
001	14-Dec-12, 08:29	484372	3811241	2	4	Good	1	Joshua tree
002	14-Dec-12, 08:30	484377	3811221	6	5	Good	1	Joshua tree
003	14-Dec-12, 08:31	484384	3811223	10	9	Good	2	Joshua tree
004	14-Dec-12, 08:33	484394	3811237	9	6.5	Good	1	Joshua tree
005	14-Dec-12, 08:34	484419	3811245	18	11	Good	1	Joshua tree
006	14-Dec-12, 08:36	484374	3811239	2.5	4.5	Good	1	Joshua tree
007	14-Dec-12, 08:43	484393	3811179	5	6	Good	1	Joshua tree
008	14-Dec-12, 08:45	484390	3811159	1.5	3.5	Good	2	Joshua tree
009	14-Dec-12, 08:46	484362	3811178	1.5	3	Good	1	Joshua tree
010	14-Dec-12, 08:47	484363	3811149	1	2.5	Good	1	Joshua tree
011	14-Dec-12, 08:48	484373	3811140	2.5	4	Good	1	Joshua tree
012	14-Dec-12, 08:49	484365	3811115	10	8	Good	1	Joshua tree
013	14-Dec-12, 08:51	484346	3811087	7.5	7	Good	1	Joshua tree
014	14-Dec-12, 08:53	484345	3811069	4	8	Good	10	Mojave Yucca
015	14-Dec-12, 08:54	484366	3811070	6.5	7.5	Good	1	Joshua tree
016	14-Dec-12, 08:55	484349	3811047	1.5	3	Good	1	Joshua tree
017	14-Dec-12, 08:57	484365	3811005	11	10	Good	1	Joshua tree
018	14-Dec-12, 08:58	484370	3810986	8	8	Good	1	Joshua tree
019	14-Dec-12, 09:00	484392	3810994	6.5	6	Poor	1	Joshua tree
020	14-Dec-12, 09:01	484391	3810976	3	4	Good	1	Joshua tree
021	14-Dec-12, 09:02	484388	3810965	2	4	Good	1	Joshua tree
022	14-Dec-12, 09:04	484387	3810944	3	6	Good	6	Mojave Yucca
023	14-Dec-12, 09:06	484396	3810946	3	6	Good	5	Mojave Yucca
024	14-Dec-12, 09:07	484389	3810927	3	6	Good	4	Mojave Yucca
025	14-Dec-12, 09:09	484396	3810931	2.5	5.5	Good	1	Mojave Yucca
026	14-Dec-12, 09:10	484408	3810948	6	6	Good	1	Joshua tree
027	14-Dec-12, 09:14	484406	3811044	1.5	3.5	Good	1	Joshua tree
028	14-Dec-12, 09:15	484407	3811044	5	5	Good	3	Joshua tree
029	14-Dec-12, 09:19	484410	3811059	7	5.5	Fair	2	Joshua tree

030	14-Dec-12, 09:21	484393	3811080	5.5	7	Good	6	Mojave Yucca
031	14-Dec-12, 09:22	484395	3811089	9	8	Good	2	Joshua tree
032	14-Dec-12, 09:23	484403	3811107	2.5	7.5	Good	1	Mojave Yucca
033	14-Dec-12, 09:24	484387	3811108	1.5	3.5	Good	2	Joshua tree
034	14-Dec-12, 09:26	484408	3811122	3	5	Good	1	Joshua tree