

**Focused Desert Tortoise & Burrowing Owl
Protocol Presence/Absence Surveys and Rare Plant Surveys**

**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 focused desert tortoise and burrowing owl survey on the 23.4 acre, multiple assessor parcel (APN # 0438-212-01, -02) on 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”). The desert tortoise (DT; *Gopherus agassizii*) surveys adhered to the 1992 and 2010 United States Fish and Wildlife Service (USFWS) desert tortoise protocol methodology (USFWS, 1992; USFWS, 2010). Burrowing owl (BUOW; *Athene cunicularia*) phase II protocol surveys were conducted concurrently. Burrowing owl survey methodology adhered to the California Burrowing Owl Consortium burrowing owl survey guidelines (CBOC, 1993; CDFG, 2012). In addition to burrowing owl and desert tortoise surveys, botanical surveys were conducted.

The DT, BUOW and rare plant surveys were conducted during the spring of 2013 on April 16th – 17th. Subsequent rare plant surveys were conducted on April 5th, 15th & May 26th. The survey results for desert tortoise, burrowing owl and rare plants were negative. Zone-of-influence surveys for desert tortoise and burrowing owl buffer-zone surveys were negative as well.

Introduction and Purpose:

The Apple Valley East project constitutes a project pursuant to the California Environmental Quality Act (CEQA) as it is located on private lands, administered by San Bernardino County. Acting in its capacity as a lead agency under CEQA, the county would need to determine the potential for the project to result in significant impacts, consider mitigation measures and alternatives capable of avoiding significant impacts, and consider the environmental effects of the project as part of its decision-making process. 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 24-acre, multiple assessor parcel (APNs 0438-212-01, 02) located south east of Apple Valley. The "Apple Valley East", herein referred to as "the site" 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.

Due to the potential biological impacts associated with the development of the site, Clean Focus, retained Phoenix to conduct protocol desert tortoise and burrowing owl presence & absence surveys at the site. The tortoise surveys adhered to the 1992 and 2010 United States Fish and Wildlife Service (USFWS) desert tortoise protocol methodology (USFWS, 1992; USFWS, 2010). BUOW phase II protocol surveys were conducted concurrently. BUOW survey methodology adhered to the California Burrowing Owl Consortium and California Department of Fish and Wildlife burrowing owl survey guidelines (CBOC, 1993; CDFG, 2012). BUOW phase III surveys were not required as due to the absence of suitable burrows and owl sign on the site. In addition to BUOW and DT surveys, botanical surveys were conducted within the project boundary.

The DT, BUOW and rare plant surveys were conducted during the spring of 2013 on April 16th-17th. Subsequent rare plant surveys were conducted on April 5th, 15th & May 26th, The survey results for DT, BUOW, and rare plants were negative.

Location:

The site is located in the Victor Valley of San Bernardino County, southeast of Apple Valley, just outside the city limits. The parcels are bordered to the west by Central Road (paved road) and to the north by Tussing Ranch Road (dirt 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 low-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 exist. 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 $\frac{1}{4}$, NW $\frac{1}{4}$ of Section 14, Township 4 N, Range 3 W (Figure C).

Section I: Desert Tortoise & Burrowing Owl, Presence/Absence Focused Survey Results

Habitat Assessment Results:

Phoenix conducted a habitat assessment for the Apple Valley East project site in November-December of 2012 (Phoenix, 2013). The results of the habitat assessment indicate the project site is situated within relatively undisturbed creosote/bursage scrub vegetation. Furthermore, there is habitat connectivity on at least two sides of the site. Habitat connectivity would allow for potential sensitive species to move freely in or out of the project area. There are no other types of habitat present on site except for creosote/bursage scrub and there are no sensitive habitat types such as mesquite bosques, riparian habitat or fan palm oasis. Joshua trees are present in medium density on site and the census and relocation are addressed separately (Phoenix, 2013). The soils on site are stabilized sandy-loam and provide suitable consistency for fossorial reptiles and mammals to create burrows. In addition, the CNDDB results indicate the proposed site is located within the range of the desert tortoise and the burrowing owl, Mohave ground squirrel and several potential rare plant species. Due to these findings, focused protocol surveys were implemented during the 2013 survey period. The Mohave ground squirrel is addressed in a separate report due to reporting requirements set forth by the California Department of Fish and Wildlife (CDFW). Due to the habitat assessment findings, Phoenix initiated a protocol desert tortoise and burrowing owl surveys and rare plant surveys at the site.

