Panoche Valley Solar Point Count

Survey Study Report

Panoche Valley Solar Project
San Benito County, California
April 2014

Image Courtesy of Michael Bumgardner

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ABBREVIATIONS AND ACRONYMS

°F	Degrees Fahrenheit
AMSL	Above Mean Sea Level
BBCS	Bird and Bat Conservation Strategy
CNPS	California Native Plant Species
Duke Energy	Duke Energy Renewables
ECP	Eagle Conservation Plan
FEIR	Final Environmental Impact Report
GOEA	Golden eagle
GPS	Global positioning system
km	kilometer
MW	Megawatt
Project Footprint	The portion of the Proposed Project that includes the solar arrays and associated roads and equipment, totaling 2,492 acres.
Proposed Project	Panoche Valley Solar Project
PVS	Panoche Valley Solar, LLC
SCRCL	Silver Creek Ranch Conservation Lands
UDA	Utilization Distribution Assessment
USFWS	United States Fish and Wildlife Service
UTM	Universal Transverse Mercator
VFCL	Valley Floor Conservation Lands
VRCL	Valadeao Ranch Conservation Lands

1.0 Project Introduction and Background

Panoche Valley Solar, LLC (PVS) is proposing to construct the proposed Panoche Valley Solar Project (Proposed Project). PVS is proposing to construct the Proposed Project to operate an up to 399-Megawatt (MW) solar photovoltaic energy generation facility in San Benito County, California (Figure 1). The Proposed Project would be located approximately three-quarters of a mile north of the intersection of Panoche Road and Little Panoche Road, in eastern San Benito County (Figure 2). The Proposed Project site is comprised of approximately 2,492 acres in the Panoche Valley and would also include approximately 24,185 acres of high quality Conservation Lands that are contiguous with the Proposed Project area (Figure 3).

On June 13, 2013, PVS consulted with the United States Fish and Wildlife Service (USFWS)-Ventura office concerning the requirement to prepare an Eagle Conservation Plan (ECP) and a Bird and Bat Conservation Strategy (BBCS) for the Proposed Project. It was determined during this discussion, the data presented in the 2010 Final Environmental Impact Report (FEIR) was dated, insufficient in coverage, and was conducted too late in the season. USFWS recommended a Phase II site-specific golden eagle (GOEA; *Aquila chrysaetos*) study be conducted (USFWS 2013).

This report documents the survey results of GOEA occurrence, frequency, and behavior conducted during the migratory and wintering phase (September through January) within the Proposed Project area and associated conservation lands in the Panoche Valley (Figure 3). The conservation lands include three large parcels of land to offset potential impacts as part of a conservation package consisting of the permanent preservation and management of those parcels. These parcels are called the Valley Floor Conservation Lands, the Valadeao Ranch Conservation Lands, and the Silver Creek Ranch Conservation Lands (Figure 3).

Additionally, aerial surveys conducted in January and March were completed to determine the number and locations of occupied nests and the approximate centers of occupied nesting territories of GOEA within a 10-mile radius centered on the Project Footprint. The results of these studies will be summarized in a separate report. Results of the combined studies will be used to prepare the ECP and the BBCS.

2.0 Study Purpose and Need

The Point Count and Utilization Distribution Assessment (UDA) studies were completed to provide baseline data on GOEA occurrence, frequency, and behavior to present results of spatial and temporal site use and potential risk based on time spent within the Proposed Project area.

3.0 Study Area

The Study Area includes the Proposed Project which is generally located approximately three-quarters of a mile north of the intersection of Panoche Road and Little Panoche Road, in eastern San Benito County. This location is approximately two miles southwest of the Fresno County Line and the Panoche Hills, and approximately 15 miles west of Interstate 5 and the San Joaquin Valley. The Project Footprint is located within Township 15S, Range 10E, Sections 3-4, 8-11, and 13-16 of the United States Geologic Survey's Cerro Colorado, Llanada, Mercy Hot Springs, and Panoche 7.5-minute topographic quadrangle maps. In addition to the Project Footprint, the Study Area also includes the Conservation Lands associated with the Proposed Project, which are located in both San Benito and Fresno counties within Township 15S, Range 10E, Sections 3-4, 8-10, 13-16, and 25; Township 15S, Range 11E, Section 19; Township 14S, Range 10E, Sections 21-27, and 32-36; Township 14S, Range 11E, Sections 19, and 29-32; Township 15S, Range 10E, Sections 1-8, and 10-14; Section 15S, Township 11E, Sections 6-7, 19-20, and 26-36; and Township 16S, Range 11E, Sections 1-6, and 8-12 (Figure 3).

The Study Area is comprised almost entirely of annual, non-native grasslands used mainly to graze cattle and sheep. The Study Area experiences a Mediterranean climate with dry hot summers and cool wet winters. However, this region does not experience heavy rainfall. Annual precipitation in the general vicinity of the site ranges from eight to ten inches per year. Approximately 85 percent of precipitation falls between October and March. Temperatures average approximately 80 degrees Fahrenheit (˚F) in the summer and 40˚F in the winter, mid-summer temperatures are often over 100˚F, and winter lows can be close to freezing. Nearly all precipitation infiltrates into the site's soils and flows in creeks and drainages when soil capacity has been reached.

The Study Area for this GOEA survey includes the habitats within the following areas:

- Project Footprint
- Conservation Lands associated with the project including the Valley Floor (VFCL), Valadeao Ranch (VRCL), and Silver Creek Ranch (SCRCL)areas

Project Footprint

The Project Footprint consists of the area within the fence line of the proposed solar facility and is composed of approximately 2,492 acres of rangeland. Historically, the Project Footprint was used for crop production; however, in the past approximately 40 years, the site has been used for cattle grazing. The site is surrounded by rangeland and bordered by hills of the Gabilan Range to the west and the Panoche Hills to the east. The topography of the site dips gently down to the east-southeast. The site elevation ranges from approximately 1,200 feet above mean sea level (amsl) near the southeast end of the site to approximately 1,400 feet amsl near the west end.

Prominent grass species within the Project Footprint include ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), and rat-tail fescue (*Vulpia myuros*). Dominant forbs included broad-leaved filaree (*Erodium botrys*), red-stemmed filaree (*Erodium cicutarium*), shining peppergrass (*Lepidium nitidum var. nitidum*), and vinegarweed (*Tricostema lanceolatum*). Fiddleneck (*Amsinckia menziesii*), devils lettuce (*Amsinckia tessellata*), shepherds purse (*Capsella bursa-pastoris*), turkey mullein (*Eremocarpus setigerus*), and bur clover (*Medicago polymorpha*) were also common, especially along ranch roads. Areas which have not been previously disturbed by grazing or historic cultivation also include a variety of native wildflowers such as blow wives (*Achyrachaena mollis*), blue dicks (*Dichelostemma capitaum*), California gold fields (*Lasthenia californica*), yellow daisy tidy-tips (*Layia platyglossa*), and California creamcups (*Platystemon californicus*).

Valley Floor, Silver Creek Ranch and Valadeao Ranch Conservation Lands

Project Conservation Lands include 3 areas totaling 24,185 acres that would be preserved in perpetuity for the benefit of the GOEA, as well as many other species of wildlife. An additional 2,523 acres interspersed throughout and adjacent to the Project Footprint would be left undisturbed and designated as the VFCL. In addition to the designation of the VFCL, the Proposed Action will include two large ranches for conservation purposes. These ranches, the VRCL (10,772 acres) and the SCRCL (10,890 acres), are contiguous with the Project site and each other (Figure 3).

Valley Floor Conservation Lands

The VFCL (approximately 2,523 acres) are contiguous with the Project Footprint, and primarily consist of the non-native annual grassland habitat found within the Project Footprint with some seasonal ponds and vernal and ephemeral pools, as well as the seasonally dry Panoche and Los Aquilas Creeks. The VFCL also includes the entire 100-year floodplain within the Proposed Project boundary on the valley floor.

The dominant vegetation in the VFCL includes ripgut brome, soft chess, red brome, foxtail barley, rat-tail fescue, broad-leaved filaree, red-stemmed filaree, shining peppergrass, and vinegarweed. Fiddleneck, devils lettuce, shepherds purse, turkey mullein, and bur clover were also common, especially in disturbed areas. Areas which have not been previously disturbed include a variety of native wildflowers such as blow wives, blue dicks, California gold fields, yellow daisy tidy-tips, and California creamcups.

Valadeao Ranch Conservation Lands

The VRCL (approximately 10,772 acres) are contiguous with the Project Footprint directly to the west, east, and northeast of the site (Figure 3). These lands are also contiguous with the VFCL and Silver Creek Ranch Conservation Lands (SCRCL). The VRCL include several seasonal drainages. Soils on this site are complex and range from sandy to sandy loam to clay loam to badlands. The VRCL contain approximately 2,945 acres with slopes between 0 and 11 percent. Elevations on the VRCL range from approximately

1,400 feet to 2,100 feet above mean sea level (amsl). The property which is currently grazed is dominated by introduced annual grasslands (approximately 6,700 acres), which have a very similar species makeup to the Project Footprint and VFCL. This property also mostly consists of ephedra shrubland (approximately 2,700 acres), barrens, and saltbush shrubland.

Ephedra shrublands within the VRCL range from nearly pure California ephedra (*E. californica*) stands to highly diverse associations with typical desert shrubs. Occupied habitats occur from lower slopes and valley bottoms to rocky outcrops and alluvial slopes. This 3 to 15 foot tall shrub rarely achieves greater than 10 percent cover (absolute), but the cover provided varies little with soil type, aspect, or grazing pressure. It is generally the only shrub present in the often very broad transition from Ephedra shrublands to Introduced Annual Grasslands.

Plant associations that are noted to occur within the Ephedra shrublands include *Artemisia californica - Senecio flaccidus* scrub, *Eastwoodia elegans - Ephedra californica* scrub, *Ericameria linearifolia - Ephedra californica* scrub, *Ericameria linearifolia - Ericameria nauseosa* scrub, *Ericameria linearifolia - Gutierrezia californica* scrub, *Eriogonum fasciculatum* var. *polifolium - Artemisia californica* scrub, *Eriogonum fasciculatum* var. *polifolium - Ephedra californica* scrub, *Eriogonum fasciculatum* var. *polifolium - Gutierrezia californica* scrub, *Eriogonum fasciculatum* var. *polifolium - Yucca whipplei* scrub, and *Gutierrezia californica - Ephedra californica* scrub. Ephedra Shrublands occur in the VRCL portion of Las Aquilas Creek in small patches along ridgelines, steep slopes with a northern aspect, lower slopes, ephemeral drainages, and steep, rocky, and thin-soiled south-facing slopes.