Habitat and Land Use:

There are isolated piles of refuse dispersed throughout the site and disturbed ground within the site due to off-highway vehicle (OHV) activity. The 24 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*), Mohave yucca (*Yucca schidigera*) 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. The entire list of vascular plants detected can be found on Table 4.

Multiple two-track, unimproved paths traverse through the site. The northwest corner has been impacted with off road parking, off-highway vehicle (OHV) use and refuse piles. 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 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 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 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. The average home range of a female adult tortoise is 35 to 24 acres and an adult male can 40 to 120 acres and may extend up to a square mile (USFWS, 2010). Tortoises are thought to live up to 60-80 years in optimum conditions. They are listed as a federally and state threatened. It is illegal to harass, harm, pursue or take these lizards without appropriate permits and federal/state authorization.

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).

Justification, Methodology and Qualifications:

Due to the fact that the proposed site is located within the range of the desert tortoise, burrowing owl and several potential rare plant species, protocol surveys were implemented during the 2013 survey period. The desert tortoise, burrowing owl surveys occurred on April 16th-17th. The site was also revisited on April 5th, 15th & May 26th to check for additional rare plant occurrences. Phase III owl surveys were not conducted due to the lack of owl sign and suitable burrows on the site. The initial desert tortoise and burrowing owl survey was conducted by Ryan Young and Mike Sally. Desert tortoise zone-of-influence surveys were conducted during the surveys, wherever private land restrictions were not obvious. Burrowing owl buffer surveys were included in the phase II surveys.

Survey methodology incorporated the 1992 United Fish and Wildlife Service (USFWS) *Field Survey Protocol For Any Federal Action That May Occur Within The Range Of The Desert Tortoise (USFWS, 1992)*, the 2010 USFWS desert tortoise protocol, *Preparing For Any Action That May Occur Within The Range Of The Mojave Desert Tortoise (Gopherus agassizii, USFWS, 2010)* and the *Burrowing Owl Survey Protocol and Mitigation Guidelines and Staff Report of Burrowing Owl Mitigation (CBOC, 1993; CDFG, 2012)*.

The desert tortoise and burrowing owl field surveyors included: Ryan Young and Mike Sally. The combined desert tortoise and burrowing owl survey experience of the entire crew is 19 years. Furthermore, both members of the survey crew have completed the desert tortoise handling workshop in Ridgecrest, CA through the Desert Tortoise Council. Mr. Young conducted the plant surveys, characterized the habitat on site and provided habitat photos during the survey. All plant species were keyed to species level or collected for further identification.

The surveys methods consisted of walking 10-meter wide belt transects surveys, using hand-held Garmin GPS units with a 3-5 meter accuracy, within the project footprint in a north to south direction starting approximately a half hour after sunrise and ending no later than a half hour before sunset. Survey teams used hand-held mirrors to view into any potential burrows. During the survey, the surveyors search images included: live tortoises, tortoise carcasses such as scutes and bone fragments, tortoise scat, eggshell fragments, tortoise courtship rings, burrows, burrowing owls, owl feathers, pellets, owl whitewash (scat) and owl vocalizations. Typically, burrowing owl surveys require 20 meter wide belt transects (CDFG, 2012). The surveyors exceeded the standard burrowing owl surveys by incorporating 10 meter wide transects throughout the site. The 10-meter wide transects distance allowed the surveyors to survey for both ground-dwelling species, concurrently, with a high level of confidence in detection. Surveyors average coverage rate was 1.5 miles per hour, with an average daily coverage rate of 20 acres per day, per person. The surveyors also conducted zone-of-influence transects and burrowing owl buffer-zone surveys wherever possible. Zone-

of-influence surveys were conducted at 200m, 400m and 600m from the project site. Burrowing owl buffer-zone surveys were conducted at 30 meter intervals out to 150 meters from the project site. The track logs for the survey efforts are depicted on Figure A-B.

Weather Conditions:

Weather conditions during the spring survey effort consisted of warm to hot weather. Winter rainfall of 2012-2013 was far below average. The forage availability for tortoises and small mammal prey/invertebrates for burrowing owl was low. Additionally, annual plant abundance was low and may have contributed to negative rare plant findings. The morning and afternoon temperatures were taken to ensure surveys were not conducted beyond upper range temperature limits for the desert tortoise. All surveys were conducted during the April-May survey window period for desert tortoises and the February 15-July 15th survey window for burrowing owl.