Barrens are ridgelines and south or (rarely) west-facing very steep slopes that exhibit a precipitous drop-off in vegetative cover. In terms of vegetation, the assembled species diversity is very low, nearly all species are relatively short-lived annuals, shrubs and trees are absent, and introduced annual grasses become minor components of the species mix. Barrens most commonly interrupt Introduced Annual Grasslands, where the transition was often observed to occur over the space of several feet. Two plant associations were identified within the barrens: *Erodium cicutarium - Plantago erecta* and *Holocarpha obconica - Vulpia macrostachys*.

The saltbush shrubland habitat consists of nearly pure to mixed stands of saltbush (*Atriplex polycarpa*) associations. Occupied habitats range from white clay soils on hills immediately west of Little Panoche Road to rocky outcrops and alluvial slopes experiencing high ground creep rates near ridgelines east of the road. In all observed occurrences on hills, the aspect of greatest *Atriplex polycarpa* cover is southern. This two to three foot tall shrub also attains dominance within several of the ephemerally flooded washes, where sandier soils are more common. It is always the most common shrub canopy contributor near seasonal springs and seeps that exhibit saline character.

Two plant associations exist on the VRCL: *Atriplex polycarpa - Eriogonum fasciculatum* var. *polifolium* and *Atriplex polycarpa - Isocoma acradenia* var. *bracteosa*. *Atriplex polycarpa - Eriogonum fasciculatum* var. *polifolium* occurs on slopes, appearing as mainly open ground with scattered shrubs. Shrub canopy

closure averages 5 to 10 percent, with scattered clumps of 20 percent closure. Canopy density is greatest on south-facing slopes, where *Eriogonum fasciculatum* is often more prevalent, and on slopes that are steep or slippery enough to exclude grazing. The herbaceous layer is largely absent, resembling barrens that are often present on adjacent slopes of similar aspect. Shrub canopies are confined to wash edges due to trampling by cattle, and average cover rarely exceeds 10 percent.

Silver Creek Ranch Conservation Lands

The SCRCL (approximately 10,890 acres), which is currently being with grazed with livestock, is located southeast of the Project Footprint (Figure 3). The northwestern-most corner of the proposed SCRCL is contiguous with a portion of the VRCL. Elevations on the SCRCL range from 900 to 2,200 feet amsl. Soils on the SCRCL are less complex than those found on the VRCL and are generally characterized as well drained and moderately permeable. SCRCL contains approximately 5,765 acres with slopes between 0 and 11 percent.

SCRCL are dominated by non-native species (approximately 8,400 acres), with the same species found on the Project Footprint and on the other conservation lands, distributed sparsely over the landscape. The other major habitats on this conservation lands includes ephedra shrubland (approximately 2,260 acres) with similar species noted on the VRCL and riparian/wetland habitat.

The riparian habitats occur along the Panoche and Silver Creeks. The Silver Creek riparian vegetation, where it briefly intersects the SCRCL, indicates a seasonally wet, somewhat saline habitat subject to annual or occasional energetic flows. The riparian corridor has become dominated by invasive tamarisk (*Tamarix* sp.). Tamarisk has developed semi-open to impassable stands in a 30 to 100 foot wide corridor. The population extends well off-site, both upstream and downstream. In this area, saltgrass (*Distichlis spicata*) appears to be the native species most tolerant of the soil salination and groundwater drawdown effects of heavy tamarisk infestation, and often forms meadow-like swards between the tamarisk thickets.

Panoche Creek is a gaining reach as it crosses through the SCRCL. The streambed upstream off the site for at least three miles was observed to be completely dry and largely devoid of plants. Within the surveyed area, this arroyo-like habitat quickly transitions to zonal wetlands characterized by gaseous springs, highly reduced soils, and marsh or meadow vegetation. The Panoche Creek riparian zone, which ranges from 100 feet to 500 feet in width, may provide the only reliable, naturally occurring surface water for much of the year. The dominant plants are consistently arrayed, with vegetation classified as emergent *Typha* marsh (*Typha* Herbaceous Alliance) centrally, *Schoenoplectus americanus* mid-marsh (*Schoenoplectus americanus* Herbaceous Alliance) at the outer saturated edge, and *Distichlis spicata* meadow (*Distichlis spicata* Herbaceous Alliance) extending across the moistened to seasonally drying soils at the riparian edge and *Frankenia salina* and *Juncus mexicanus*. Trees are largely absent, as are species adapted to a floating or submerged habitat.

4.0 Methodology

Per the USFWS recommendations, the GOEA studies followed the Wind Energy Guidelines in Tier 3, Stage 2 of which includes site-specific surveys and assessments in anticipation of ECP preparation (USFWS 2013). These site specific surveys included:

- Point Count Surveys (i.e., fixed-radius circular plot surveys) within the project footprint and Conservation Lands (conducted summer, fall, and winter of 2013/2014);
- Utilization Distribution Assessment (UDA) within the project footprint and VFCL (conducted summer, fall, and winter of 2013/2014); and
- Aerial survey of Project-area nesting population, location, and number of occupied eagle nests within a 10 mile radius of the Proposed Project center (results provided in separate report).

4.1 Point Count Surveys

The surveys for GOEA resources were conducted through the use of point counts that were conducted at established point count stations (Cooperrider et al. 1986; Hamel et al. 1996; Ralph et al. 1993; Ralph et al. 1995). Six point count stations were located within Project Footprint and VFCL (Figure 4) to ensure a minimum spatial coverage of at least 30 percent of the Project Footprint (USFWS 2013). Six point count stations were also located within the VRCL and the SCRCL (Figures 5 and 6). Three point count stations were located in the VRCL (Figure 5) and three point count stations in the SCRCL (Figure 6). The coverage for the VRCL and SCRCL is less than 30 percent, but provides adequate observations of GOEA use in these areas.

The survey locations were established by creating point count stations within an 800 meter (2,625 feet) radius observation area. The center point of each plot was geo-referenced using a global positioning system (GPS). The boundary of each point count plot was identified via distinct natural or any anthropogenic features at several points for distance reference.

The point count surveys consisted of observers recording GOEA detections from the point count stations for two hours at each point count station (Figures 4, 5, and 6) and recorded on point count field forms (Appendix A) (Pagel et al. 2010; USFWS 2013). The GOEA surveys were conducted between daylight hours (sunrise to sunset) on a bi-weekly basis from September 3, 2013 to January 24, 2014. During the fall migration, when possible, surveys were completed during midday to increase sampling efficiency by temporally stratifying surveys to cover the midday period during migration (CA Energy Commission 2007; USFWS 2013).

During the point count surveys, the observers, which were trained and their skills tested for GOEA observations (e.g. species, age class, activity), stayed with their vehicle to remain inconspicuous, which decreased the possibility that an individual eagle would avoid observers, which could reduce the

likelihood of detection. The observers performed systematic scans of the point count plot using binoculars alternated with unaided eye scans to detect GOEA.

The data collected during each point count station survey beyond the typical conditions information (e.g. date, time, temperature, wind speed and direction, and etc.) included the number of GOEA seen, age class, GOEA activity/behavior, flight paths, estimated flight height and location in plot, and general description of observations.

The age class of the GOEA were broken down into juvenile eagles (first year), immature or subadult eagles (second to fourth year), adult eagles (fifth year or greater), or unknown (eagles where age class could not be determined due to distance, etc.). The activity/behavior data collected noted the prevalent behavior during each one-minute interval as soaring flight (circling broadly with wings outstretched); unidirectional flapping gliding; kiting-hovering; stooping or diving at prey; stooping or diving in an agonistic context with other eagles or other bird species; undulating/territorial flight; perched; or other. The flight path data included GOEA inside, as well as outside the plot. The flights were recorded on the point count data forms for each point count station (Appendix B).

In addition to the GOEA point count surveys and the UDA data, any miscellaneous observations information gathered during the 2013 PVS giant kangaroo rat and blunt- nosed leopard lizard surveys, conducted in March through September, 2013, was also used to supplement the point count/UDA data (Appendix C).

4.2 Utilization Distribution Assessment (UDA)

In addition to the point count surveys, a UDA for GOEA was completed during the survey season. The UDA was completed to document the GOEA spatial distribution of use on the Proposed Project Footprint. The observation data was noted on field maps (Appendix B) and then convert the data into GIS formats for analyses. The field maps were created by placing a grid of square cells, each 0.5 x 0.5 kilometer (km), which was framed by a Universal Transverse Mercator (UTM) system across a map of the PVS Project Footprint to record eagle observations in each 0.25 km^2 cell (Figure 7).

The Project Footprint/VFCL was divided into non-overlapping observation sectors centered on a designated Observation Point, each with a vantage point. The point count stations were utilized for the UDA Observation Points (Figure 7). These locations afforded an unobstructed viewing of the grid cells to more than one km in all directions. The UDA observation periods were conducted for two hours and were added to each point count survey period for the Project Footprint/VFCL. The UDA was not conducted on the VRCL and the SCRCL since they are outside of the Project Footprint.

During the UDA, when necessary, the observers worked together with the use of hand-held radios from separate vantage points to pinpoint the location(s) of GOEA through triangulation. This communication between observers also eliminated the duplication of GOEA sightings. The data recorded by the

observers during the UDA included GOEA activity/behavior and flight path and location. The prevalent activity/behavior of each GOEA was recorded in one-minute interval as soaring flight (circling broadly with wings outstretched); unidirectional flapping gliding; kiting-hovering; stooping or diving at prey; stooping or diving in an agonistic context with other eagles or other bird species; undulating/territorial flight; perched; or other. The flight paths and location data was recorded on the gridded field maps (Appendix B), using topographic features or distance indicators as location references.

The data was analyzed by simply counting the number of flights intersecting each cell. If the data set had been larger, a specific GOEAs distribution of use would have been estimated by using standard kernel analyses (USFWS 2013).

5.0 Discussion, Analysis and Results

This discussion, analysis, and results section presents a compilation of the data that was gathered during the surveys point count and UDA surveys for GOEA. As stated previously, the surveys for GOEA resources were conducted through use of point counts and UDA surveys at 12 established stations within the PVS Project Footprint; Conservation lands associated with the Project include the Valley Floor, Valadeao Ranch, and Silver Creek Ranch areas.

Survey events occurred every other week between the weeks of September 3, 2013 until January 24, 2014, for a total of 11 survey events. Each survey event was made up of 12 point counts surveys that lasted 2 hours each and 6 UDA surveys which were also 2 hours each. The total hours surveying for GOEA during each survey event was 36 hours. This gives an overall total of 396 hours of survey time within the Project area. The overall sightings of GOEA during the surveys, excluding the aerial surveys, was 94. Weather was generally conducive to GOEA surveys; temperatures ranged between 20-97˚F, and winds ranged between 0 and 19.5 miles per hour (mph), though were typically less than 8 mph, nothing but a trace of rain throughout the surveys, and visibility that ranged from 80% to 100% (Appendix D).