Table 1: Burrowing Owl and Tortoise Survey Weather Summary

Date	Begin Temp (°F)	End Temp (°F)	Begin Cloud %	End Cloud %	Begin Wind (MPH)	End Wind (MPH)	Start Time	End Time
04/16/2013	51	85	10	10	20	25	08:00	16:00
04/17/2013	52	84	0	0	3	10	08:00	16:00

Rare, Endangered or Sensitive Species Field Survey Results:

Desert Tortoise

Desert tortoises were not detected within the project boundary nor were any tortoise sign (scutes, bones, eggshell fragments, burrows, courtship ring, drinking depressions or scat) detected on site. There was one burrow detected on the site and two burrows within the zone-of-influence surveys but all burrows were either kit fox or coyote. Zone-of-influence surveys were conducted wherever private property restrictions did not impede pedestrian surveys. All reptile species encountered during the desert tortoise survey are listed on Table 4.

Burrowing Owl

The project site was negative for occupied burrowing owl habitat. No owl sign was present within the project footprint nor was owl sign present at the one burrow on site. There

were no fresh tracks at the burrow entrance. The subsequent site visits did not reveal any additional owl sightings. Based on the results of the phase II survey, owls are not utilizing this site. The burrow detections are cross-referenced on figures A and B with their record number on Table 2.

Other Sensitive Bird Species

No other sensitive bird species were detected during the survey effort and no nests (active or inactive) were detected within the project site. The surveys paid particular attention to all Joshua trees to ensure there were no hawks nesting in the Joshua trees. However, the Joshua Trees on site are not very big compared to other areas. Furthermore, the surveyors kept a watchful eye out for any raptors foraging in the vicinity during the owl and tortoise surveys. Furthermore, no raptors were sighted nesting or foraging on the site during the Mohave ground squirrel surveys (separate report) which accounted for over 15 days on the project site.

Mammals

No sensitive mammal species were detected during the survey effort and nor were detected within the project site.

Drainages

There is a drainage on the site. The drainage enters on the southern edge and meanders to the north, and ends at Tussing Ranch Road (Figure B). The southern edge of the drainage enters via a large culvert under the railroad crossing. The project proponent has elected to avoid the drainage and no impacts are anticipated.

Table 2: Field Survey Results

Record Number ¹	Date	Easting (NAD 83)	Northing (NAD 83)	Photo Number	Project Footprint (PF), Zone-of-Influence (ZOI), Owl Buffer (OB)	Dimensions (Width X Height X Length)	Description
1	4/16/2013	484422	3811062	1531	PF	36X40X0	Pallet. Jackrabbit?. No tortoise/owl/canid sign.
2	4/17/2013	483753	3810931	1532	ZOI	19X19X0	Inactive burrow. No owl/tortoise/canid sign.
3	4/17/2013	484610	3810374	1533	OB	23X19XUnk	Canid burrow. Pos. coyote. No owl/tortoise sign.

¹Record numbers are cross-referenced on Figure A-B

Discussion of Field Survey Results:

Desert Tortoise

The surveys were negative for live tortoises or tortoise sign. Due to the lack of tortoises or tortoise sign a “take” permit will not be required. However, due to several CNDDDB occurrences in the area, potential habitat within the site and habitat connectivity, there are several mitigation measures, discussed below, that are recommended to prevent unauthorized take, in the event a tortoise appears on the site, during project development. Regardless of the findings of this report, the desert tortoise is protected under federal and state law and the survey report and mitigation measures do not constitute authorization for incidental take of the desert tortoise. The results of the tortoise survey are good for up to one year.

Burrowing Owl

The site was negative for burrowing owls and burrowing owl sign. Due to the absence of owl sign the site would not be considered burrowing owl habitat. Mitigation measures have been included below.

Other Sensitive Vertebrates

No other sensitive vertebrates were detected during the survey efforts.

Desert Tortoise and Burrowing Owl Mitigation Measure (MM) Recommendations:

Desert Tortoise and Burrowing Owl

The findings of the desert tortoise, burrowing owl and rare plant surveys are negative. The surrounding habitat has a low potential to harbor desert tortoises due to edge effects and residential activities; OHV use, dogs, horseback riding, etc. The possibility for a desert tortoise to appear on the site from potential adjacent habitat is low. Burrowing owls are known to occur in urban environments and can re-colonize an area after years of absence. In order to address the potential of a burrowing owl from entering the site there are mitigation recommendations listed below to address this issue. Since the survey results were negative; the project proponent will not be required to obtain a take permit nor to mitigate for loss of habitat via land acquisition. In the unlikely event a tortoise or burrowing owl is detected during the initial clearing and grubbing efforts, the project proponent will need to stop work, consult with the lead agency and initiate consultation with the resource agencies.