5.1 Point Count Surveys

As stated previously, six point count stations (P-01 to P-06) were located within Project Footprint and VFCL (Figure 4), and six point count stations were located within Valadeao Ranch and Silver Creek Ranch Conservation Lands (Figures 5 and 6). Three point count stations were located in the VRCL (Figure 5) and three point count stations in the SCRCL (Figure 6).

The results of the point count surveys included a total of 61 observations of GOEA. This total includes 23 individual observations of GOEA seen within the point count plot boundaries and 38 observations outside the plot boundaries (Tables 1 and 2).

Table 1. Total GOEA by Survey Event

Survey Event	Total GOEA Observed (inside and out of boundaries)	Observation Location (Inside Point Count/Outside)	Juvenile GOEA (Inside Point Count/Outside)	Subadult GOEA (Inside Point Count/Outside)	Adult (Inside Point Count/Outside)	Unknown Age (Inside Point Count/Outside)
1st (September 3 -5, 2013)	10	2/8	0/0	0/0	2/0	0/8
2nd (September 17-19, 2013)	21[1]	9/12	2/0	1/0	3/2	2/10
3rd October 2-4, 2013	1	1/0	0/0	0/0	1/0	0/0
4th October 15-17, 2013	5	3/2	0/0	0/0	3/2	0/0
5th October 28-30, 2013	4	1/3	0/1	0/0	1/1	0/1
6th November 11-13, 2013	7	0/7	0/0	0/0	0/1	0/6
7th November 25-27, 2013	3	0/3	0/0	0/0	0/0	0/3
8th December 9-11, 2013	2	1/1	0/0	0/0	0/0	1/1
9th December 21-23, 2013	2	0/2	0/0	0/0	0/2	0/0
10th January 7-9, 2014	5	5/0	2/0	1/0	1/0	1/0
11th January 22-24, 2014	1	1/0	0/0	0/0	1/0	0/0

[1] - Data includes several GOEA (approx. 7 GOEA) that were feeding on a carcass of a dead cow inside the project boundary and GOEA stayed at carcass during point count and UDA.

Table 2. GOEA by Point Count Station

	Project Footprint/Valley Floor CL						Valadeao Ranch CL			Silver Creek Ranch CL			Age Class Total
Age Class	**P-01**	**P-02**	**P-03**	**P-04**	**P-05**	**P-06**	**V-01**	**V-02**	**V-03**	**S-01**	**S-02**	**S-03**	
Juvenile	2/1[1]	0/0	0/0	1/0	0/0	0/0	0/0	2/0	0/0	0/0	0/0	0/0	6
Sub-Adult	1/0	0/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	2
Adult	5/2	2/2	0/2	0/0	0/1	0/0	2/0	0/0	0/0	0/0	1/0	2/1	20
Unknown	2/10	0/3	1/0	0/0	0/7	0/0	0/0	0/5	0/2	0/0	1/1	0/1	33
Total – Inside/Out	10/13[2]	2/5	2/2	1/0	0/8	0/0	2/0	2/5	0/2	0/0	2/1	2/2	
Total	23	7	4	1	8	0	2	7	2	0	3	4	61

[1] - Numbers of GOEA observed inside point count plot/outside point count plot
[2] - Data includes several GOEA that were feeding on a carcass of what appeared to be a dead animal inside the P-01 boundaries.

Project Footprint/Valley Floor Conservation Lands

The GOEA observations in the Project Footprint/VFCL totaled 43 GOEA, with 15 observations within the point count plot boundaries and 28 observations outside the plot boundaries for the entire survey season. These observations were also categorized by their age class (Table 2). The GOEA observation on the Project Footprint/Valley Floor Conservation Lands were made up of four juveniles, three inside the point count plot boundaries and one observation outside the plot boundaries. There were two subadult GOEA observed within the point count plot boundaries and none outside. The surveys also found 14 adult GOEA observations within the Project Footprint/Valley Floor Conservation Lands areas, with 7 adults being seen inside the plot boundaries, and 7 adult GOEA observed outside the plot boundaries. Furthermore, there were 23 GOEA observations where the age class could not be

determined and were categorized as unknown (Table 2). A majority of the unknown age class observations were due to the distance between the observer and the GOEA.

The point count station with the highest number of observations of GOEA, both inside and outside the plot boundaries, was P-01 (Figure 4) with a total of 23 GOEA observations (10 inside/13 outside) (Table 2). Note that the reasons for the high number of GOEA observations at this point count station was due to numerous GOEA observed utilizing the hills of the VRCL and the hills to the west of the VRCL for perching, foraging, etc. An additional event elevated the number of GOEA observed at this point. During the second survey event (September 17-19, 2013), 7 GOEA were observed feeding on a carcass of a dead animal (i.e. cattle) during the entire point count survey period (Table 1). The point count station with the lowest number of GOEA observations during the survey season was P-06 (Figure 4) with no GOEA observed during all of the point count surveys (Table 2).

Of the 15 GOEA observations within the Project Footprint/Valley Floor Conservation Lands observed within the point count plots, over half of the observations (8 GOEA) were seen within the month of September (Table 3). As previously stated, during the second survey event (September 17-19, 2013), 7 GOEA were observed feeding on a carcass of a dead animal during the entire point count survey period. The next highest number of observations during a month was the events in October with four GOEA (Table 3). The observation numbers for the other months included two observations in January, one GOEA observation in December, and no observations of GOEA in November within the Project Footprint/Valley Floor Conservation Lands during the point count surveys (Table 3).

Table 3.Survey Event Results for Project Footprint/Valley Floor Conservation Lands

Survey Event	P-01	P-02	P-03	P-04	P-05	P-06	Total
1st (September 3 -5, 2013)	0	0	0	0	0	0	**0**
2nd (September 17-19, 2013)	7[1]	0	1	0	0	0	**8**
3rd (October 2-4, 2013)	1	0	0	0	0	0	**1**
4th (October 15-17, 2013)	1	2	0	0	0	0	**3**
5th (October 28-30, 2013)	0	0	0	0	0	0	**0**
6th (November 11-13, 2013)	0	0	0	0	0	0	**0**
7th (November 25-27, 2013)	0	0	0	0	0	0	**0**
8th (December 9-11, 2013)	0	0	1	0	0	0	**1**
9th (December 21-23, 2013)	0	0	0	0	0	0	**0**
10th (January 7-9, 2014)	1	0	0	1	0	0	**2**
11th (January 22-24, 2014)	0	0	0	0	0	0	**0**
Total	**10**	**2**	**2**	**1**	**0**	**0**	**15**

[1] - Data includes several GOEA that were feeding on a carcass of a dead animal inside the plot boundary.

Valadeao Ranch Conservation Lands

The GOEA observations in the VRCL totaled 11 GOEA with 4 observations within the point count plot boundaries and 7 observations outside the plot boundaries for the entire survey season (Table 2). These observations were also categorized by their age class. The GOEA observations on the Valadeao Ranch Conservation Lands were made up of 2 juveniles, all inside the point count plot boundaries. There were no subadult GOEA observed within the point count plot boundaries or outside the plot boundaries. The surveys also found 2 adult GOEA observations within the Valadeao Ranch Conservation Lands areas with all being seen inside the plot boundaries. Furthermore, there were 7 unknown age class observations that were observed outside the plot boundaries. The unknown age class observations were due to the distance between the observer and the GOEA.

The point count station with the highest number of observations of GOEA, both inside and outside the plot boundaries was V-02 (Figure 5) with a total of 7 GOEA observations (2 inside/5 outside) (Table 2). The point count stations with the lowest number of GOEA observations during the survey season was V-01 and V-03 (Figure 5) with 2 GOEA observations each (Table 2). V-01 had 2 GOEA observations inside the plot boundaries, and V-03 had 2 observed outside the plot boundaries (Table 2).

Of the 4 GOEA observations within the VRCL observed within the point count plots, 75% of the observations (3 GOEA) were seen within the month of September (Table 4). The next highest number of observations during a month was the events in January with 1 GOEA observation. For the months of October, November, and December, no observations of GOEA were made within the VRCL during the point count surveys (Table 4).

Table 4. Survey Event Results for Valadeao Ranch/Silver Creek Ranch Conservation Lands

Survey Event	V-01	V-02	V-03	S-01	S-02	S-03	Total
1st (September 3 -5, 2013)	2	0	0	0	0	0	2
2nd (September 17-19, 2013)	0	1	0	0	0	0	1
3rd (October 2-4, 2013)	0	0	0	0	0	0	0
4th (October 15-17, 2013)	0	0	0	0	0	0	0
5th (October 28-30, 2013)	0	0	0	0	0	1	1
6th (November 11-13, 2013)	0	0	0	0	0	0	0
7th (November 25-27, 2013)	0	0	0	0	0	0	0
8th (December 9-11, 2013)	0	0	0	0	0	0	0
9th (December 21-23, 2013)	0	0	0	0	0	0	0
10th (January 7-9, 2014)	0	1	0	0	2	0	3
11th (January 22-24, 2014)	0	0	0	0	0	1	1
Total	**2**	**2**	**0**	**0**	**2**	**2**	**8**

Silver Creek Ranch Conservation Lands

The GOEA observations in the SCRCL totaled 7 GOEA with four observations within the point count plot boundaries (Figure 6) and 3 observations outside the plot boundaries for the entire survey season. These observations were also categorized by their age class (Table 2). The GOEA observations on the SCRCL had no juvenile or subadult eagles inside or outside the point count plot boundaries. The surveys found 4 adult GOEA observations within the SCRCL areas with 3 observations inside the plot boundaries and one observation outside the plot boundaries. Furthermore, there were 3 unknown age class observations with 1 observation inside the plot boundaries and 2 observations outside the plot boundaries (Table 2). The unknown age class observations were due to the distance between the observer and the GOEA.

The point count station in the SCRCL with the highest number of observations of GOEA, both inside and outside the plot boundaries was S-03 (Figure 6) with a total of 4 GOEA observations (2 inside/2 outside) (Table 2). The point count stations with the lowest number of GOEA observations during the survey season was V-01 and V-03 (Figure 6) with 2 GOEA observations each. V-01 had 2 GOEA observations inside the plot boundaries and V-03 had 2 observed outside the plot boundaries (Table 2). The point count station with the lowest number of GOEA observations during the survey season was S-01 (Figure 2) with no GOEA observed during all of the point count surveys.

Of the 4 GOEA observations within the SCRCL observed within the point count plots, 75% of the observations (three GOEA) were seen within the month of January (Table 4). The next highest number of observations during a month was the events in October with 1 GOEA observation. For the months of September, November, and December, no observations of GOEA were made within the SCRCL during the point count surveys (Table 4).

5.2 Utilization Distribution Assessment (UDA)

Like the Point Count Survey events, the UDA Survey events occurred every other week between the weeks of September 3, 2013 until January 24, 2014 for a total of 11 survey events. Each survey event was made up of 6 UDA surveys from designated Observation Points (Figure 7) for 2 hours each. The total hours surveying for GOEA during the UDA study was 132 hours of survey time within the Project Footprint/VFCL.

The results of the UDA surveys included a total of 33 observations of GOEA (Table 5) which includes observations inside the Project Footprint/ VFCL (the UDA Study Area) and outside the UDA Study Area. Of those 33 observations, 16 GOEA observations were recorded within the UDA Study Area (Table 5) with 5 identified as adult GOEA, 3 as subadult GOEA, 4 as juvenile GOEA, and 4 birds were not able to be identified by age class (Table 6).

Table 5. Total UDA Observations

Date of Observation	UDA Observation Point	Observation Location - In or Out of UDA Study Area	Age Class	Flight Height (feet)	Observation Minutes
9/4/2013	P-06	In	SA	150	5
9/17/2013[1]	P-01	In	UK	0[2]	10
9/17/2013	P-01	In	UK	0	120
9/17/2013	P-01	In	AD	0	80
9/17/2013	P-01	Out	UKN	200-300	16
9/17/2013	P-01	Out	UKN	200-300	16
9/17/2013	P-01	Out	UKN	200-300	16
9/17/2013	P-01	In	JUV	0	52
9/17/2013	P-01	Out	UKN	350	11
9/17/2013	P-01	In	UKN	0	15
9/17/2013	P-01	In	UKN	0	8
9/17/2013	P-02	In	JUV	NR	6
9/18/2013	P-05	In	AD	120	4
9/18/2013	P-06	Out	UKN	100	13
10/3/2013	P-03	In	AD	150-300	2
10/3/2013	P-03	Out	JUV	150-300	2
10/3/2013	P-03	Out	AD	150-300	2
10/3/2013	P-05	Out	JUV	800	2
10/16/2013	P-03	Out	AD	50-200	6
10/16/2013	P-03	Out	AD	50-200	6
10/16/2013	P-03	Out	UKN	150-200	3
10/16/2013	P-03	Out	UKN	150-200	3
10/16/2013	P-04	In	JUV	400 - 800	7
10/28/2013	P-01	Out	UKN	250	1
10/30/2013	P-02	In	SA	200 - 1,000	13
11/12/2013	P-06	In	AD	150	3
11/12/2013	P-06	In	AD	100	3
12/9/2013	P-02	Out	UK	1100	6
12/21/2013	P-04	Out	JUV	NR	19
12/21/2013	P-04	Out	JUV	NR	30
12/21/2013	P-04	Out	AD	NR	5
1/8/2014	P-01	In	SA	0	120
1/22/2014	P-02	In	JUV	200	4

AD – Adult, SA – Subadult, JUV – Juvenile, UKN – Unknown age, NG – Not Recorded

[1] - Data includes several GOEA that were feeding on a carcass of what appeared to be a dead animal inside the P-01 boundaries on September 17, 2013.

[2] – 0 feet flight height indicates perched on ground or rock.

Table 6. UDA Survey Overview by Age Class/Survey Point within Study Area

Age Class	P-01	P-02	P-03	P-04	P-05	P-06	Totals by Age Class
Juvenile	1	2	0	1	0	0	4
Sub-Adult	1	1	0	0	0	1	3
Adult	1	0	1	0	1	2	5
Unknown	4	0	0	0	0	0	4
Total per Observation Station	7[1]	3	1	1	1	3	

[1] - Data includes several GOEA that were feeding on a carcass of what appeared to be a dead cow inside the P-01 boundaries.

Table 5 indicates the majority of the GOEA observations came from outside the UDA Study Area near Observation Points P-01 and P-03 (Figure 7). This is due to numerous sightings of GOEA observed utilizing the hills of the western portion of the VRCL and the hills beyond the western portion of the VRCL for perching, foraging, etc.

During the UDA surveys there were 452 observation minutes of GOEA inside the UDA Study Area and 157 observation minutes of GOEA outside the UDA Study Area for a total of 609 observation minutes for the entire study period. Note that totals for the UDA study included several GOEA that were observed feeding on a carcass of a dead animal (cattle) inside the UDA Study Area near P-01 within Grid Cell 79 (Figure 7) and remained on the carcass a majority of the UDA survey event on September 17, 2013. These observations made up 63% (285 observation minutes) of the observation time for GOEA for the UDA Study. In addition, the observation time (120 observation minutes) for a subadult eagle noted on January 8, 2014, that perched on the hillside for the entire UDA survey period near P-01, make up 90% of the observation minutes made during the entire study within the UDA Study Area.

The average observed flight height noted during the study, excluding perched GOEA, for all observations of GOEA made during the UDA surveys, was approximately 300 feet above ground level. The average flight height for the GOEA observations noted inside the UDA Study Area was similar with an average flight above ground level of approximately 270 feet (Table 5).

Lastly, due to the small size of the data set, only 16 GOEA flight observations that utilized 57 grid cells within the UDA Study Area (Figure 8), a standard kernel analyses was unable to be utilized. The data was analyzed by calculating the number of flights intersecting an individual grid cell (Figure 8). With exception of the several GOEA observed feeding on a carcass in Grid Cell 79, the cells noted to be utilized by GOEA within the Study Area indicates that the GOEA are not using the southwest and south central areas of the Project Footprint and VFCL. They did not frequent the northern portion of the Project Footprint/VFCL, as well. However, Figure 8 does show that the GOEA are utilizing the hills in the VRCL on both the eastern and western sides of the Study Area for perching, foraging, etc. This area's usage was also noted during the point count surveys.

6.0 Conclusion

This report provides the findings of the 2013/2014 Phase II site-specific surveys (USFWS 2013) for GOEA for the Panoche Valley Solar Project. Point Count and UDA studies were completed to provide baseline data on GOEA occurrence, frequency, and behavior to present results of spatial and temporal site use and potential risk based on time spent within the Proposed Project area, which will assist in the preparation of the BBCS and the ECP.

The results of the point count surveys indicated that 93% of the GOEA observations made within the Project Footprint and VFCL point count station boundaries were from the western point count stations, which are in close proximity to the hills located within the western portion of the VRCL (Figure 4). Of the total 15 GOEA observations made during the entire study within point count plots, approximately 47% of those observations were seen during a single survey event (September 17-19, 2013), where 7 GOEA were observed feeding on a carcass of a dead animal within the proposed Project Footprint. This indicates that unless there is an attractant (i.e. food) found within the Project Footprint and the VFCL, that GOEA usage is nominal.

With exception of the several GOEA observed feeding on a carcass in the northeast corner of the UDA Study area, the cells noted to be utilized by GOEA within the UDA Study Area indicates that the GOEA are not using the northern, southwest, and south central areas of the Project Footprint and VFCL. The UDA Study does show, as seen in the point count surveys, that the GOEA are utilizing the hills in the VRCL on both the eastern and western sides of the Study Area for perching, foraging, etc. In addition, the study indicated that flight heights noted inside the UDA Study Area averaged approximately 270 feet with exception of the GOEA noted feeding on the carcass during a September survey event. This shows that the eagles mostly are flying across or through the Panoche Valley (i.e. Project Footprint and VFCL) to other habitat to forage or perch.

7.0 References

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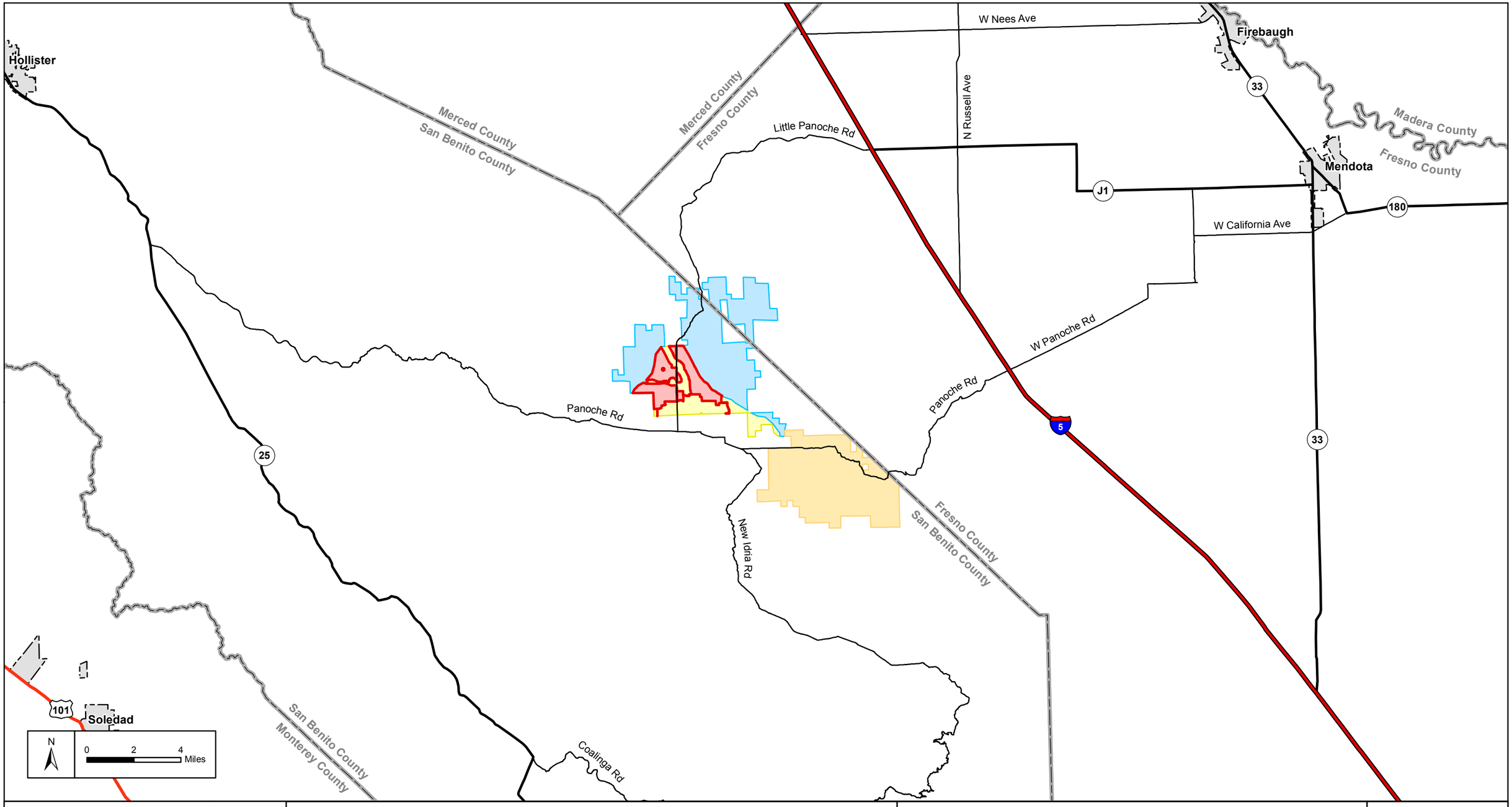
FIGURES