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 (3) minimize the impacts associated with the development of the site.

- **MM-01: 30 Day Pre-Construction Burrowing Owl Survey.** A burrowing owl survey is recommended within thirty (30) days prior to any ground disturbance on the site. The biologist should conduct pedestrian surveys throughout the project site to ensure no owls have moved onto the site. A report of the findings will be generated and submitted to the lead agency. In the event an owl is detected the project proponent will need to consult with the lead agency and local CDFW office to determine what mitigation requirements will be required. 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:

- 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 Measures:

- 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-02: 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-03: Submit a California Natural Diversity Database (CNDDDB) Form:** A CNDDDB 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-04: Provide a Trash Abatement Program** with sealed trash containers on site to prevent unwanted tortoise predators such as ravens and coyotes.

- **MM-05: Vehicle Speeds.** Vehicular speed limits of 15 miles per hour on all project related access roads and work areas.
- **MM-06: Avoid Off-Road Travel.** Utilize existing roads, whenever possible, to minimize disturbance to potential DT habitat.
- **MM-07: Clearance Survey.** Conduct five meter DT clearance surveys along any new or existing dirt access roads that will be used during the construction phase to identify areas of potential avoidance or areas where realignment of proposed access roads is preferred to minimize impacts.
- **MM-08: 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-09: 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-10: 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.

Section II: Focused Rare Plant Survey Results

Due to the findings presented in the habitat analysis and the CNDDDB literature review conducted by Phoenix in November-December of 2012, Phoenix initiated a rare plant survey at the Apple Valley East project site (Phoenix, 2013). Clean Focus Energy proposes to construct and operate a 3.0 MW AC photovoltaic solar energy generation facility (the “Apple Valley East”) on approximately 21 of the 23-acre, multiple assessor parcel (APNs 0438-212-01, 02) located south east of Apple Valley. The site 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. This section of the report addresses the rare plant survey conducted within the site.

Habitat and Land Use:

The 24 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. The entire list of vascular plants detected during the survey, can be found on Table 5.

Multiple two-track, unimproved paths traverse through the site. The northwest corner is particularly disturbed with off road parking, off-highway vehicle (OHV) use. 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.

Rare Plant Species Discussion

The CNDDDB 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 (Phoenix, 2012). 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.

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. See table 1 for federal and state conservation status as well as CNPS ranking for all 27 species.

Target Sensitive Species Description:**Table 3: Potential Rare Plant Species**

Common Name	Scientific Name	Fed/State/CNPS Status	Flowering Period	Description
Parish's daisy	<i>Erigeron parishii</i>	Threatened/-/1B.1	May – June	Mojavean desert scrub, pinyon and juniper woodland. Usually carbonate soils. Elevation 800-2,000 meters.
Purple nerve cymopterus	<i>Cymopterus multinervatus</i>	-/-/2.2	March - April	A perennial herb that occurs in the southwestern United States., including desert regions. Prefers sandy or rocky limestone slopes. 630 – 1,500 meters in elevation.
Latimer's woodland gilia	<i>Saltugilia latimeri</i>	-/-/1B.2	March - June	Occurs in the western Mojave desert in dry rocky and sandy desert canyons. Annual herb.
Booth's evening primrose	<i>Camissonia boothii</i>	-/-/2	April - May	Joshua tree woodland, pinyon and juniper woodland. Elevation 900-2,400 meters. Annual herb.
Cushenury buckwheat	<i>Eriogonum ovalifolium var. vineum</i>	-/-/1B	May – August	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland, carbonate soils. Elevation 1,4000 – 2,440 meters. Perennial herb.
Pinyon rock cress	<i>Boechera dispar</i>	-/-/2.3	Apr – May	Rocky slopes and gravelly soil in desert scrub and pinyon-juniper communities. 1,500 – 2,300 meters.

Justification, Methodology and Qualifications:

Due to the fact that the proposed site is located within the range of the before-mentioned plant species, surveys were implemented during the 2013 survey period. The rare plant surveys occurred on April 5th, 15th & May 26th, 2013. Survey methodology incorporated the United Fish and Wildlife Service (USFWS) Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species (USFWS, 2000).

The botanical field surveys were conducted by Ryan Young. Mr. Young has over twelve years of botanical experience in the Mojave Desert. Mr. Young also characterized the habitat on site and provided habitat photos during the site visit. All plant species were keyed to species level or collected for further identification.

The surveys methods consisted of walking 10-meter wide belt transects surveys, using hand-held Garmin GPS units with a 3-5 meter accuracy, within the project footprint in a north to south direction starting approximately a half hour after sunrise and ending no later than a half hour before sunset. The 10-meter wide transects, which is a much tighter interval, than required for most plant survey work, created a high level of confidence in detection. The surveyors average coverage rate was 1.5 miles per hour, with an average daily coverage rate of 30 acres per day.

Rare, Endangered or Sensitive Plant Field Survey Results:

No sensitive plant species were detected during the survey effort. Furthermore no sensitive habitat types were present such as Fan Palm Oasis, riparian habitat or Mesquite Bosques. The habitat throughout the site is a homogeneous creosote/bursage scrub with low density Joshua tree woodlands. The Joshua tree removal is being addresses through a separate report. All plants detected on site are listed on Table 5. Each plant was identified to the species level.

Discussion of Rare Plant Field Survey Results:

No sensitive species were detected during the field survey which was conducted during the appropriate time of year. The survey was conducted in the spring of 2013 when annual rainfall levels were below average which may have decreased the detectability of any potential rare plants on the project site. Due to the fact that no rare plant species were encountered during the field survey there are no mitigation recommendations or avoidance measures required. Additionally, since no sensitive plant species or habitats are present there are no anticipated impacts to integrity or continuity of the surrounding habitat.

Literature Cited:

- Baldwin, Bruce B., et. al. The Jepson Desert Manual: Vascular Plants of California. 2002
University of California Press, Berkeley, CA
- Bureau of Land Management.
1998. Surface Management Status Desert Access Guide. California. Desert District
Palm Springs. 1:100,000-Scale Topographic Map.
- Bureau of Land Management
January 2005. Final Environmental Impact Report and Statement for the West
Mojave Plan. Vol. 1A.
- Bureau of Land Management
2002. Geographic Information Systems Desert Tortoise Density Layer.
- California Burrowing Owl Consortium. Burrowing Owl Survey Protocol and Mitigation
Guidelines. April 1993.
- California Department of Fish and Game
Rarefind 3 Natural Diversity Database. Habitat and Data Analysis Branch.
Sacramento, CA, 2010.
- California Department of Fish and Game
Staff Report on Burrowing Owl Mitigation. March 7, 2012.
- California Department of Fish and Game
Biogeographic Data Branch, California Natural Diversity Database. Species Animals (883)
taxa. 2009.
- California Department of Fish and Game. Staff Report on Burrowing Owl Mitigation. March 7,
2012.
- Grinnell, Joseph & Miller, A. H. The Distribution of the Birds of California. Cooper Ornithological
Club, 1994.
- Jones, L.C., Lovich R.E. Lizards of the American Southwest. A Photographic Field Guide. Rio
Nuevo Publishers. Tucson, Arizona. 2009
- Sanders, Andy. Herbarium, Department of Botany and Plant Sciences, University of California,
Riverside, CA 92521-0124.
- Stebbins, R.C. Western Reptiles and Amphibians. Third Edition. Peterson Field Guide Series.
2003.
- Phoenix Biological Consulting. Biological Habitat Assessment For Proposed Photovoltaic Solar
Array "Apple Valley East" (24 acres; APN #438-212-01, -02) Apple Valley 7.5 Minute
Quadrangle, Section 1, Township 5 N, Range 6 W. San Bernardino County, California.
2013
- United States Fish and Wildlife Service

January 1992. Field Survey Protocol for any Federal Action that may occur within the range of the Desert Tortoise.

United States Fish and Wildlife Service

Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*), 2010.

United States Fish and Wildlife Service

Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. January, 2000.

[\(http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/\)](http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/)

United States Fish and Wildlife Service

Desert Tortoise Exclusion Fence Specifications, 2005.