Figure 1: Project Location Map



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Legend

- Project Footprint
- Valley Floor Conservation Lands
- Valadeao Ranch Conservation Lands
- Silver Creek Ranch Conservation Lands
- City

Panoche Valley Solar Project

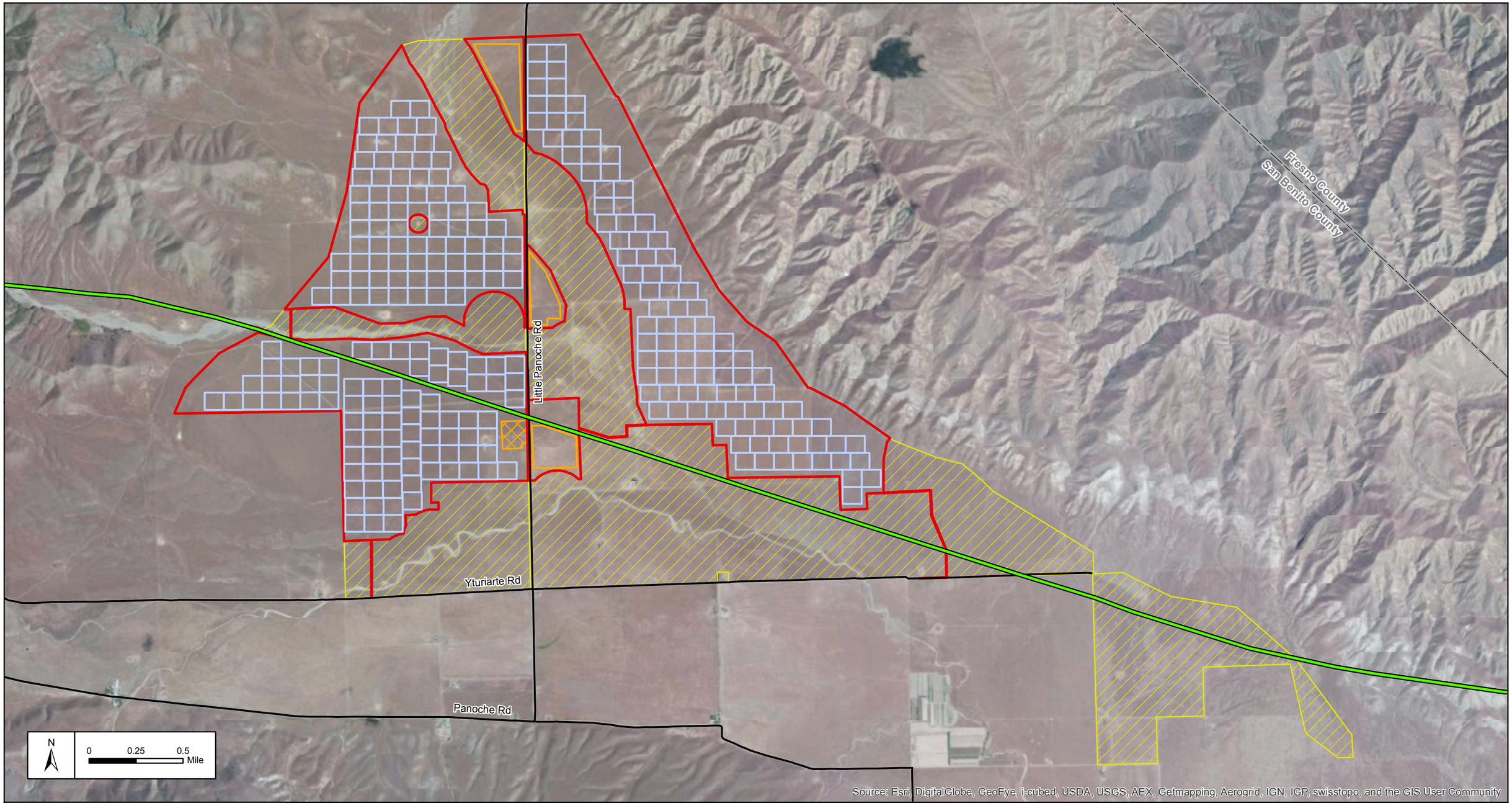
Project Location

FIGURE

1

JH 2014-03-18

Figure 2: Project Layout



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Legend

- Project Footprint
- Valley Floor Conservation Lands
- Proposed Panel Block
- Existing Transmission Line
- Project Substation
- Laydown Yard

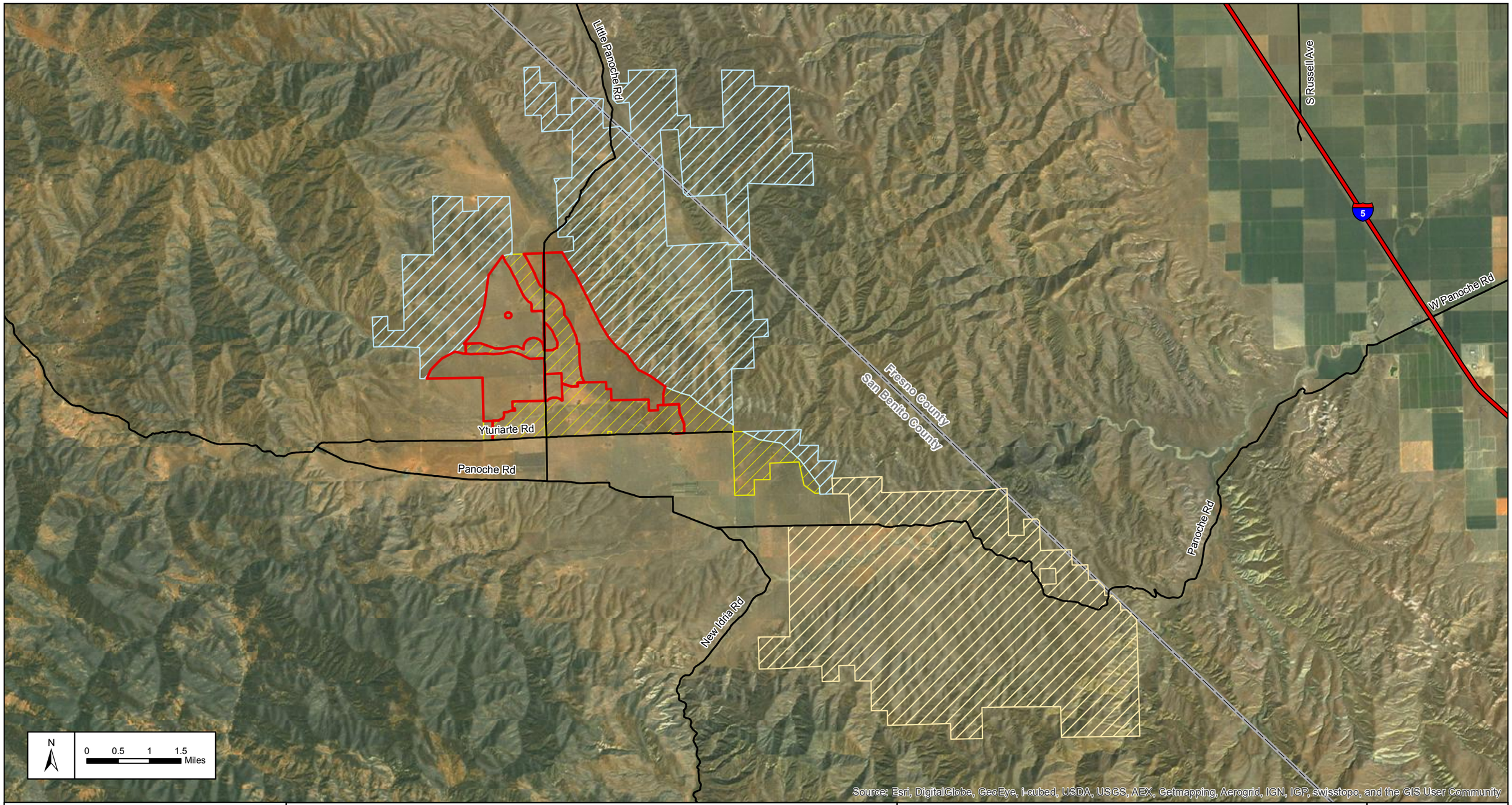
Panoche Valley Solar Project

Proposed Layout

FIGURE 2

JH 2014-03-17

Figure 3: Project Footprint and Conservation Lands



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- Valley Floor Conservation Lands
- Valadeao Ranch Conservation Lands
- Silver Creek Ranch Conservation Lands

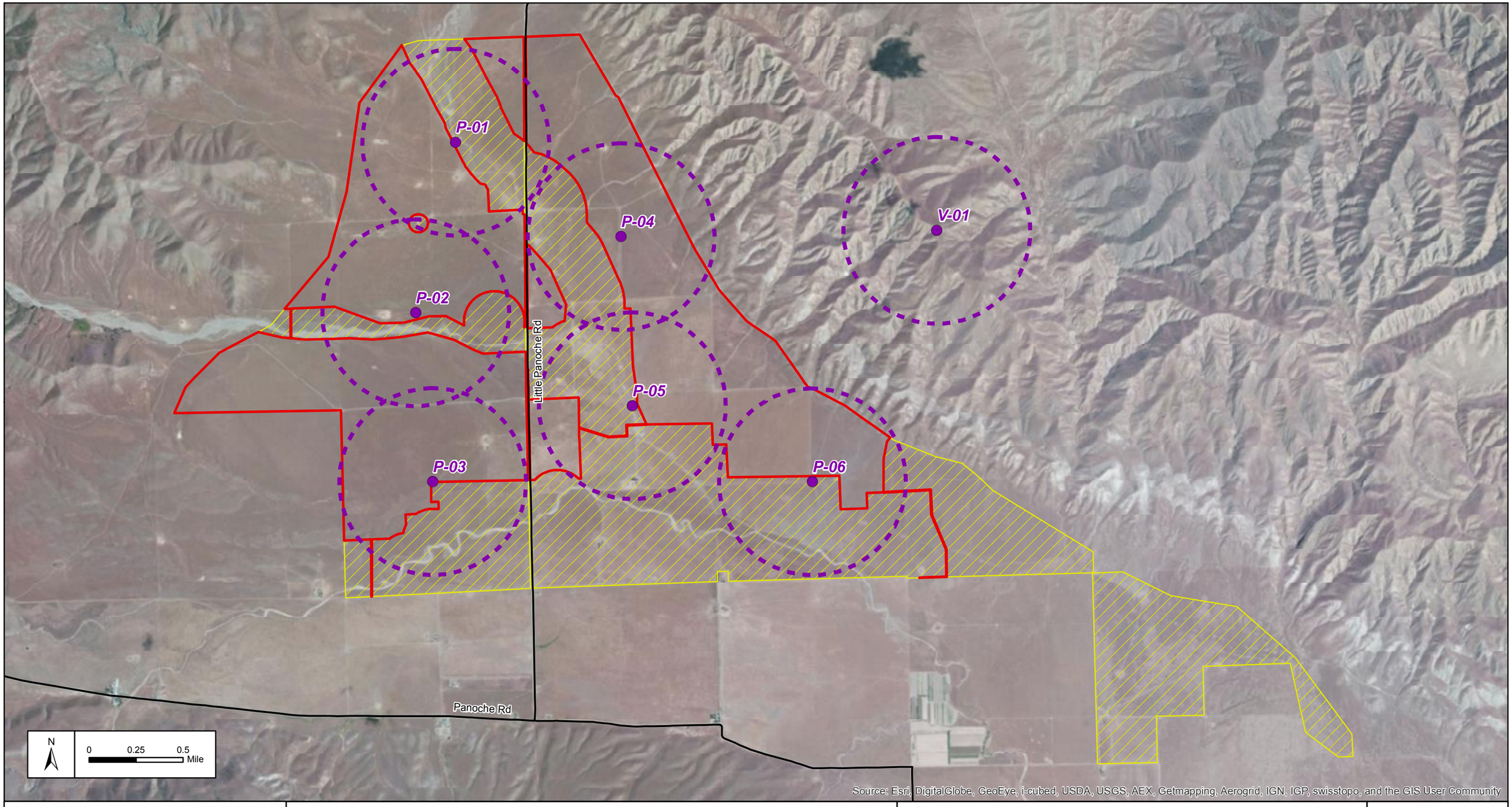
Panoche Valley Solar Project

Project Footprint and Conservation Lands

FIGURE 3

JH 2014-03-18

Figure 4: Project Footprint and Valley Floor Conservation Lands Point Count Stations



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Legend

- Point Count Station
- 800-meter Observation Area
- Project Footprint
- Valley Floor Conservation Lands

Panoche Valley Solar Project

Point Count Stations

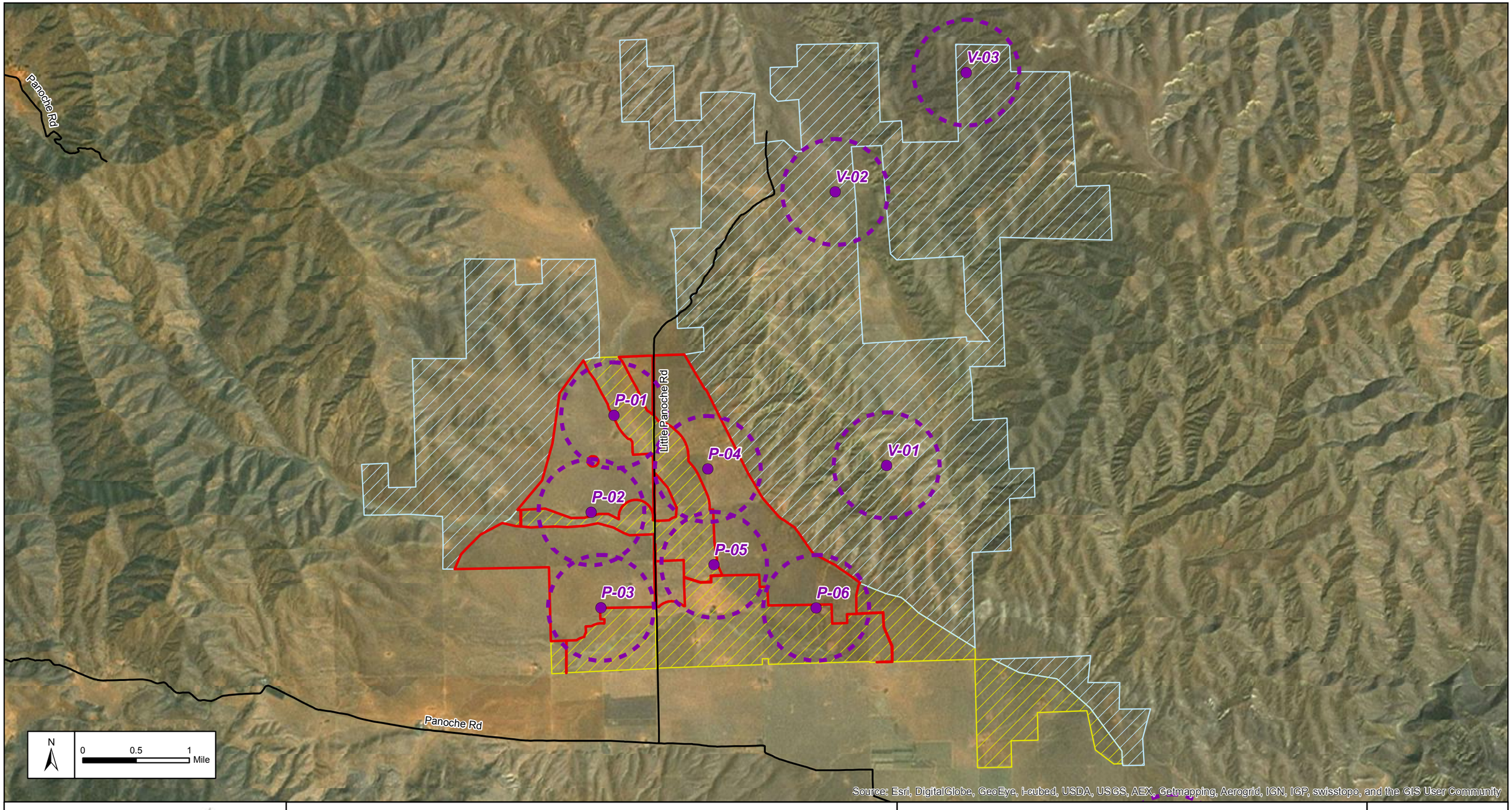
Project Footprint and Valley Floor Conservation Lands

FIGURE

4

JH 2014-03-17

Figure 5: Valadeao Ranch Conservation Lands Point Count Stations



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Legend

- Point Count Station
- 800-meter Observation Area
- Project Footprint
- Valadeao Ranch Conservation Lands
- Valley Floor Conservation Lands

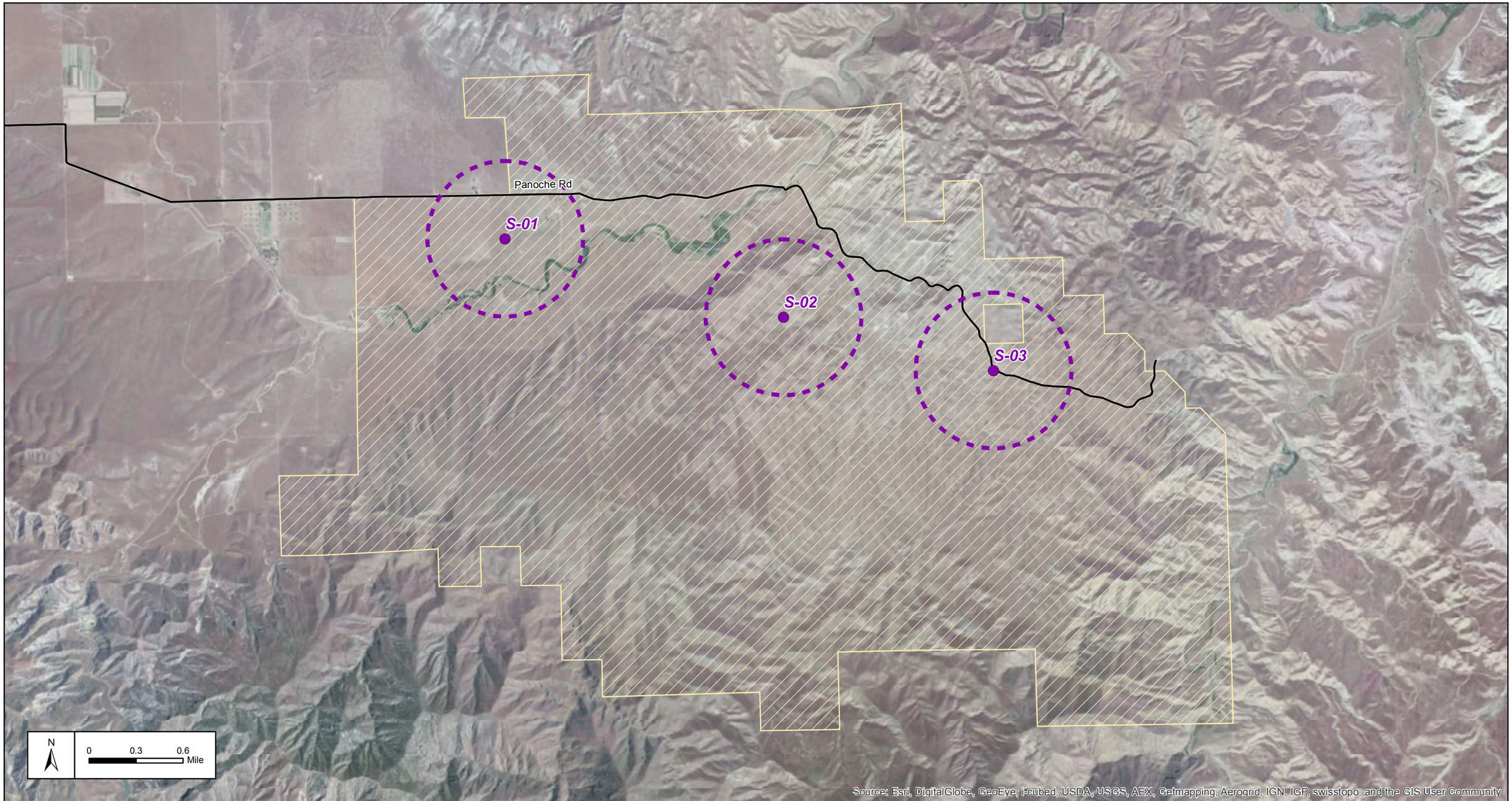
Panoche Valley Solar Project

Point Count Stations
Valadeao Ranch Conservation Lands

FIGURE
5

JH 2014-03-17

Figure 6: Silver Creek Ranch Conservation Lands Point Count Stations



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Legend

- Point Count Station
- 800-meter Observation Area
- Silver Creek Ranch Conservation Lands

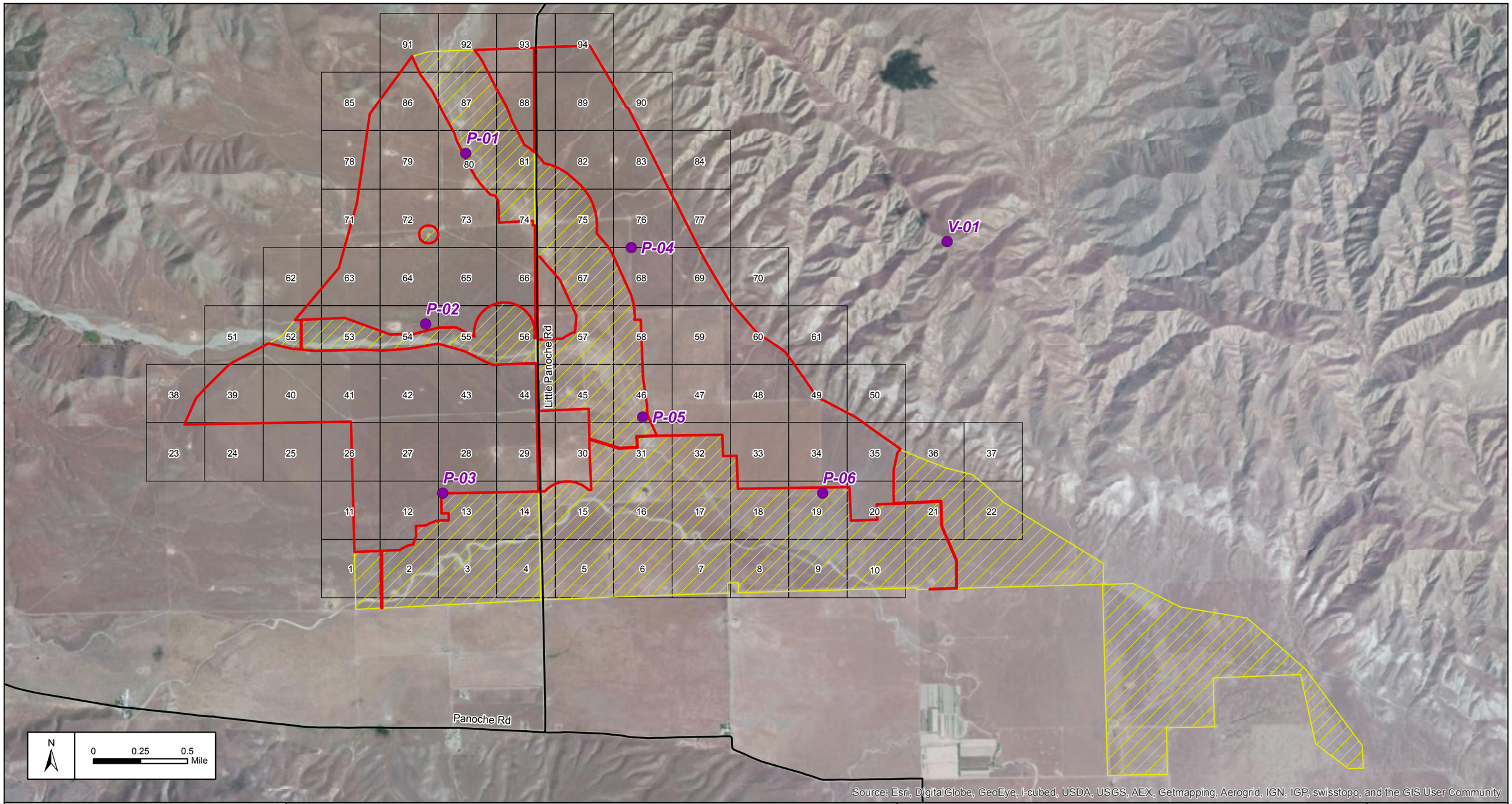
Panoche Valley Solar Project

Point Count Stations
Silver Creek Ranch Conservation Lands

FIGURE
6

JH 2014-03-17

Figure 7: Utilization Distribution Assessment Observation Points



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Legend

- UDA Observation Point
- Project Footprint
- Valley Floor Conservation Lands
- 0.5 x 0.5 Kilometer Grid Cell

Panoche Valley Solar Project

UDA Observation Points

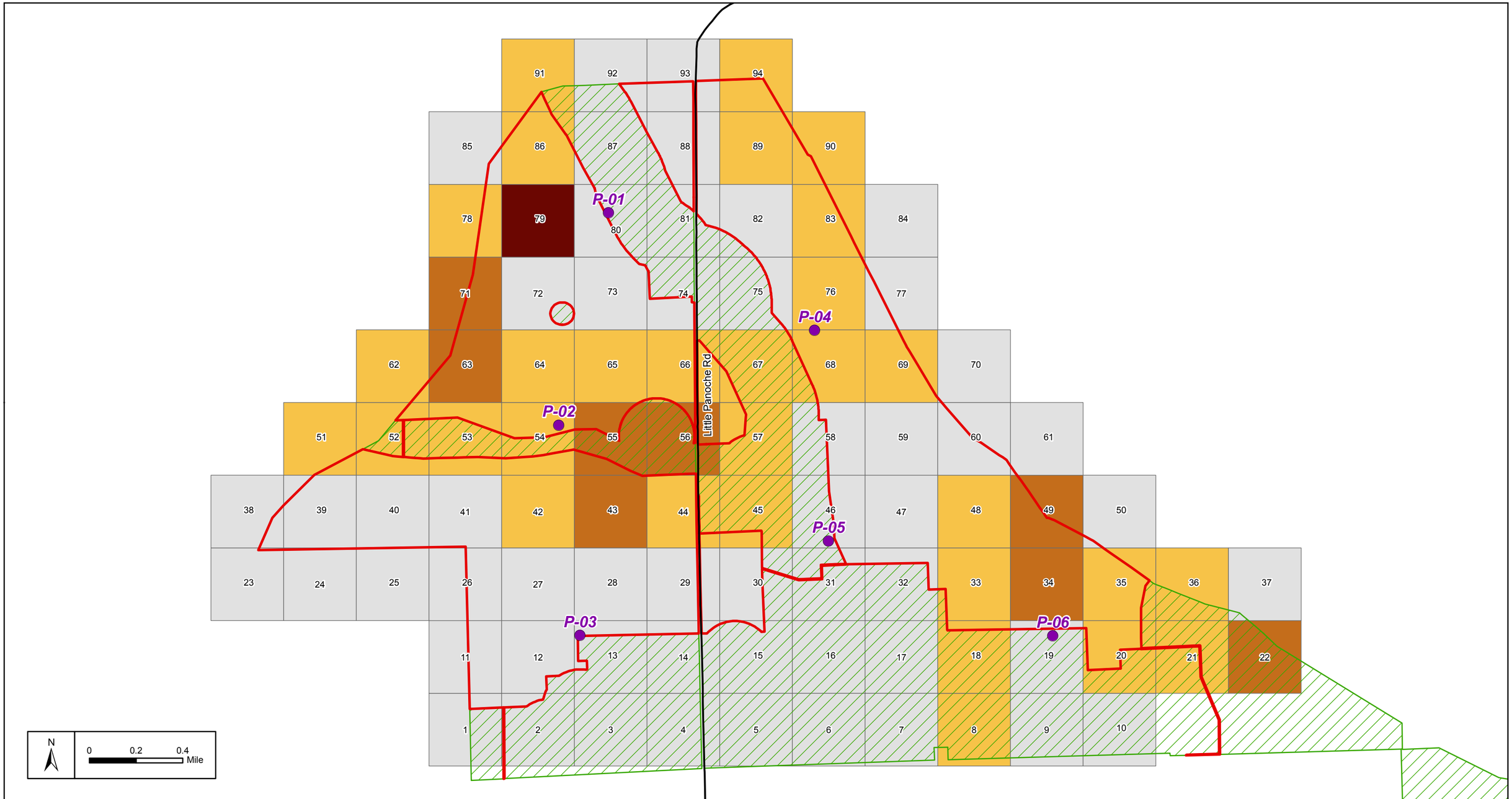
Project Footprint and Valley Floor Conservation Lands

FIGURE

7

JH 2014-03-17

Figure 8: Utilization Distribution Assessment Study Results



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Legend

- UDA Observation Point
- Project Footprint
- Valley Floor Conservation Lands

Number of Times a Grid Cell was Utilized by GOEA

0	2 - 3
1	4 - 7

Panoche Valley Solar Project

UDA Study Results

FIGURE

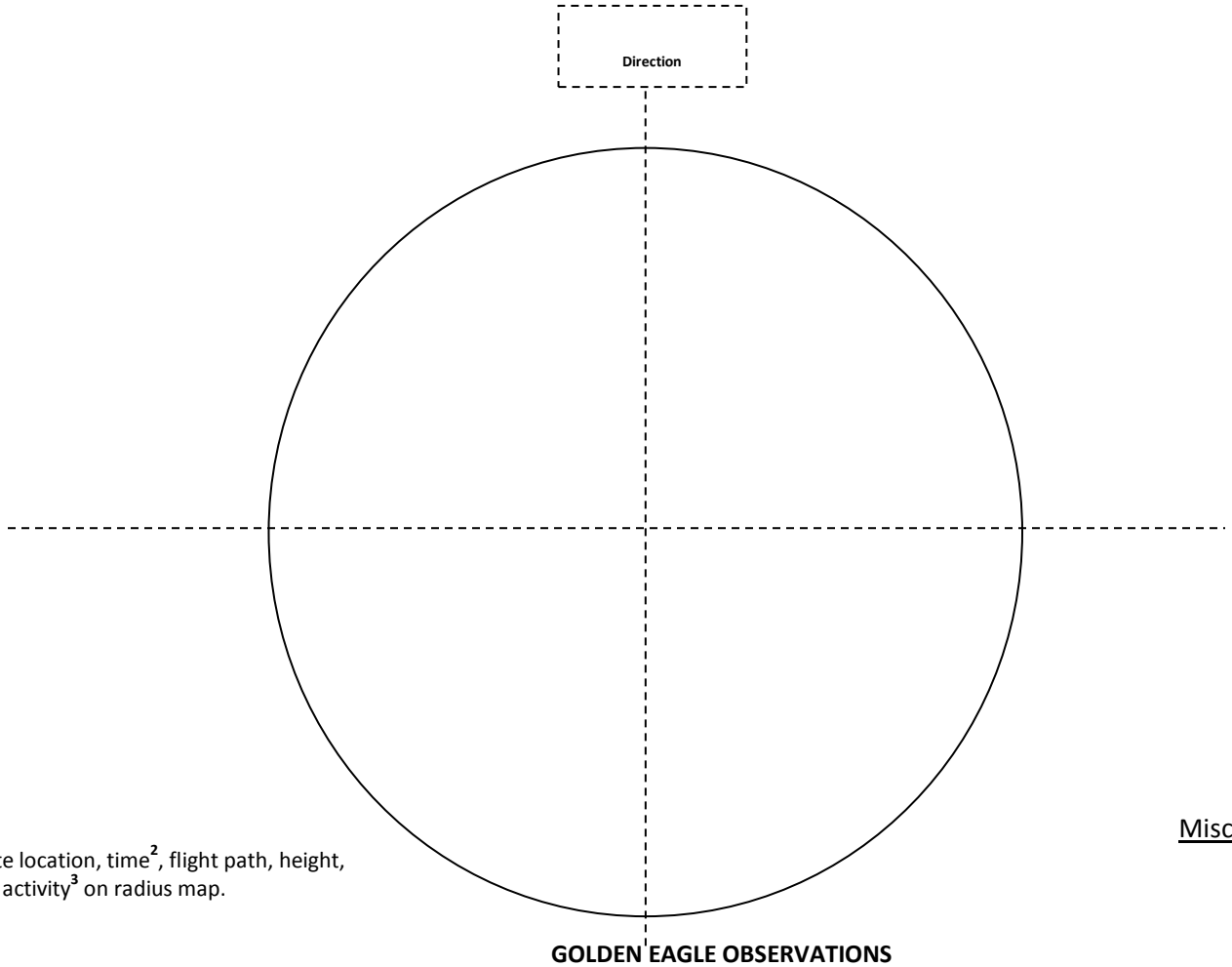
8

JH 2014-03-17

APPENDICES

APPENDIX A
FIELD FORMS

Panoche Valley Solar Golden Eagle 800 Meter Point Count Survey			
Point Count Station Number		Start Time	Temp Start °F
Date (mm/dd/yy)		End Time	Temp End °F
Observer(s)	Precip. (amt. last 24hr)		Visibility (% clear)[1]
Wind (mph/direction)	Cloud Cover (% cloudy)		



Misc. Obs

Indicate location, time[2], flight path, height, and activity[3] on radius map.

GOLDEN EAGLE OBSERVATIONS

GOEA #	Age Class[4]	Obs Time Start/End	Eagle Minutes	Description of Observation/Comments

[1]Percent clear within 800 meter and 200 meter vertical

[2]Prevalent behavior noted at one minute intervals

[3]Activity - PE (Perched), SO (Linear Soaring/Gliding), CS (Circle soaring), FL (Flapping), HU (Hunting), HO (Hovering/Kiting), and OT (Other).

[4]Age Class – JUV (Juvenile), SA (Sub-adult), and AD (Adult)

UDA Point #: _____ Date: _____

Start Time: _____ End Time: _____

Draw Flight Path on Grid Map: ——— ——— →

Record1-Minute Interval Description: ● -Observation Time
-Activity*
-Estimated Elevation

Example: ——— ——— → ● 1410
GL
150 ft
——— ——— →

*See opposite side for Activity Code

P-01 P-02 P-03 P-04 P-05 P-06

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9/11/2013

Legend

- Approximate Project Boundary
- Valley Floor Conservation Lands
- Survey Point Location
- 800 meter Observation Area

Duke Energy Renewables
Panoche Valley Solar Project

Golden Eagle Utilization Distribution Assessment (UDA) Grid Map

N

0 1,000 2,000
Feet

Panoche Valley Solar Golden Eagle Utilization Distribution Assessment (UDA)			
UDA Point Number	**Start Time:**	**Temp Start: °F**	**Wind (mph/direction)**
Date (mm/dd/yy)	**End Time:**	**Temp End: °F**	**Observer(s)**

GOLDEN EAGLE OBSERVATIONS

GOEA #	Age Class[1]	Obs Time Start/End	Eagle Minutes	Description of Observation[2]/Comments[3]

Indicate location, time, flight path, estimated height, and activity[2] on grid map (opposite side).

KEY

[1]Age Class – JUV (Juvenile), SA (Sub-adult), and AD (Adult)

[2]Includes prevalent behavior/activity noted at one minute intervals. Activity description includes - PE (Perched), SO (Linear Soaring/Gliding), CS (Circle Soaring), FL (Flapping), HU (Hunting), HO (Hovering/Kiting), and OT (Other).

[3]Include grid numbers utilized from attached grid map

APPENDIX B
COMPLETED FIELD FORMS
ELECTRONIC FORMAT

APPENDIX C
MISCELLANEOUS GOLDEN EAGLE OBSERVATIONS

Miscellaneous Golden Eagle Observations during other Surveys

Date	GOEA Observations
5/13/2013	1
5/25/2013	1
5/26/2013	2
5/28/2013	1
5/29/2013	1
6/17/2013	1
6/22/2013	1
7/6/2013	1
7/8/2013	1
8/4/2013	1
8/9/2013	2
8/29/2013	1
9/5/2013	3
9/7/2013	2

APPENDIX D
WEATHER DATA

Survey Date	Weather Conditions
September 3, 2013	Temp 83-95° Fahrenheit (F) Wind 6.5-10.4 miles per hour (mph) N Cloud Cover 25% Precipitation 0 inches (in) Visibility 100%
September 4, 2013	Temp 66-97°F Wind 1.5-6.6 mph N Cloud Cover 0% Precipitation 0 in. Visibility 100%
September 5, 2013	Temp 70-96°F Wind 6.1 – 7.4 mph E Cloud Cover 100% Precipitation 0 in. Visibility 95%
September 17, 2013	Temp 61-72.3°F Wind 15.4 mph W Cloud Cover 0% Precipitation 0 in. Visibility 100%
September 18, 2013	Temp 64-79°F Wind 7.9-13.2 mph NNW Cloud Cover 0% Precipitation 0 in. Visibility 100%
September 19, 2013	Temp 64-93.5°F Wind 0.6 mph N Cloud Cover 0% Precipitation 0 in. Visibility 100%
October 2, 2013	Temp 59-70°F Wind 3.2 mph SW Cloud Cover 10% Precipitation 0 in. Visibility 100%
October 3, 2013	Temp 52-66°F Wind 1-12.7 mph S Cloud Cover 0% Precipitation 0 in.

Survey Date	Weather Conditions
	Visibility 100%
October 4, 2013	Temp 53-68°F Wind 1.4 mph E Cloud Cover 0% Precipitation 0 in. Visibility 100%
October 15, 2013	Temp 52-84°F Wind 1.1 – 5.9 mph S Cloud Cover 0% Precipitation 0 in. Visibility 100%
October 16, 2013	Temp 51.5-85°F Wind 0-5 mph S Cloud Cover 0% Precipitation 0 in. Visibility 100%
October 17, 1913	Temp 77-90°F Wind 1.1-5 mph S Cloud Cover 0% Precipitation 0 in. Visibility 100%
October 28, 2013	Temp 48-62°F Wind 8.9-19.5 mph W Cloud Cover 35% Precipitation Trace Visibility 100%
October 29, 2013	Temp 53.4-75°F Wind 3.6-6 mph NW Cloud Cover 98% Precipitation 0 in. Visibility 90%
October 30, 2013	Temp 42-67°F Wind 0.9 -7 mph S Cloud Cover 10% Precipitation 0 in. Visibility 100%
November 12, 2013	Temp 58-64.4°F

Survey Date	Weather Conditions
	Wind 1-6 mph N Cloud Cover 80% Precipitation Trace Visibility 100%
November 13, 2013	Temp 49-74.6°F Wind 2-8.1 mph N Cloud Cover 5% Precipitation Trace Visibility 100%
November 14, 2013	Temp 52-76°F Wind 1 -5 mph NW Cloud Cover 15% Precipitation 0 in. Visibility 100%
November 25, 2013	Temp 32-73°F Wind 0.8-3.6 mph SE Cloud Cover 0% Precipitation 0 in. Visibility 80%
November 26, 2013	Temp 46-66°F Wind 1-4 E Cloud Cover 90% Precipitation 0 in. Visibility 100%
November 27, 2013	Temp 41-64°F Wind 1 mph W Cloud Cover 35% Precipitation 0 in. Visibility 100%
December 9, 2013	Temp 20-50.3°F Wind 1-1.7 mph SE Cloud Cover 0% Precipitation 0 in Visibility 100%
December 10, 2013	Temp 27-51.6°F Wind 1-5 mph NE Cloud Cover 0%

Survey Date	Weather Conditions
	Precipitation 0 in Visibility 100%
December 11, 2013	Temp 31.4-53°F Wind 0.9-2.7 mph W Cloud Cover 0% Precipitation 0 in Visibility 100%
December 21, 2013	Temp 33-40°F Wind 2.5- 7.5 mph W Cloud Cover 0% Precipitation 0 in Visibility 100%
December 22, 2013	Temp 30-49°F Wind 0.6-8.2 mph N Cloud Cover 0% Precipitation 0 in Visibility 100%
December 23, 2013	Temp 43-60°F Wind 0.6-2 mph W Cloud Cover 0% Precipitation 0 in Visibility 100%
January 7, 2014	Temp 39-69°F Wind 1-5 mph E Cloud Cover 75% Precipitation 0 in. Visibility 100%
January 8, 2014	Temp 36-71°F Wind 0-5 mph S Cloud Cover 50% Precipitation 0 in. Visibility 100%
January 9, 2014	Temp 41-47°F Wind 0-5 mph N Cloud Cover 50% Precipitation 0 in. Visibility 100%

Survey Date	Weather Conditions
January 22, 2014	Temp 38-66°F Wind 1-4 mph N Cloud Cover 40% Precipitation 0 in. Visibility 100%
January 23, 2014	Temp 47-68°F Wind 3-6 mph NW Cloud Cover 5% Precipitation 0 in. Visibility 100%
January 24, 2014	Temp 48-65°F Wind 0-10 mph S Cloud Cover 90% Precipitation 0 in. Visibility 100%

APPENDIX E
PHOTOGRAPHS

Photo 1. General habitat view of Valley Floor Conservation Lands (VFCL) and Project Site near P-01 looking southwest.

Photo 2. General habitat view of Project Footprint in vicinity of P-03 looking northeast toward P-04 and P-05.

Photo 3. General habitat view of Project Footprint in vicinity of P-03 looking southwest.

Photo 4. General view from Little Panoche Road toward P-05 with the Valadeao Ranch in background looking east/northeast.

Photo 5. General view of Project Footprint and VFCL looking west toward P-02 and the western Valadeao Ranch property.

Photo 6. General view of Project Footprint and VFCL looking southwest from V-01 on the eastern Valadeao Ranch property.

Photo 7. General habitat view of eastern Valadeao Ranch property looking northeast from V-01.

Photo 8. General habitat view of eastern Valadeao Ranch property looking north/northeast from V-01.

Photo 9. General habitat view of eastern Valadeao Ranch property looking east near V-02.

Photo 10. General habitat view of eastern Valadeao Ranch property near V-02.

Photo 11. General habitat view of the Silver Creek Ranch property looking northwest back towards S-01.

Photo 12. General habitat view of the Silver Creek Ranch property near S-02.

Photo 13. Additional habitat view of the Silver Creek Ranch property near S-02.