[\(http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/\)](http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/)

This concludes the habitat assessment for the 24 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: June 17, 2013

Signature: _____

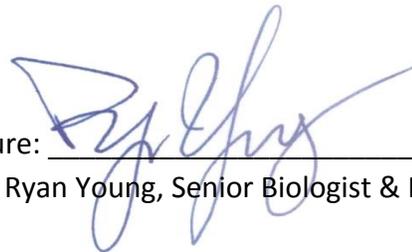


Ryan Young, Senior Biologist & Principal

Biological Technical Report Prepared BY:

Date: December 23, 2013

Signature: _____



Ryan Young, Senior Biologist & Principal

Figure A: Biological Resource Map (Topographic View) for Apple Valley East

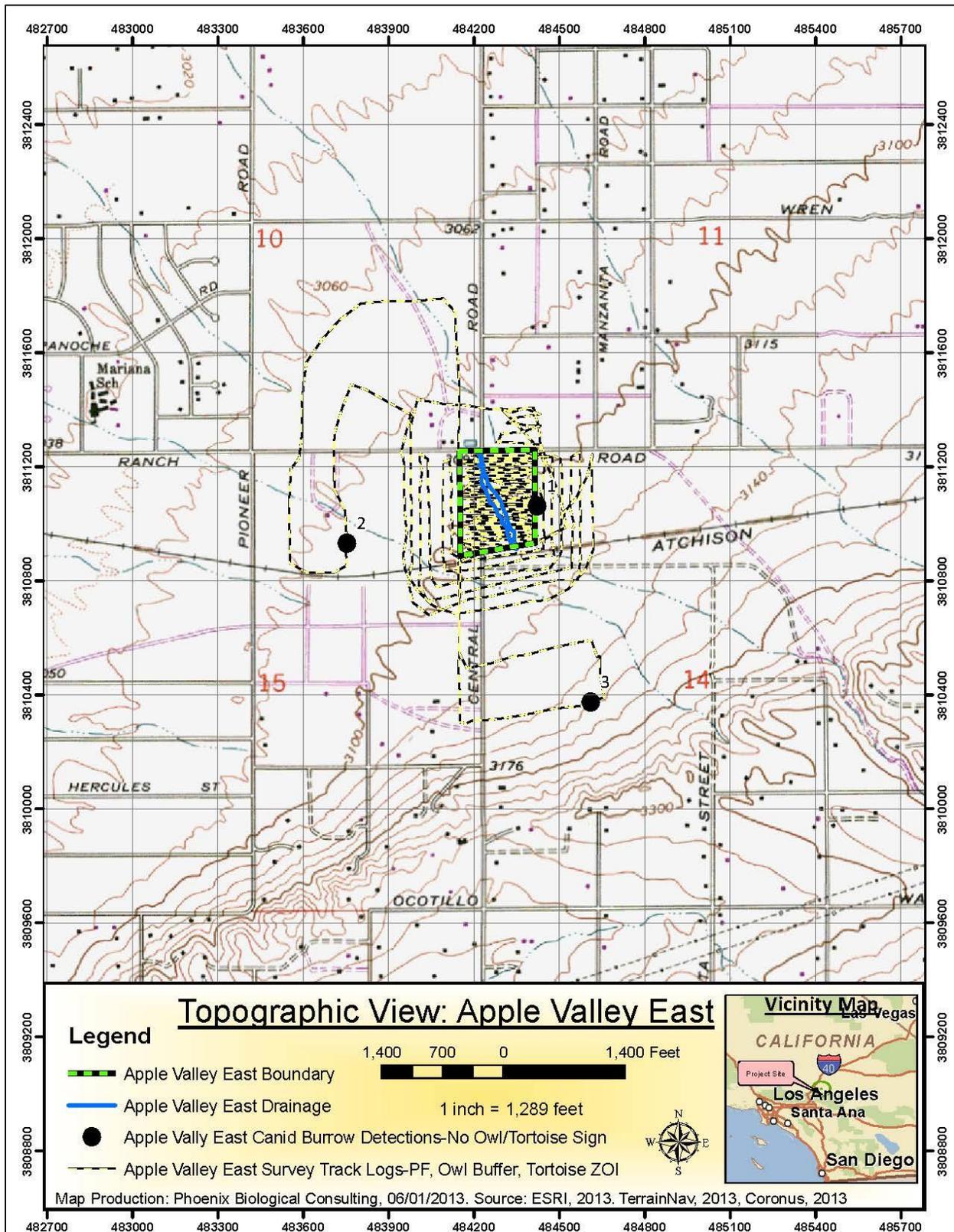


Figure B: Biological Resource Map (Aerial View) for Apple Valley East

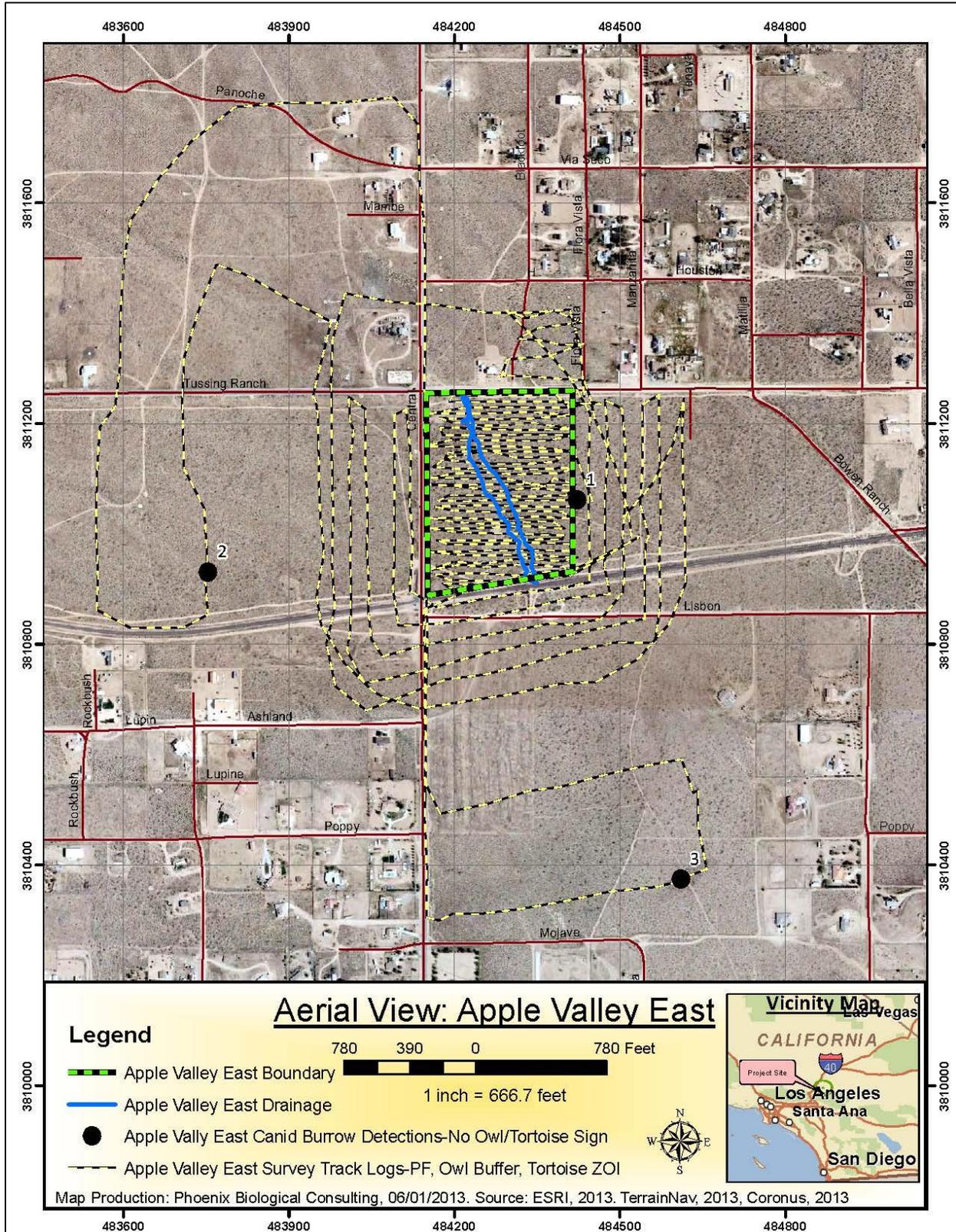


Figure D: Site Photos (Corners) for Apple Valley East



NW Corner looking to center of site



SW corner looking to center of site

Figure E: Site Photos (Corners)



SE corner looking to center of site



NE corner looking to center of site

Figure F: Site Photos (Drainages



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



Same drainage, standing on north end looking south

Figure G: Burrows Detections for Apple Valley East



Table 4: Vertebrates Detected During the Survey for Apple Valley East

Mammals
Antelope ground squirrel (<i>Ammospermophilus leucurus</i>)
Black tailed jack rabbit (<i>Lepus californicus</i>)
Coyote (<i>Canis latrans</i>)-scat only
Merriam's kangaroo rat (<i>Dipodomys merriami</i>)
Desert Kangaroo rat (<i>Dipodomys deserti</i>)
Birds
American kestrel (<i>Falco sparverius</i>)
Barn swallow (<i>Riparia riparia</i>)
Black-throated sparrow (<i>Amphispiza bilineata</i>)
Horned lark (<i>Eremophila alpestris</i>)
House finch (<i>Carpodacus mexicanus</i>)
Mourning dove (<i>Zenaida macroura</i>)
Northern mockingbird (<i>Mimus polyglottos</i>)
Red tailed hawk (<i>Buteo jamaicensis</i>)
Tree swallow (<i>Tachycineta bicolor</i>)
Turkey vulture (<i>Cathartes aura</i>)
Western kingbird (<i>Tyrannus verticalis</i>)
White crowned sparrow (<i>Zonotrichia leucophrys</i>)
Reptiles
Desert spiny lizard (<i>Sclerophorus magister</i>)
Desert horned lizard (<i>Phrynosoma platyrhinos</i>)
Side-blotched lizard (<i>Uta stansburiana</i>)
Western whiptail (<i>Cnemidophorus tigris</i>)
Zebra-tailed lizard (<i>Callisaurus draconoides</i>)

Table 5: Vascular Plants Detected During Site Visit

FAMILY Species	Common Name	Habit
ASTERACEAE		
<i>Ambrosia acanthocarpa</i>	Annual bur-sage	Annual
<i>Ambrosia dumosa</i>	Burrobush	Shrub
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	Shrub
<i>Ericameria cooperi</i>	Cooper's goldenbush	Shrub
<i>Gutierrezia microcephala</i>	Snakeweed	perennial
<i>Hymenoclea salsola</i>	Cheesebush	Shrub
<i>Tetradymia sp.</i>	Horsebrush	Shrub
CACTACEAE		
<i>Opuntia acanthocarpa</i>	Buckhorn cholla	perennial
<i>Opuntia ramosissima</i>	Pencil cholla	perennial
CHENOPODIACEAE		
<i>Salsola tragus</i>	Russian thistle/tumbleweed	Annual
EPHEDRACEAE		
<i>Ephedra nevadensis</i>	Mormon tea	Shrub
EUPHORBIACEAE		
<i>Chamaesyce albomarginata</i>	Rattlesnake weed	Annual
FABACEAE		
<i>Senna armata</i>	Desert Senna	Shrub
LILIACEAE		
<i>Calochortus kennedyi</i>	Mariposa lily	Annual
<i>Yucca brevifolia</i>	Joshua tree	perennial
<i>Yucca shidigera</i>	Mojave yucca	perennial
MALVACEAE		
<i>Sphaeralcea ambigua</i>	Apricot mallow	perennial
POACEAE		
<i>Achnatherum speciosum</i>	Desert needle grass	perennial bunchgrass
<i>Bromus rubens</i>	Red brome	annual
<i>Bromus tectorum</i>	Cheatgrass	annual
<i>Vulpia octoflora</i>	Six-weeks fescue	annual
POLYGONACEAE		
<i>Eriogonum fasciculatum</i>	California buckwheat	shrub
<i>Eriogonum sp.</i>		Annual
SOLANACEAE		
<i>Lycium andersonii</i>	Anderson's boxthorn	shrub
<i>Lycium cooperii</i>	Cooper's boxthorn	Shrub
ZYGOPHYLLACEAE		

<i>Larrea tridentata</i>	Creosote	shrub
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Appendix A: USFWS Desert Tortoise Survey Form

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: 4/16/13 Survey biologist(s): Ryan Young, Mike Sally
(day, month, year) (name, email, and phone number)
 Site description: "Apple Valley East" 24 Acres, AON 938-212-PL-02
(project name and size, general location)
 County: San Bernar Cino Quad: Apple Valley South Location: 0484287 E, 3811069 N W6S 89
(USM coordinates, lat-long, and/or TRS, map datum)
 Circle one: 100% coverage or Sampling Area size to be surveyed: 24 Acres Transect #: Transect length:
 GPS Start-point: 0484113 E, 3810895 N Start time: 08:00 am/pm
(easting, northing, elevation in meters)
 GPS End-point: 0484419 E, 3811235 N End time: 16:00 am/pm
(easting, northing, elevation in meters)
 Start Temp: 12 °C End Temp: 29 °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, carcasses, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

Page: of
 Transect number: