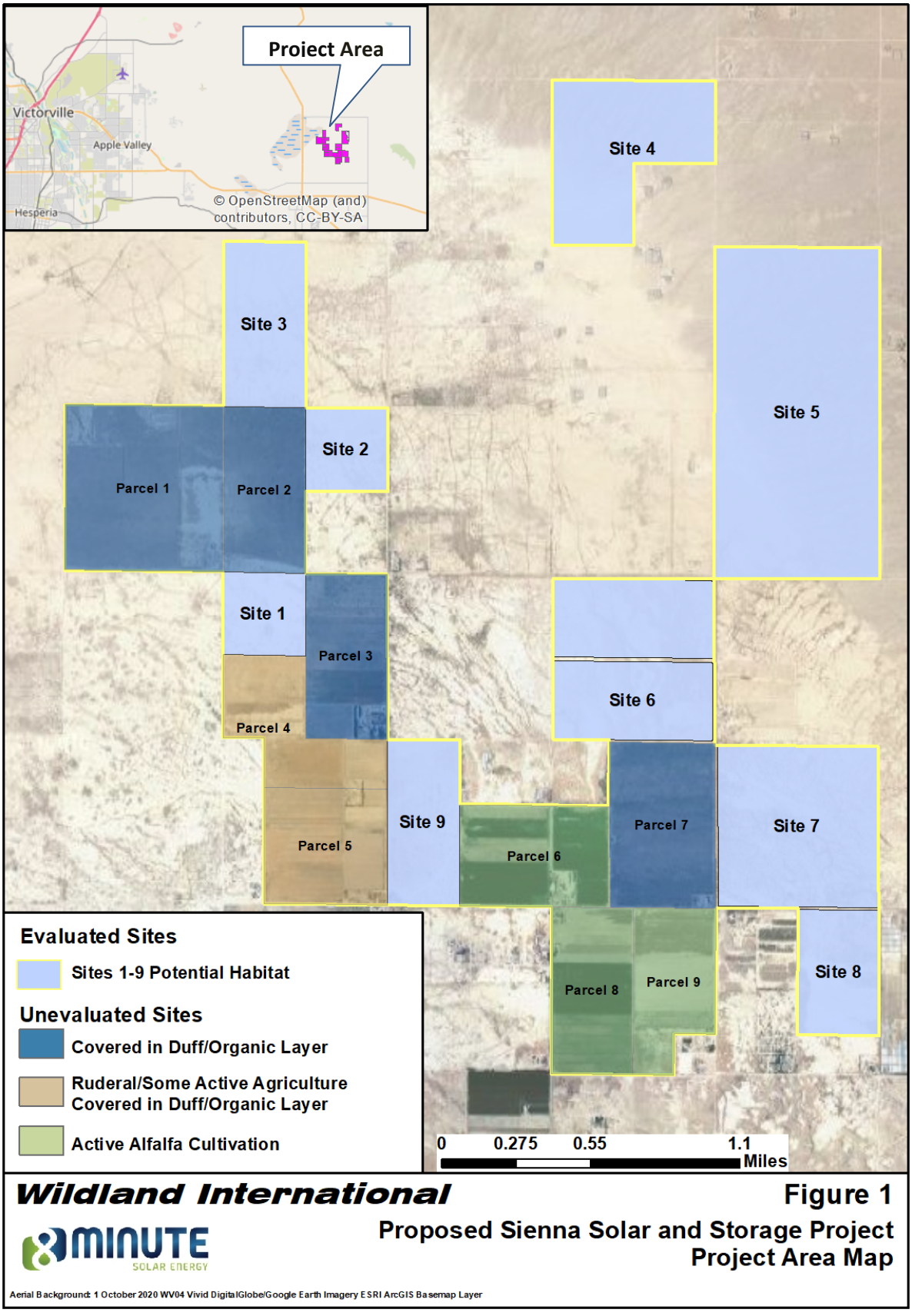

Wildland International

Figure 1

Proposed Sienna Solar and Storage Project
Project Area Map

MINUTE SOLAR ENERGY

Aerial Background: 1 October 2020 WV04 Vivid DigitalGlobe/Google Earth Imagery ESRI ArcGIS Basemap Layer

Table 1 – Evaluated Sites

Evaluated Sites	APNs	Acreage*	Vegetation Community	Soil Type
Site 1	**045-206-221**	40.2	Modified *Atriplex confertifolia* Shrubland Alliance	Bousic and Peterman Clays
Site 2	**045-207-125**	40.2	Modified *Atriplex confertifolia* Shrubland Alliance	Bousic and Peterman Clays
Site 3	**045-207-119, 045-207-120**	80.41	Modified *Atriplex confertifolia* Shrubland Alliance	Bousic and Peterman Clays and Playa
Site 4	**045-239-108, 045-239-109**	119.93	*Atriplex canescens* Shrubland Alliance	Bousic Clay, Joshua Loam, Kimberlina Fine Loamy Sand, Bryman Fine Sands
Site 5	**045-236-146, 045-236-147, 045-236-148**	322.63	*Larrea tridentata Shrubland* and *Atriplex polycarpa* Shrubland Alliance Transition	Kimberlina Fine Loamy Sand, Glendale Variant Silt Loam, Joshua Loam
Site 6	**045-211-218, 045-211-219**	138.19	*Atriplex polycarpa* Shrubland Alliance	Bousic and Peterman Clays, Glendale Variant Silt Loam, and Dune
Site 7	**045-211-317**	151.40	*Atriplex polycarpa* Shrubland Alliance	Glendale Variant Silt Loam
Site 8	**045-212-138, 045-212-139, 045-212-148, 045-212-152**	61.03	*Atriplex polycarpa* Shrubland Alliance	Glendale Variant Silt Loam
Site 9	**045-211-220**	70.20	*Atriplex polycarpa* Shrubland Alliance	Bousic and Peterman Clays

***Any discrepancies in total acreage are attributable to County easements and property boundaries within roadways.**

Table 2 – Unevaluated Parcels

Unevaluated Parcels	APNs	Acreage	Land Use
Parcel 1	**045-207-111**	154.93	No Habitat -Ruderal, Former Agriculture, Covered in Duff/Organic Debris
Parcel 2	**045-207-110**	80.41	No Habitat -Ruderal, Former Agriculture, Covered in Duff/Organic Debris
Parcel 3	**045-206-223**	80.44	No Habitat -Ruderal, Former Agriculture, Covered in Duff/Organic Debris
Parcel 4	**045-206-222**	76.43	No Habitat -Ruderal, Covered in Duff/Organic Debris, Some Active Agriculture
Parcel 5	**045-206-224**	84.47	No Habitat -Ruderal, Covered in Duff/Organic Debris, Some Active Agriculture
Parcel 6	**045-211-224**	89.90	No Habitat -Active Alfalfa Field
Parcel 7	**045-211-225**	103.45	No Habitat -Ruderal, Former Agriculture, Covered in Duff/Organic Debris
Parcel 8	**045-212-112**	80.72	No Habitat -Active Alfalfa Field
Parcel 9	**045-212-142**	70.84	No Habitat -Active Alfalfa Field

2.0 Environmental Setting

The Sienna Solar Project is located at the south and eastern margins of the Lucerne Dry Lake playa in the Lucerne Valley and White Horse Mountain quadrangles and is contained entirely within Township 5 North and Range 1 East. The Project Area is a consolidated contiguous mixture of residential properties, ruderal/fallow properties, undeveloped playa and desert scrub communities, and agricultural land that includes alfalfa and jojoba farms and large-scale hemp growing operations. As of 2022, approximately 241 acres of the broader project is currently under cultivation for alfalfa. In addition, approximately 580 acres of the Project Area is under fallow management covered by a duff layer as wind protection or weed barrier. The remaining acreage is barren/formerly tilled or is native desert scrub or playa habitat totaling approximately 1,033 acres. Native habitat communities range from low growing shadscale (*Atriplex confertifolia*) at the playa margins to larger allscale (*Atriplex polycarpa*) communities (collectively saltbush scrub) for most of the Project Area as well as open playa. There is a minor creosote bush (*Larrea tridentata*) scrub community that is identified as "transitional" on the eastern edge of the Project Area encompassed by a 320-acre parcel (Site 5). One extant parcel (Site 4) exists at the northern most portion of the Project Area and this is an "L" shaped 120-acre parcel positioned at the corner of Lincoln Avenue and Smoke Bush Road. Terrain throughout the Project Area was mainly flat to gently sloping with some minor rolling terrain.

The pedons present were mainly Bousic and Peterman Clays for much of the playa and near playa areas and Joshua and Kimberlina sandy loams in the north and east (Sites 4 and 5). Sites 7, 8 and a portion of the southern alfalfa fields were Glendale variant silty loams. Table 3 shows the soil types identified with in the Project Area and these are mapped on Figure 2 in Appendix A.

Table 3 Soil Mapping Units within the Sienna Solar and Storage Project Area

Soil Mapping Unit	Soil Mapping Unit Name	Percent Slopes	Elevation Where Found (ft)	Landform	Parent Material
135	JOSHUA LOAM	2-5	2,600 to 3,000 feet	Fan remnants	Alluvium derived from mixed sources
156	PLAYAS	0-1	100 to 5,000 feet	Playas	Lacustrine deposits derived from mixed sources
154	PETERMAN CLAY	0-2	2,800 to 3,000 feet	Fan skirts	Fine-textured alluvium derived from mixed sources
140	LAVIC LOAMY FINE SAND	0-5	2,800 to 3,100 feet	Fan skirts, fan aprons	Alluvium derived from mixed sources
137	KIMBERLINA LOAMY FINE SAND	0-2	120 to 1,000 feet	Fan skirts, fan aprons	Alluvium derived from mixed sources
125	GLENDALE VARIANT SILT LOAM, SALINE-ALKALI	0-2	2,850 to 2,950 feet	Lake plains	Alluvium derived from mixed sources
123	DUNE	0-10	0 to 3000 feet	Dunes	Aeolian deposits derived from mixed sources
104	BOUSIC CLAY	0-1	2,850 to 2,900 feet	Lake plains	Alluvium derived from mixed sources
105	BRYMAN LOAMY FINE SAND	0-2	2,800 to 3,200 feet	Fan remnants	Alluvium derived from granite sources

Human use/disturbance of the broader Project Area is considerable with active and abandoned hemp growing operations, active agriculture, temporary worker housing resulting in a significant amount of fugitive trash and debris scattered across the landscape. There are many named roads in a grid pattern in the area. Of particular note, were the number of feral and domestic canines roaming the general area and the large number of excavations of lizard and small mammal burrows which as almost ubiquitous on every site evaluated.

The following sections include detailed descriptions of each of the nine Evaluated Sites. Photos showing typical vegetative cover and habitat are included in Appendix B - Site Photos.

2.1 Site 1 – 40.20 acres APN 045-206-221

Site 1 is located in the western portion of the broader Project Area in Section 30, T5N, R1E, of the Lucerne Valley Quadrangle, approximately 0.25 miles west of the intersection Locust Avenue and Granite Road. Site 1 is a mix of agricultural, ruderal, and native habitat extending southeast from the greater Lucerne Dry Lake playa. Vegetation at the site includes shadscale, bush seepweed (*Suaeda nigra*), and a few Torrey's saltbush (*Atriplex torreyi*), all scattered in loosely distributed patches and concentrated in areas of disturbance (road edges) and in particular fissures created by both subsidence in the area and also along natural drainage channels. Where vegetative cover is present, densities ranged from 5-60%. The site is over 70% open with no vegetation or shrub cover and approximately 25% of the site contains some form of shrub or herbaceous cover. More specifically the site contains 11 acres of vegetation and 29 acres of open ground. Site 1 appears to be an old homestead, likely from the early part of the 20th century, with the remains of an old chimney and some foundation materials present. There is considerable evidence of off-road vehicles use and many vehicle tracks on Site 1.

Pedons at the site were classified as Bousic and Peterman clays. Fine textured clays and silts with some minor surface gravels and the characteristic muddy craquelure surface mosaic typical of playa or near playa substrates.

Weedy species at the site were 39 small to large tamarisk (*Tamarix ramosissima*) mainly scattered around the periphery of the site and around the old homestead. Also observed were Russian thistle (*Salsola tragus*), London rocket (*Sisymbrium irio*), and cheatgrass (*Bromus tectorum*).

2.2 Site 2 - 40.20 acres APN 045-207-125

Site 2 is located in the western portion of the broader Project Area in Section 19, T5N, R1E, of the White Horse Mtn. Quadrangle, at the intersection Amber and Locust Avenue and approximately 0.25 miles north of Granite Road. Site 2 is a mix of agricultural, ruderal, and native habitat extending southeast from the greater Lucerne Dry Lake playa. Vegetation at the site is a mix of shadscale, bush seepweed, and scattered Torrey's saltbush in loosely distributed patches and concentrated in areas of disturbance (road edges) and, in particular, fissures created by both subsidence in the area and also along natural drainage channels. Where vegetative cover is present, densities ranged from 5-60%. The site is over 70% open with no vegetation or shrub cover and approximately 28% of the site contains some form of shrub or herbaceous cover. More specifically the site contains 11 acres of vegetation and 29 acres of open ground that is potential Parish's phacelia (*Phacelia parishii*) habitat.

Pedons at the site were also classified as Bousic and Peterman clays. Fine textured with some minor surface gravels and the characteristic muddy craquelure surface mosaic typical of playa or near playa substrates.

Weedy species at the site were small to large tamarisk and were mainly concentrated along a set of deep fissures extending from the northwest to the southeast of the property. Also observed were Russian thistle, London rocket, and cheatgrass, again concentrated along the fissures on the property.

2.3 Site 3 – 80.41 acres APNs 045-207-119, 045-207-120

Site 3 is located in the western portion of the broader Project Area in Section 19, T5N, R1E, of the White Horse Mtn. Quadrangle, approximately 0.25 miles west of the intersection Amber and Locust Avenue and approximately 0.25 miles north of Granite Road. Site 3 extends into the northeastern corner of the greater Lucerne Dry Lake playa. Vegetation at the site is a mix of shadscale, bush seepweed, scattered allscale saltbush (*Atriplex polycarpa*), Torrey's saltbush scattered in loosely distributed patches and concentrated in areas of disturbance (road edges and fencelines) and in particular, the fissures created by both subsidence in the area and also along natural drainage channels. Where vegetative cover is present, densities ranged from 5-60%. The site is over 80% open with no vegetation or shrub cover and approximately 16% of the site contains some form of shrub or herbaceous cover. More specifically the site contains approximately 13 acres of vegetation and 67 acres of open ground that is potential Parish's phacelia habitat.

Pedons at the site were also classified as Bousic and Peterman clays. Fine textured with some minor surface gravels and the characteristic muddy craquelure surface mosaic typical of playa or near playa substrates.

Weedy species at the site included 42 moderate to large tamarisk were mainly concentrated along a set of fissures in the southwest corner of the property. Also observed were Russian thistle, London rocket, and cheatgrass, again concentrated in the depressions, dense shrub cover, and along the fissures on the property.

2.4 Site 4 – 119.93 acres APNs 045-239-108 & 045-239-109

Site 4 is located in the northern extent of broader Project Area in Section 17, T5N, R1E, of the White Horse Mtn. Quadrangle. Site 4 is an "L" shaped parcel extending west for 80 acres and south for 39.91 acres in two contiguous parcels at the intersection Smokebush Road and Lincoln Avenue. Site 4 extends into the margins of northeastern corner of the greater Lucerne Dry Lake playa. Vegetation at the site is mainly a saltbush scrub community and a mix of shadscale, bush seepweed, scattered allscale saltbush. The site is gently sloping to the southwest and contains some mildly rolling features composed of packed sands in the westernmost portion of the 80 acres. The eastern portion of the site has open patches of fine to coarse gravels following the general trend of the terrain. The southern 40 acres enters the margins the Lucerne dry lake playa. Where vegetative cover is present, shrub and forb densities range from 5-30%. The site is over 33% open with no vegetation or shrub cover and approximately 67% of the site contains some form of shrub or herbaceous cover. More specifically the

site contains approximately 90 acres of vegetation and 29.9 acres of open ground that is potential Parish's phacelia habitat.

Cacti occurred on the site, with the sole species being silver cholla (*Cylindropuntia echinocarpa*). These cacti were concentrated in the northern and east portion of the property on the more sandy loam/silt portions of the site. Most of the cacti were quite old with portions of the skeletal infrastructure visible on many of the plants observed. Very little recruitment was observed.

Pedons at the site were also classified as Bousic and Peterman clays. Fine textured with some minor surface gravels and the characteristic muddy craquelure surface mosaic typical of playa or near playa substrates.

Weedy species at the site were moderate to large tamarisk, were mainly concentrated along a set of fissures in the southwest corner of the property. Also observed were concentrated patches London rocket, and cheatgrass, along the drainages on inner corner of the property.

2.5 Site 5 – 322.63 acres APN 045-236-146, 045-236-147, & 045-237-101

Site 5 in located in the northeastern portion of the overall Project Area occupying the western half of Section 19, T5N, R1E immediately northeast of the intersection of Granite Road and Lincoln Avenue in the White Horse Mountain Quadrangle. This site was identified as potential Mojave desert tortoise habitat prior to the site evaluation. Of the nine sites evaluated, Site 5 was the most diverse in terms of vegetation and habitat. Vegetation at the site is a mix of a transition between creosote bush scrub and mainly a saltbush scrub community and a mix of allscale, bush seepweed, scattered shadscale. Creosote bush was a very minor component of this vegetation community and was estimated at 1% overall cover. It is confined to the eastern and northeastern periphery of the site. The site is a transition zone from a more robust creosote bush scrub community to the east and north as it extends westward to the margins of the broader Lucerne Dry lake playa. The site was composed of salt bush scrub species such as allscale saltbush, shadscale, and bush seepweed in varying degrees of dominance depending on location. Nevada jointfir (*Ephedra nevadensis*) was present throughout the sites and particularly prevalent in the northwestern portion of the property where there was some minor relief and some smaller rills had developed as drainage into the broader Lucerne Dry Lake playa margins. Also present were minor amounts of Anderson's desert thorn (*Lycium andersonii*) and four-wing saltbush (*Atriplex canescens*). The southwestern 1/3 of the property is nearly barren playa forming an elongated triangle that extends approximately 3,000 feet along the western edge of the property with scattered patches of allscale saltbush scattered mainly along the periphery of the area. This area is potential habitat for Parish's phacelia and the margins of this zone extending north and east into the saltbush scrub community are potential habitat for Beaver Dam breadroot (*Pediomelum castoreum*) particularly where the soil becomes more sandy.

It should be noted that human disturbance at the site was considerable approximately 45 acres in the east central portion of the property were partially bladed and 6-15 foot berms were built as wind breaks. And inner seven acres was completely cleared within the 45 acre perimeter and contained abandoned greenhouses.

Cacti were present on the site, with the sole species being silver cholla (*Cylindropuntia echinocarpa*). These cacti were concentrated in the northern and east portion of the property on the more sandy loam/silt portions of the site. Most of these cacti were quite mature and some nearly senescent. Very little recruitment was observed.

The site is 34% open ground with no vegetation or shrub cover and approximately 76% of the site contains some form of shrub or herbaceous cover. More specifically the site contains approximately 189 acres of vegetation and 60 acres of open ground.

Pedons on the site were classified as Kimberlina Loamy Fine Sand with a smaller proportion identified as Joshua Loam by SSURGO.

2.6 Site 6 – 147.02 acres APN 045-211-219, 045-211-218, 045-211-217

Site 6 is located in the southeastern portion of the Project Area in Section 28, T5N, R1E of the Lucerne Valley Quadrangle immediately southeast of the intersection of Granite Road and Lincoln Avenue. This site is comprised of two parcels that are not contiguous but separated by a 60-foot wide County easement extending around the periphery and east-west for the lengths of the properties. Because they are essentially contiguous habitat these two parcels were evaluated as a single site. Vegetation at the site is a primarily a saltbush scrub community and dominated by mature shadscale on the western portion of the site and allscale on the eastern portion. A low rising stabilized aeolian deposit that extends through the middle of the parcels north to south contained a slightly more diverse shrub structure including a greater amount of Nevada joint fir, Anderson's boxthorn, and scattered winterfat (*Kraschenninikovia lanata*).

Substrates at the site were a more diverse mix of Peterman Clays in the western portion of the site and Bousic Clays in the east separated along with Glendale Variant Silt Loam by a low rising stabilized aeolian deposit (dune) that was composed of a more composite mixture of firm sands and silts. The northeastern portion of the site had some fissuring but also the silts/clays were overlain with sand and deeper (i.e., not firm) and likely were a result of aeolian deposition.

The open flats were fine textured with some minor surface gravels and the characteristic muddy craquelure surface mosaic typical of playa or near playa substrates.

Forbs and grasses at the site are limited to mainly annual weedy species such as London rocket, cheat grass, fivehorn bassia, and Russian thistle and were primarily confined to the southern margins of the site along the abutting fallow or ruderal fields. Tamarisk was scattered in the southwest corner and along the southern border of the site.

The site is 55% open ground with no vegetation or shrub cover and approximately 55% of the site contains some form of shrub or herbaceous cover. More specifically the site contains approximately 146 acres of vegetation and 81 acres of open ground.

2.7 Site 7 – 151.4 acres APN 045-211-317

Site 7 is located in the southeastern portion of the Project Area in Section 28, T5N, R1E of the Lucerne Valley Quadrangle immediately northeast of the intersection of Cambria Road and Lincoln Avenue. Vegetation at the site is a mainly a saltbush scrub community and dominated by mature allscale. The site is a mosaic of small to large open patches of barren soil and allscale. The site is heavily fissured and the scrub community is concentrated along those fissures. Forbs and grasses at the site are limited to weedy non-natives such as London rocket along with foxtail barley and cheatgrass. The fissures and shrub community are acting as repositories for these invasive species. The western portion of the site contains a heavy infestation of Russian thistle, some of which blew into the site from the west and some which germinated in the native shrub community. Also present are a scattering of tamarisk concentrated in the northwestern corner and southcentral portion of the site.

Pedons at the site were classified as Glendale variant silt loams. These are fine textured soils with no surface gravels and also the characteristic muddy craquelure surface mosaic typical of playa or near playa substrates.

The site is over 66% open ground in mosaic with no vegetation or shrub cover and approximately 34% of the site contains some form of shrub or herbaceous cover. More specifically the site contains approximately 52 acres of vegetation and 99 acres of open ground.

2.8 Site 8 – 61.03 acres APN 045-212-138, 045-212-139, 045-212-148, & 045-212-152

Site 8 is located in the southeastern-most portion of the Project Area in Section 33, T5N, R1E of the Lucerne Valley Quadrangle approximately 0.25 miles east of the intersection of Cambria Road and Lincoln Avenue. This site appears to be formerly tilled and reclaimed by native vegetation in selected locations. Lateral scars are still visible on the ground and from satellite images. In the northwest corner of the parcel there remains a remnant of a small 10-acre pistachio orchard that was started and apparently failed. The dead trees are still present. The southern portion of the property is dominated by an old playa and is largely barren of any vegetation. Vegetation at the site is a saltbush scrub community and dominated by allscale. Portions of the western edge of the property have been recolonized by allscale as has the eastern central portion and to a lesser degree the northeastern portion of the property.

The site is approximately 66% open ground with no vegetation or shrub cover and approximately 34% of the site contains some form of shrub or herbaceous cover. More specifically the site contains approximately 21 acres of vegetation and 40 acres of open ground.

Forbs and grasses at the site are limited to weedy non-natives such as London rocket and fivehorn bassia (*Bassia hyssopifolia*) along with foxtail barley and cheatgrass. The fissures and shrub community are acting as repositories for these invasive species, particularly along the western edge of the property. The western portion of the site contains a heavy infestation of Russian thistle and fivehorn bassia, some of which blew into the site from the ruderal properties to the west and some which germinated in the

native shrub community. Also present are a scattering of tamarisk in the northern ½ of the property and a concentration in the southeastern corner of the site.

Pedons at the site were classified as Glendale variant silt loams. These are fine textured with no surface gravels and also the characteristic muddy craquelure surface mosaic.

2.9 Site 9 – 70.2 acres APN# 045-211-220

Site 9 is located in the south central portion of the Project Area in the southwestern corner of Section 29, T5N, R1E of the Lucerne Valley Quadrangle immediately northeast of the intersection of Locust Avenue and Cambria Road. This site is currently an abandoned agricultural field that is largely barren with some residual weed cover that appears to have been mowed within the last year.

Pedons at the site were classified as a mix of Bousic and Peterman clays. These are fine textured soils with no surface gravels and also include characteristic muddy craquelure surface mosaic.

Although this site is heavily disturbed and ruderal, it was included because it contains the substrate requirements for potential Parish's phacelia habitat and location records from 2017 are located in formerly disturbed habitat less than 0.5 miles to the southwest.

Forbs and grasses at the site are limited to annual weedy non-natives such as London rocket and fivehorn bassia along with foxtail barley and cheatgrass. There is a small concentration of two tamarisk in the southwestern corner of the property along with Siberian elm.

3.0 Natural Community Alliances

The entire Project Area is within the western Mojave Desert, specifically Lucerne Valley, California. There are several natural community alliances present. These natural community alliances are discussed below, but for graphical context they are referred to collectively on the maps as Saltbush Scrub and Creosote Bush Scrub with the representative alliances named and shown in different colors. No sensitive natural communities were located within the Project Area. The Natural Community Alliances observed on the Project Area are shown in Table 4 along with the rounded acreages and described in the following sections.

Table 4 – Natural Community Alliances Identified Within the Sienna Solar and Storage Project Area

Evaluated Sites	Acreage	Natural Community Alliance
Site 1	11	Modified *Atriplex confertifolia* Shrubland Alliance
Site 2	11	Modified *Atriplex confertifolia* Shrubland Alliance
Site 3	13	Modified *Atriplex confertifolia* Shrubland Alliance
Site 4	90	*Atriplex canescens* Shrubland Alliance
Site 5	71	*Larrea tridentata* Shrubland and *Atriplex polycarpa* Shrubland Alliance Transition Zone
Site 5*	182	*Atriplex polycarpa* Shrubland Alliance
Site 6	60	*Atriplex polycarpa* Shrubland Alliance
Site 6	21	Modified *Atriplex confertifolia* Shrubland Alliance
Site 7	52	*Atriplex polycarpa* Shrubland Alliance
Site 8	21	*Atriplex polycarpa* Shrubland Alliance
Site 9	70	Fallow/Ruderal, but potential habitat for Parish's phacelia

*** 7 acres were removed due to the Abandoned Hemp Grow Operation where this bermed area was completely bladed/disturbed**.

3.1 *Atriplex polycarpa* Shrubland Alliance

Allscale shrub is typically found in washes, playa lake beds and shores, dissected alluvial fans, rolling hills, terraces, and edges of large, low gradient washes. Soils may be carbonate rich, alkaline, sandy, or sandy clay loams. Allscale shrub occurs at elevations between 75 and 1500 meters (Sawyer 2009). It is the most widespread saltbush alliance in the Mojave Desert. Allscale is dominant in the shrub canopy with bush seepweed and four-wing saltbush, and to a lesser degree white bursage (*Ambrosia dumosa*), cheeseweed (*Ambrosia salsola*), alkali goldenbush (*Isocoma acradenia*) and creosote bush. Senescent cheatgrass was also present. The shrubs averaged less than three meters in height with fairly open canopy. The absolute percent cover averaged 12 percent with allscale being more than 50 percent of the cover. Due to the drought conditions, this year's annuals were sparse consisting of only rattlesnake weed (*Euphorbia albomarginata***)** and red-stemmed filaree (*Erodium cicutarium*) in a few isolated areas that had received water from outflow originating from the hemp growing operations. A total of 315 acres of *Atriplex polycarpa* Shrubland Alliance were identified within the Project Area.

This natural community was observed on Sites 5, 6, 7, and 8. (Figure 3 in Appendix C)

3.2 *Larrea tridentata* Alliance/*Atriplex polycarpa* Shrubland Alliance Transition Zone

Creosote bush scrub is found on alluvial fans, bajadas, upland slopes, and minor intermittent washes occurring at elevations between 75 and 1,303 meters (Sawyer 2009). Soils are well drained, sometimes with desert pavement (Sawyer 2009). To be considered creosote bush scrub the site may have no shrub

with total cover greater than creosote bush with a few exceptions. The exceptions do not include allscale which is the co-dominant with creosote bush within this portion of the Project Area. The portion of the Project Area with creosote bush as a co-dominant in the shrub canopy with allscale, Nevada jointfir and Anderson's desert thorn is a transition zone from the *Atriplex polycarpa* Shrubland Alliance to the *Larrea tridentata* Shrubland Alliance. The creosote bush component, at approximately two percent, is too high for this area to be considered a pure *Atriplex polycarpa* Shrubland Alliance though it is too low to be considered a *Larrea tridentata* Shrubland Alliance. Essentially, this area is the absolute perimeter extent of creosote bush as the terrain gently descends into the apron of the broader lake bed. The soils in this area are very sandy with a silt component and sparse surface gravel. A total of 71 acres of *Larrea tridentata Shrubland and Atriplex polycarpa Shrubland Alliance Transition* were identified with the Project Area.

This natural community occurs in the northeast and mid-eastern portion of Site 5 (Figure 4 in Appendix C).

3.3 *Atriplex canescens* Shrubland Alliance

This four-wing saltbush scrub community is found in playas, old beach and shores, lake deposits, dissected alluvial fans, rolling hills or channel beds (Sawyer 2009). Soils are carbonate rich, alkaline, sandy, or sandy clay loams (Sawyer 2009). Four-wing saltbush is the dominant in the shrub canopy with associated plants including white bursage, shadscale, allscale, Nevada jointfir, and bush seepweed. The Project Area contains Nevada jointfir instead of *E. viridis*. Shrubs average less than three meters in height with an open canopy. The absolute percent cover averaged 12% and Four-wing saltbush greater than 50 percent relative cover. A total of 90 acres of *Atriplex canescens* Shrubland Alliance were identified with the Project Area.

This natural community was observed on Site 4 (Figure 4 – Appendix C).

3.4 Modified *Atriplex confertifolia* Shrubland Alliance

Shadscale shrub (collectively Saltbush Scrub) is typically found on bajadas, flats, lower slopes, rocky hills, exposed bedrock, erosional highlands, valleys, minor rills, washes, and edges of playas. Soils are variable and may be carbonate rich, clay rich, or have a high sand content, and may be covered with desert pavement (Sawyer 2009). Shadscale is dominant in the shrub canopy with a greater than two percent absolute cover in the shrub canopy with no other species having a greater absolute cover. Bush seepweed is the next dominant shrub though it is less than two percent absolute cover. Shrubs are less than one meter with a very open canopy. An herbaceous layer is sparse and present only in the fissures that crisscross the playa.

Shadescale shrub is found within the Project Area and mainly present within the fissures and slight mounds. Soils in this area are typically fine clays with a silt component often in broad barren stretches and with some fine surface gravels. At total of 56 acres of Modified *Atriplex confertifolia* Shrubland Alliance were identified within the Project Area.

This natural community occurs in Sites 1, 2, and 3 within the overall playa as well as Site 6 (Figures 3 and 5 in Appendix C).

It should be noted that the structure and composition of this natural community did not fit the parameters of the pure *Atriplex confertifolia* Shrubland Alliance well, but no other alliances were close, so a decision was made to give it the term Modified *Atriplex confertifolia* Alliance.

4.0 Biological Studies

At the request of the EnviroPlus Consulting (EPC), Wildland International was contracted to provide a biological inventory of selected wildlife species and all sensitive plant species occurring within the Project Area. The focus of the surveys were:

1. To provide a general biological overview of terrestrial biological resources of the Project Area.
2. To provide focused, protocol based surveys to identify and document the presence of Mojave desert tortoise within Project Area.
3. To provide surveys to identify and document the presence of potential sensitive plant habitat within the Project Area.
4. To identify and document any other special status observed within the Project Area.
5. To identify and document any sensitive natural community that is observed within the Project Area.
6. Inventory 100 percent of all CDNPA plants within the Project Area.

A species was determined to have some potential for inhabiting the Project Area if it is known to occur in the same general area, in a similar habitat, and/or at a similar elevation as the Project Area. A species was included on the special status list if it fell into one or more of the following categories:

- Taxa that are officially listed or proposed for listing under the State and/or Federal Endangered Species Acts.
- Taxa that are State or Federal candidates for possible listing.
- Taxa listed in the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California*.
- Taxa for which there are existing records in the California Natural Diversity Data Base (CNDDB).
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines (e.g., all CRPR 1 and CRPR 2 and some CRPR 3 and CRPR 4 plants may fall under Section 15380 of CEQA).
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation.
- Populations in California that may be on the periphery of a taxon's range, but are threatened with extirpation in California.
- Taxa closely associated with a habitat that is declining in California at a significant rate.
- Taxa included as CDFW fur-bearers which are protected from "take" pursuant to the California Code of Regulations (CCR), Title 14 [Natural Resources], Division 1 [Fish and Game Commission-Department of Fish and Game], Subdivision 2 [Game, Furbearers, Nongame, and Depredators], Chapter 5 [Furbearing Mammals], Section 460 [Fisher, Marten, River Otter, Desert Kit Fox and Red Fox] (Westlaw 2019a).

In addition, taxa protected under the California Desert Native Plants Act (CDNPA) (Division 23 of the California Food and Agricultural Code, Section 80071-80075), which include cacti and yuccas, were also considered. These taxa include:

- Smoke tree (*Psorothamnus spinosus*);
- all native species in the genus *Prosopis*, i.e., mesquites;
- all native species in the genus *Nolina*, i.e., beargrass;
- all native species in the family *Cactaceae*, i.e., cacti; and
- all native species in the family *Agavaceae*, i.e., century plants (*Agave* spp.), Western Joshua trees (*Yucca brevifolia*), other *Yucca* spp., desert lilies (*Hesperocallis undulata*).

4.1 Personnel

The biological inventory was conducted by experienced desert field biologists from Wildland International and Wildland International subcontractors. The field personnel had between 30 and 37 years of experience in desert ecosystems and in particular with the target species. Participating biologists were Dan Malueg (Wildland International) and Karen Jones (KDJ & Associates). Both Mr. Malueg and Ms. Jones have worked extensively with the Mojave desert tortoise on well over 1,300 projects in the Mojave and Sonoran deserts as well Parish's phacelia and Beaver Dam breadroot in Nevada. They have identified numerous new populations of both plant species numbering in the tens of thousands to millions of plants. Andy Sanders (UCR Herbarium curator) was also consulted during the field inventories.

4.2 Methodology

Surveys conducted by Wildland International and its subcontractors were focused on the Mojave desert tortoise, sensitive plants, and a 100 percent inventory of all botanical species, including California Desert Native Plant Act (CDNPA) species occurring within the Project Area. In addition, Wildland International recorded all wildlife species observed as a matter of standard protocol. Prior to field investigations the project boundaries and survey transect lines were downloaded to GPS units.

Sensitive annual plant species that could occur in the area were not identifiable given the drought conditions, but adequate habitat was noted and mapped if present. Additional sensitive species that were searched for included desert kit fox, American badger, Western burrowing owl, LeConte's thrasher, loggerhead shrike, and any raptors.

Within identified potential Mojave desert tortoise habitat, survey methodology for the inventories consisted of parallel linear pedestrian transects at 10 meter intervals providing 100 percent visual coverage of the survey area. This survey methodology provided an acceptable transect frequency to locate and identify any of the target sensitive species which might occur within the survey corridor. The basis for this survey methodology is the U. S. Department of Interior Fish and Wildlife Service (2019) protocols for surveying for Mojave desert tortoises. This methodology also allows sufficient coverage to characterize general habitat quality, species diversity, and the distribution of natural community alliances including sensitive natural community alliances. Surveys were conducted from April 5 to May 12, 2022.

Sensitive annual plant species that could occur in the area were not identifiable given the protracted drought conditions, but potential habitat was noted and mapped if present. Potential habitats were identified for four special status species. These species were Parish's phacelia, Beaver Dam breadroot, depressed standing cypress, and thorny milkwort. Habitat for one other special status species, alkali mariposa lily, was not found in the Project Area. Additional focused surveys may be required in a year with sufficient fall and winter precipitation to germinate any potentially occurring species to meet the requirements for a complete protocol-level survey (CDFW 2018).

4.2.1 Literature Review

A list of special status wildlife, special status plants and sensitive natural communities that occur or have the potential to occur within the Project Area was developed using information from the California Natural Diversity Database (CNDDB, 2022a; CNDDB, 2022b), California Native Plant Society (CNPS, 2022b), Consortium of California Herbariums, and regional planning documents (e.g., the Desert Renewable Energy Conservation Plan [DRECP; Dudek, 2014]). The database searches covered the following U.S. Geological Survey 7.5-minute topographic quadrangle maps within 5 miles of the Project Area: Whitehorse Mountain, Grand View Mine, Fifteen Mile Valley, Lucerne Valley and Cougar Buttes. Tables 5 and 6 include list of Special Status Plants and Wildlife with the potential to occur within the Project Area. These lists were developed prior to conducting Reference Population Site Visits and field inventories.

4.2.2 Reference Population Site Visits

A series of four reference population site visits was made prior to and during the inventories to determine if sensitive annual/biennial species had emerged or were flowering. Reference population site visits were conducted on 4/3/2022, 4/18/2022, 5/5/2022, and finally 5/10/2022. The only species seen was alkali mariposa lily in representative habitat at Rabbit Springs on 5/10/2022 and it was in full anthesis. No Parish's phacelia or Beaver Dam breadroot were observed at their reference populations on any of the visits.

4.2.3 Taxonomic Nomenclature Changes

Bird identification and nomenclature resources included The Sibley Field Guide to Birds of Western North America (Sibley, 2003), nest identification was aided by A Guide to the Nests, Eggs, and Nestlings of North American Birds, 2nd Ed. (Baicich and Harrison, 1997). Mammal identification resources included California Mammals (Jameson, 1988), National Audubon Society Field Guide to North American Mammals (Whitaker, 1996) and The Trackers Field Guide (Lowery, 2013). Reptile identification resources included A Field Guide to Western Reptiles and Amphibians (Stebbins, 1985). Plant nomenclature throughout this report follows *The Jepson Manual, 2nd Ed.* (Baldwin, 2012).

Table 5 Special Status Plant Species with the Potential to Occur in the Project Area

Scientific Name, Family Name	Common Name	Rank or Status				Flowering Period	Habitat and Distribution Notes	Potential Occurrence Within the Project Area
		Federal/ State	G-Rank	S-Rank	CRPR			
Pediomelum castoreum ***Fabaceae***	Beaver Dam breadroot	**-/-**	G3	S2	1B.2	April-May	Creosote bush scrub; Open areas, roadcuts; Elevation: < 1750 m.	Low potential on Site 4, 5 and 6. Known from NW Lucerne Valley in Creosote/Atriplex transition zone.
Phacelia parishii ***Hydrophyllaceae***	Parish's phacelia	**-/-**	G2G3	S1	1B.1	April-May	Dessert Scrub: clay or alkaline soils-often in thick cracks of clay accumulation, in playas, barren dry lakes, and gypsum beds' 540-1200 (1800) meters elevation.	Moderate potential on all Sites within playa areas. Data Basin lists the "habitat intactness" as low to very low in the Project Area. Known from Lucerne Valley Dry Lake east of Hwy 247.
Loeseliastrum depressum ***Polemoniaceae***	depressed standing cypress	**-/-**	G4	S3	4.3	April-July	Sandy, gravelly or clay soils of flats and gentle slopes; **Elevation:** 1000--2100 m	Very low at Site 5 in Transition Zone. Known from Rabbit Springs area of Lucerne Valley.
Calochortus striatus ***Liliaceae***	alkali mariposa lily	**-/-**	G3	S2S3	1B.2	April-June	Alkaline meadows, moist creosote-bush scrub; **Elevation:** 800--1400 m	Data Basin model shows no habitat in Project Area. Known from Rabbit Springs Lucerne Valley.
Polygala acanthoclada ***Polygalaceae***	thorny milkwort	**-/-**	G4	S2S3	2B.3	May-August (Oct.)	Desert scrub, Joshua-tree or pinyon/juniper woodland, generally in loose, sandy or gravelly soil; **Elevation:** 945--1830 m.	Low Potential at Sites 4 and 5 - Known from Lucerne Valley near Hwy 247 and Locust Ave.

1 The Global rank (G rank) is a reflection of the overall status of an element throughout its global range. Both Global and State ranks represent a letter + number score that reflects a combination of Rarity, Threat and Trend factors, with weighting being heavier on Rarity.

Species or natural community level:

• G2 - Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

• G3 - Vulnerable; at moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

• G4 - Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

The State rank (S rank) is assigned much the same way as the Global rank, but State ranks refer to the imperilment status only within California's state boundaries.

• S1 - Critically imperiled; at very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

• S2 - Imperiled; at high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

• S3 - Vulnerable; at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere

4: Plants of Limited Distribution – A Watch List

Threat Ranks

.1 – Seriously threatened in California

.2 – Moderately threatened in California

.3 – Not very threatened in California

Table 6 Special Status Wildlife Species with the Potential To Occur in the Project Area

Scientific Name	Common Name	Rank or Status					Activity Period	Habitat and Distribution Notes	Potential Occurrence Within the Project Area
		FESA	CESA	Other	G-Rank	S-Rank			
Gopherus agassizii	Mojave desert tortoise	FT	SE*	CDFW-SSC	G3	S2S3	Most active March through June and September through October-but can be active any time of year; Often in morning or evening, however anytime temperatures are moderate.	Found in a variety of vegetative communities though strongly associated with creosote bush scrub with friable soil.	Very Low potential only on Sites 4 and 5. No potential on other Sites.
Athene cunicularia hypugaea	Western burrowing owl	-	-	CDFW-SSC	G4	S3	Maybe in area all year long. More active in the mornings and evenings.	Open areas; Uses burrows of other species-occasionally digs its own; Known to occur in and near the Project Area.	Observed at burrows on Sites 4 and 5. Moderate potential on all sites.
Toxostoma lecontei	LeConte's thrasher	-	-	CDFW-SSC	G4	S3	Breeding can begin in December and last through June.	Creosote or salt bush scrub. Active during daylight. Known from Lucerne Valley.	Observed on Site 6. High potential on all sites.
Lanius ludovicianus	loggerhead shrike	-	-	CDFW-SSC	G4	S4	Breeding can begin in mid-February.	Open country with low shrubs and trees. Known from Lucerne Valley	Moderate potential on Sites 1, 2, 4, 5, 6 and 7.
Vulpes macrotis arsipus	desert kit fox	-	-	CDFW-Fur-bearer			All year. Typically, at night.	It's presence in the Mojave is strongly linked to creosote bush scrub. Known from Lucerne Valley.	Low Potential on all Sites.
Taxidea taxus	American badger	-	-	CDFW-SSC	G5	S3	All year. Anytime of day though typically shelters in extreme heat.	Variety of vegetation types; main criteria are friable soils and sufficient food.	Low Potential on all Sites.

Listing and Special Status Information
- SSC Species of Special Concern
- SE State listed as endangered
- SE* State listed as endangered (Conditional Listing)
- ST State listed as threatened
- FE Federally listed as endangered
- FT Federally listed as threatened
- FPE Federally proposed for listing as Endangered

State Ranking
- S2: Imperiled – At high risk of extirpation in the state
- S3: Vulnerable – At moderate risk of extirpation in the state widespread declines, threats, or other factors.
- S4: Apparently Secure – At a fairly low risk of extirpation in the state

Global Ranking
- G3: Vulnerable – At moderate risk of extinction
- G4: Apparently Secure – At fairly low risk of extinction
- G5: Secure – At very low risk of extinction

4.2.4 Mojave Desert Tortoise Inventory

A map of potential Mojave desert tortoise habitat was provided to Wildland International prior to field investigations. This map appears to have been generated by mapping areas that identified native vegetation and were not fallow farm fields and not playa using Google Earth. Within this Mojave desert tortoise potential habitat, survey methodology consisted of parallel linear pedestrian transects at 10 meter intervals providing 100 percent visual coverage of the survey area with over 90 miles of transects completed. A Garmin GPS was used with preloaded transects to follow. In addition, a compass was utilized to pick landscape features at a distance so little time was spent looking at the GPS unit while maintaining an accurate bearing. The transect line was maintained except when necessary to leave it to investigate a potential burrow or other wildlife sign. This survey methodology provides an acceptable transect frequency to locate and identify any of the target sensitive species which might occur within the survey corridor. The biologists have extensive experience with surveying in this fashion. The basis for this survey methodology is the U. S. Department of Interior Fish and Wildlife Service (2019) protocols for surveying for Mojave desert tortoises. This methodology also allows sufficient coverage to characterize general habitat quality, species diversity, and the distribution of natural vegetation communities. Surveys were conducted from April 4 to May 10, 2022.

4.2.5 Special Status Wildlife Inventory

During the course of the inventories for Mojave desert tortoise or sensitive plants and natural communities, Wildland International crews documented any other sensitive wildlife species that were encountered such as desert kit fox, American badger, Western burrowing owl, LeConte's thrasher, loggerhead shrike, and any raptors. Where appropriate and useful, GPS location data was recorded along with numbers of individuals observed and any other pertinent notes about the observations.

A special status wildlife species was determined to have the potential to occur within the Project Area if there were records CNDDB listed within a 5 mile radius of the area. A species was determined to have some potential for inhabiting the Project Area if it is known to occur in the same general area, in a similar habitat, and/or at a similar elevation as the Project Area or had CNDDB records nearby.

4.2.6 Sensitive Plant and Sensitive Natural Community Inventory

Prior to initiating field surveys, reference populations in the area were checked as mentioned under 5.2.3 Reference Population Site Visits. Plants within these reference populations had not emerged this in 2022 so the survey focused on determination of the extent of potential habitat for sensitive plant species and habitats.

As with special status wildlife species, special status flora was determined to have the potential to occur within the Project Area if there were records CNDDB-listed records within a 5 mile radius of the area. Sites with the potential to have sensitive plant species but not within potential Mojave desert tortoise habitat were walked at 100-foot intervals and were modified with an intuitive component. If microhabitat was observed that could support a sensitive plant species, the botanist deviated from the line to investigate this area and record any additional species observed. These transects were walked using the same methodology as with the Mojave desert tortoise surveys using a GPS and a compass. This methodology allowed for identification of any Sensitive Natural Communities as well as sensitive plant populations.

4.2.7 California Desert Native Plants Act Information

A complete inventory for cactus and yucca species was conducted within the Project Area. All cactus were tallied by height class. Height classes were divided into three groups, plants under three feet in height, between 3-10 feet in height, and over 10 feet in height.

4.2.8 Invasive Weed Inventory

During the protocol surveys for Mojave desert tortoise and sensitive plants as well as natural community identification, any and all invasive weeds occurring on a site were documented. Notes were made as to the general numbers and areas of significant concentrations were mapped.

4.3 Data Collection

Physical field data were recorded on a set of standardized data sheets provided by Wildland International. These forms include a **General Biological Survey and Habitat Evaluation Form, Mojave desert tortoise Habitat Evaluation and Observed Sign Form, Botanical Survey Form, Cactus Inventory Form, Sensitive Plant Form, Burrowing Owl Form, and Rapid Relive Form**.

Mojave desert tortoise sign key is listed below. The carcass classification shown here is for general reference. Carcass classification is based on age since time of death (Berry and Woodman, 1984).

BURROWS and PALLETS

Class: 1 = Currently active, with tortoise or recent sign
2 = Good condition, definitely tortoise, no recent sign
3 = Fair condition, definitely tortoise
4 = Deteriorated, definitely tortoise

SCATS

Class: 1 = Wet or freshly dried, obvious odor
2= Dry with glaze and some odor, no bleaching
3 = Dry w/out glaze or odor brown, packed
4 = Dry w/out glaze or odor, yellow, loose mat'l.

LIVE TORTOISE

1 = Healthy activity:	A = Foraging
2 = URTD	B = Traveling
3 = Shell cracked	C = Basking
4 = Peeling Scutes	D = In Burrow
5 = Ticks	E = Digging

CARCASS

Class: 1 = Fresh or putrid
2 = Normal color, scutes adhering to bone
3 = Scutes peeled off bone
4 = Bones falling apart
5 = Disarticulated

4.4 Data Presentation and Mapping

Data is presented here in map form and a complete data set of attributed shapefiles (points and polygons) is also available. Vegetation was mapped using snapshots from Google Earth and then manipulated in imagery evaluation software to select the target vegetation imagery using various tone/color selection tools. This was then ported into ESRI ArcMap as a Portable Network Graphic (PNG) file and georectified. Once the spatial aspect of the layer was completed it was converted from raster to vector polygons giving a very accurate representation of the vegetation layer at those evaluated sites where there was a mosaic of vegetation and open ground that could not be easily separated by simply drawing shapefiles.

5.0 Survey Results

No Mojave desert tortoise or American badger individuals or sign were observed during the surveys. Sign of desert kit fox and two individuals of Western burrowing owl (with burrows), three Le Conte's thrashers, and one loggerhead shrike were observed.

No sensitive natural communities were located within the Project Area.

No habitat for alkali mariposa lily or depressed standing-cypress exists within the Project Area. Although thorny milkwort occurs 3 miles to the south of the Project Area, upon field review it was determined that suitable habitat did not exist within the Project Area. However, potential habitat for Beaver Dam breadroot and Parish's phacelia does exist.

As a matter of standard practice Wildland International and KDJ & Associates recorded all general botanical and wildlife species observed within the Project Area. These are shown in Tables 7 and 8 in Appendix D.

5.1 Potentially Occurring Special Status Wildlife

5.1.1 Mojave desert tortoise (*Gopherus agassizii*)

The Mojave desert tortoise is a completely terrestrial tortoise occurring in the Mojave and Sonoran deserts. The Mojave species is listed as threatened by the USFWS and was conditionally listed as endangered by CDFW. It requires firm, friable soils to dig its burrow or rock shelters. Found in a variety of vegetative communities though strongly associated with creosote bush scrub with friable soil from sandy flats to rocky foothills, including alluvial fans, and washes and canyons. This species is threatened mostly by habitat fragmentation, degradation, and loss; though in this area an additional threat would be the extensive feral and roaming domestic dog population.

CNDDB records show Mojave desert tortoise records two miles to the east of the Project Area in more typical habitat. No CNDDB records exist in within the Project Area and the "Mojave desert tortoise Predicted Habitat Map" shows the entire Project Area and nearby vicinity as "Low" (CDFW, 2016). According to Data Basin maps (USFWS, 2013) this area was once considered for inclusion into a map for linkage corridors for Mojave desert tortoise, but upon an onsite field investigation by the evaluation team it was dropped from consideration due to extensive habitat degradation and lack of appropriate habitat.

No Mojave desert tortoises or desert tortoise sign were observed during the surveys of Sites 4 and 5, which were the two areas shown as potential habitat. The northeast corner and eastern edge of site 5 has very limited potential for Mojave desert tortoise as defined by the creosote bush scrub community shown in Appendix C, Figure 4. No Mojave desert tortoise habitat exists at any other Evaluated Site within the Project Area. There are records on the bajadas surrounding the Project Area as stated above and it cannot be discounted that a Mojave desert tortoise may travel into the area, it is unlikely that it would stay in the area due to the poor quality habitat, lack of food, and probable harassment by dogs and potentially humans.

5.1.2 Western Burrowing Owl (*Athene cunicularia hypugaea*)

The Western burrowing owl is a relatively small owl with long legs. It is considered a Species of Special Concern the CDFW. It nests in burrows in the ground, typically taking over other animals burrows but occasionally it will excavate its own. This owl appears to prefer a burrow in a relatively open area with a high location nearby for perching. The burrow itself may be on a hill or there could be a rock or vegetation to perch on. The area needs to contain lizards, insects, beetles, and rodents for the owl to prey upon. This species is most threatened by habitat loss. Within the Project Area the harassment by feral and roaming domestic dogs probably plays a significant role in limiting population and recruitment.

The CNDDB shows Western burrowing owl records within four miles of the Project Area and suitable habitat exists within the project sites.

Two owls were observed during the surveys; one on Site 4 and one on Site 5. No pairs were observed and the sex of the owls at either location was not determined. The owl at Site 4 had two additional satellite burrows for a total of three burrows potentially being used by this owl. A return visit on May 10th, 2022 showed that the owl on Site 4 had moved from its original location about 240 feet north to a satellite burrow. Here the owl had decorated the burrowing opening with canine scat. See Western Burrowing Owl Location Map (Figure 6) and Photos in Appendix E. Another inactive burrow was identified at the south edge of an old dry water catchment that had been bermed in the past. There was no sign of recent use and only old pellets and some bits of whitewash.

No satellite burrows were observed for the owl at Site 5. All of the active burrows used by burrowing owls were inactive kit fox natal dens. There is moderate potential to use and nest on all sites within the Project Area.

5.1.3 LeConte's Thrasher (*Toxostoma lecontei*)

The LeConte's Thrasher is a medium sized, pale brownish-gray bird with a rust colored vent and downward curved bill. It tends to move to the ground and run when startled instead of flying. It is typically found in desert areas in creosote or salt bush scrub. They feed on insects and sometimes lizards and snakes; occasionally fruits or seeds. While uncommon they can be found in the general area of the Project in all seasons. Breeding can begin as early as December and last through June. Pairs may mate for life. Nests are located in shrubs, trees or in cactus and typically placed less than five feet from the ground. Cactus appears to be a favorite nesting location. CDFW lists this species as a Species of Special Concern. Threats include habitat degradation and loss.

CNDDB records for LeConte's thrasher exist within and surrounding the Project Area. All of these records are dated, the more recent being 1988. The records within the Project Area are from 1978.

Data Basin modeling by Frank Davis (Davis, 2013b) shows the area as having a high occurrence for this species. Three individuals were observed on Site 6 on April 9, 2022. However, during a return visit early the next morning they were not observed again and were likely transients. No LeConte's thrashers were observed at any other location though suitable habitat exists within the project vicinity including any project area that is not actively being farmed.

5.1.4 Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is a medium sized, gray bird with dark mask, wings and tail. The wings and tail have white markings and are seen as white flashes while the bird is in flight. It has a thick, hooked bill. This species is found in open country with short shrubs or low trees, particularly if the vegetation is thorny. They are found in desert scrub, agricultural fields, and pastures. They feed on insects, lizards, snakes and occasionally small rodents and birds. Breeding can begin in mid-February. The nest is built over 6 - 11 days, the female broods for approximately 14-16 days, and the young fledge at 17-21 days, becoming independent between 40-45 days. This species will have one to three broods in a year. Nests are typically located in a shrub or small tree, occasionally in brush piles. The nest is located 2.5 to 15 feet from the ground (Baichich and Harrison, 1997). CDFW lists this species as a Species of Special Concern. Threats are thought to include potential pesticide ingestion and habitat loss.

No CNDDB records for loggerhead shrike exist in or near the Project Area.

Modeling by Frank Davis (Davis, 2013c and 2017) indicates this area is habitat for loggerhead shrikes. One loggerhead shrike was observed foraging near the intersection of Cambria Road and Midway Road on April 10, 2022.

Potential habitat for loggerhead shrike is found on Evaluated Sites 1 through 8.

5.1.5 Desert Kit Fox (*Vulpes macrotis arsipus*)

The desert kit fox is a small, slender canine with very large ears relative to its body size. The desert kit fox does not have a federal or California state special status; although as a fur-bearing mammal it is protected from hunting. As the common name suggests this fox inhabits various desert spaces. Their presence is strongly linked to creosote bush scrub (though they may be found in other desert spaces) and around human habitation if they have been conditioned to find enough food resources there. As an opportunistic species they will eat lizards, snakes, insects and rodents. The primary prey seems to be kangaroo rats. They require a rodent population large enough to survive and feed their young. This species is threatened by habitat fragmentation, degradation and loss. An additional threat is disease introduced into the population by domestic canines.

As of 2022, CDFW does not maintain records of desert kit fox in the CNDDB. Modeling uploaded to Data Basin (Penrod, 2012) indicates this area as probably being occupied by desert kit fox. CDFW provides mapping data showing Site 4 and a small portion of Site 5's western boundary as part of the "Linkage Design for the California Desert Linkage Network" (CDFW, 2012). It is assumed part of the purpose of this linkage is to allow desert kit foxes to move between occupied habitats. However, the extensive presence of feral and domestic canines in the area and their extensive impact on rodent and lizard populations makes this habitat marginal at best. Data Basin (Conservation Biology Institute, 2013) modeling shows low intactness levels for this area.

All of the Evaluated Sites have potential to be used by desert kit fox. Observations of very old scat and three inactive natal dens indicate that this area was occupied, at least in the past, and it still may be being used as a corridor for movement. No fresh kit fox sign and no individual foxes were observed though night time surveys were not conducted. There is a low potential for occurrence of desert kit fox on all of the Evaluated Sites within the Project Area.

5.1.6 American Badger (*Taxidea taxus*)

American badgers are flat bodied, short-legged mustelids. These animals live in a variety of habitats. Their main requirements are friable soil and sufficient food in the area, most often rodents. CDFW lists this species as a Species of Special Concern being threatened with habitat fragmentation, degradation, and loss.

There are no CNDDB records for American badger within or near the Project Area.

Modeling uploaded to Data Basin (Davis, 2016) indicates this area as probably occupied. However, no individuals observed and no sign was found to indicate that badgers are currently using this area. Once again, this may be due to the extensive presence of feral and roaming domestic canines.

Despite the lack of sign and the roaming canines, there is habitat and the area is within the range of American badgers, therefore American badgers have a low potential to occur on any of the sites within the Project Area.

5.2 Potentially Occurring Special Status Plants

5.2.1 Beaver Dam Breadroot (*Pediomelum castoreum*)

Beaver Dam breadroot is a California Rare Plant Rank (CRPR) 1B.2 species meaning the CNPS considers it rare throughout its range and fairly threatened in California. Beaver Dam breadroot is a low-growing perennial herb. It is single stemmed and smooth with palmate leaves flowering from April to June. The flowers are bluish and showy with a distinct lower calyx lobe. Beaver Dam breadroot occurs on firm sands, sandy gravels, and sandy silts at elevations of 1,200-5,000 feet (Baldwin et. al, 2012). Populations can range from a few individual plants to thousands of plants covering a large area. Potential threats include road widening and vehicular traffic (CNPS, 2022b).

The nearest location records for Beaver Dam breadroot is approximately 2.59 miles northwest of northern periphery of Site 4.

No Beaver Dam breadroot plants were observed in the Project Area. Potential habitat for Beaver Dam breadroot plants occurs within Sites 4, 5 and 6 on the stabilized dunes area of the site (Figure 7 in Appendix F). Table 9 below provides the location, acreage (rounded) and soil type of potential Parish's phacelia at each site.

Table 9 Beaver Dam breadroot Acreage by Site and Soil Type

Name	Acres	Soil Type
Site 4	13	Joshua loam
Site 5	21	Kimberlina loamy Fine Sand with Joshua loam in the NE corner of the site
Site 5	42	Kimberlina loamy fine sand
Site 6	4	Mostly Glendale variant, sandy loam, slightly aeolian, Bousic clay underneath
Site 6	15	Aeolian sands and loams

5.2.2 Parish's phacelia (*Phacelia parishii*)

Parish's phacelia is a California Rare Plant Rank (CRPR) 1B.1 meaning the CNPS considers it rare throughout its range and seriously threatened in California. It is a relatively small annual reaching 5 to 15 centimeters, branching at the base. The stem has short hairs and is minutely glandular. It has narrow bell-shaped flowers with a yellow tube and purple petals flowering from April - July. This plant is found in California and Nevada in open stretches of clay or alkaline soils at the edges and/or within dry lake beds at elevations between 540 and 1200, up to 1800 meters (Baldwin et. al, 2012). Potential threats include military expansion and solar project (CNPS, 2022b).

The nearest location records for Parish's phacelia are approximately 0.5 miles southwest of the Project Area.

Viable potential habitat for Parish's phacelia was observed on all of the Evaluated Sites. Table 10 below provides the location, acreage (rounded) and soil type of potential Parish's phacelia at each site. Figure 8 in Appendix F provides the mapped extent of potential habitat at each Evaluated site. A total of 451 acres of potential Parish's phacelia habitat was identified.

Table 10 Parish's phacelia Acreage by Site and Soil Type

Site	Acres	Soil Type
Site 1	29	Bousic and Peterman Clays
Site 2	29	Bousic and Peterman Clays
Site 3	67	Bousic and Peterman Clays and Playa
Site 4	30	Bousic and Peterman Clays
Site 5	60	Mostly Glendale variant - Alkali loams, northern portion is Bousic Clay
Site 6	65	Bousic and Peterman Clays majority, Glendale variant on east portion
Site 7	99	Glendale variant - Alkali loams
Site 8	40	Glendale variant - Alkali loams
Site 9	32	Bousic and Peterman Clays

5.2.3 Depressed standing-cypress (*Loeseliastrum depressum*)

Depressed standing-cypress has a CRPR of 4.3 meaning it is a plant of limited distribution but no very threatened in California. It is a small annual with a bilateral white corolla with yellow blotches at the corolla base. It flowers April through July. Depressed standing-cypress is found in pinyon-juniper woodlands and Mojave desert scrub (CNPS, 2022b) in sandy to clay soils on flats or gentle slopes at elevations from 1,000 to 2,100 meters (Baldwin et. al, 2012).

No records for depressed standing-cypress exist within the CNDDB data set, however, CalFlora shows a record at Rabbit Springs near the intersection of Rabbit Springs Road and Kendall Road. The elevation at this record location is approximately 887 meters. However, the record is from the late 1800's and no newer records were found (CNPS, 2022b).

All other records for this species occur much farther north in a different micro-habitat and given the date of the original record it likely this is an errant data point.

5.2.4 Alkali Mariposa Lily (*Calochortus striatus*)

The alkali mariposa lily has a CRPR of 1B.2 meaning the CNPS considers it rare throughout its range and fairly threatened in California. This is a perennial herb arising from a bulb with a smooth, hairless stem. The few leaves are basal and grass-like. The petals are white to lavender and striated with purple veins flowering April through June. The nectary at the base of each petal is oblong and densely tufted. It is found in alkaline meadows and moist creosote bush scrub at elevations between 800 and 1,400 meters (Baldwin et. al, 2012). It has been documented in washes, low flats, and seasonal water courses (CNPS, 2022b). It is threatened by water drawdown and diversions as well as habitat degradation and loss due to urbanization, grazing, trampling and road construction (CNPS, 2022b).

A pre-field work assessment of the project vicinity included a review of the USFWS National Wetland Mapper (NWI, 2022). The information provided indicated several manmade ponds as wetlands, Freshwater Forested/Shrub Wetland, and Freshwater Emergent Wetland and therefore the alkali mariposa lily was included as a potential for the Project Area. The Freshwater Forested/Shrub Wetland, and Freshwater Emergent Wetland are simply mapping errors.

The nearest location record for alkali mariposa lily is at Rabbit Springs near the intersection of Rabbit Springs Road and Kendall Road approximately 3.6 miles from the Project Area. This is a wet meadow and alkali mariposa lily requires some form of seasonally wet habitat.

No habitat for alkali mariposa lily occurred at any of the Evaluated Sites.

5.2.5 Thorny milkwort (*Polygala acanthoclada*)

Thorny milkwort has a CRPR of 2B.3 meaning CNPS considers it rare in California but more common elsewhere. This sprawling shrub has densely hairy white twigs with hairy pedicels, outer sepals and leaves. The inflorescence is thorn tipped. The flowers are greenish-yellow with a purple tip on the banner with anthesis in May through August. It is found in creosote bush scrub (CNPS, 2022b), desert scrub, Joshua tree woodland, and pinyon-juniper woodland, generally in loose, sandy or gravelly soils at elevations between 945-1830 meters (Baldwin et. al., 2012;). The lowest elevation it has been recorded at is 760 meters (CNPS, 2022b).

Nearest records are located approximately three miles from the Project Area just south of the intersection of Locust Avenue and Hwy 247 and at the junction of Santa Fe Fire Road and Hwy 247. Both populations were located in creosote bush scrub. This second location is approximately six miles southeast of the nearest portion of the project (Site 8) and approximately seven miles southeast of Site 5. Habitat for this species is creosote bush scrub which occurs higher up on the alluvial fan and it was determined that there was not suitable habitat on the any of the Evaluated Sites.

5.3 Potentially Occurring Sensitive Natural Communities

No sensitive natural communities were found within the Project Area.

5.4 CDNPA Species Occurrence

The only CDNPA plant species found to occur on the Project Area was silver cholla. This species was observed only on Sites 4 and 5. A total of 22 cacti were tallied on Site 4 and 61 on Site 5 for a total tally of 83 silver cholla. Locations of all cacti observed in the Project Area were taken with GPS units. It should be noted that recruitment on both sites was incredibly low.

No yucca, smoke tree, mesquite, beargrass, agave, desert lilies or additional species of cactus were found within the Project Area and no cactus over three feet were documented within the Project Area.

Cacti data observed within the Project Area is presented in Appendix G–Table 11 and mapped locations shown in Figure 9.

5.5 Invasive Weed Inventory

Invasive weeds were present on all of the Evaluated Sites. However, all the invasive annual weeds were dead with the exception of one plant African rue (*Peganum harmala*) present on the edge of Cambria Road near Site 7, technically outside the Project Area, but close enough to mentioned. African rue is a highly drought and alkaline tolerant plant and it was in anthesis. In normal precipitation years most of these are spring blooming species (with the exception of Russian thistle), but due to the protracted drought in the general region nothing germinated. Sites 1, 2, 3, 7, and 8 had significant concentrations of fivehorn bassia, cheatgrass, Russian thistle, and London rocket. To a lesser extent foxtail barley was present on Sites 7 and 9. Evaluated Sites 7 and 8 had the highest concentrations of Russian thistle, fivehorn bassia, and cheatgrass (Figure 10 in Appendix H). There was a large concentration of Russian thistle along the west edge of Site 7 concentrated in the fissures and dense allscale shrub cover. This was likely due to the proximity of active agriculture and field clearing/harrowing on adjacent parcels.

Sites 4, 5, and 6 had much lower concentrations of invasive weeds species. On Site 4 London rocket and minimal fivehorn bassia were located in the washes near the inside corner of the parcel. Site 5 had wide spread and sparsely scattered distribution of London rocket and no significant concentration the site so it was not mapped as showing an invasive weed layer.

Tamarisk was observed 8 of the 9 Evaluated sites for a total of 258 tamarisk individuals. Many of tamarisk are also found in the Unevaluated parcels. These are readily observable from satellite imagery. Large groves of tamarisk occur to the southwest of the Project Area at the margins of Lucerne Dry Lake.

6.0 Discussion

The Project Area and general vicinity has been fragmented by roads, human habitation and agricultural activities for over a century. All of the Evaluated Sites were impacted by some form of human use. The lack of any observation of desert tortoise sign is not surprising given the low quality of the habitat for Mojave desert tortoise. Saltbush scrub communities are not preferred habitat for Mojave desert tortoises and 99% of the Project Area occurs within one of the alliances for Saltbush Scrub. Only a very small section of one Evaluated Site (Site 5) contained any creosote bush and this community is a transition zone between a more robust creosote bush scrub community higher up on the alluvial fan to the east and the saltbush scrub communities at the periphery of the broader playa zone of Lucerne Dry Lake. This marginal habitat has been further degraded by extensive use by feral and roaming domestic canines. Most rodent mounds or any form of subterranean denning has suffered some digging by domestic/feral canines. There were hundreds of canid excavations within the Evaluated Sites.

The lack of live tortoises, burrows, scat, tracks, courtship rings, and drinking depressions in approximately 90 miles of transects walked by two experienced biologists lends credence to the fact that the Project Area is not currently occupied by Mojave desert tortoise and may have only been visited by transient animals in the past.

There were two live burrowing owl observations within the Project Area. The owl at Site 4 occupied the burrow complex it was using (inactive natal kit fox den) and two additional satellite nests (one was an inactive natal kit fox den). The owl on Site 5 appeared to only use one burrow complex (inactive natal kit fox den). Avoidance is probably not possible therefore any owls present should be passively relocated and the burrows plugged or excavated prior to initiation of ground disturbing work.

No active desert kit fox dens were found within the Project Area. However, three inactive natal dens were located and as discussed above were being used by burrowing owls. One of the natal dens on Site 4 had very old kit fox scat at one of the entrances. One set of small canine tracks was located on Site 4, however the tracks were not clear enough to distinguish if they were kit fox or small dog tracks. Given the large number of domestic/feral canines roaming the area day and night it is possible that kit foxes no longer use this area. If they are present, it is likely to be a transient move through the area. However, if a den is located during pre-construction surveys a passive relocation plan consistent with County and State specifications should be developed and implemented.

No American badger sign was located during the survey of the Project Area. Due to the mobility of this species and its preferred foraging habitat, the American badger is anticipated to potentially occur on the Project Area as an occasional transient, dispersing young adult, or forager. However, if a den is located during pre-construction a passive relocation consistent with County and State specifications should be developed and implemented.

Three LeConte's thrashers were observed on Site 6 and one loggerhead shrike was observed in the vicinity of Site 9. Much of the Project Area is habitat for both of these species. If construction of the

project occurs during breeding season a biologist should survey for potential nests and establish appropriate construction avoidance buffers if they are found.

The rare plant survey did not document any special status plant species in the Project Area. Because of the existing drought conditions during the time of the survey, the presence of rare plants could not be determined. However, potential habitats were identified for two special status plant species. These species were Parish's phacelia and Beaver Dam breadroot. Specific habitats for three other special status species identified as potentially occurring in the general area were not found within or near the Project Area.

Additional surveys may be required for special status plants in a year with sufficient fall and winter precipitation to germinate any potentially occurring species to meet the requirements for a complete protocol-level survey (CDFW 2018). Avoidance of Parish's phacelia potential habitat will not be possible within the solar array areas. Although the potential habitat for Beaver Dam breadroot is much smaller and restricted to Sites 4, 5, and 6, it is unlikely that avoidance would be a viable measure. No know records of Beaver Dam breadroot occur in this portion of Lucerne Valley.

One CDNPA plant species, silver cholla, was present in the Project Area. These cacti may not be harvested except under a permit issued by the San Bernardino County agricultural commissioner or sheriff as per the California Food and Agricultural Code, Section 80071-80075. Avoidance of silver cholla within the solar array will not be possible. Like the majority of plant life in the area these cacti are severely stressed from prolonged drought conditions and many were dying.

No sensitive natural communities occur within the Project Area.

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Appendix A

Soil Mapping Units
Proposed Sienna Solar and Storage Project

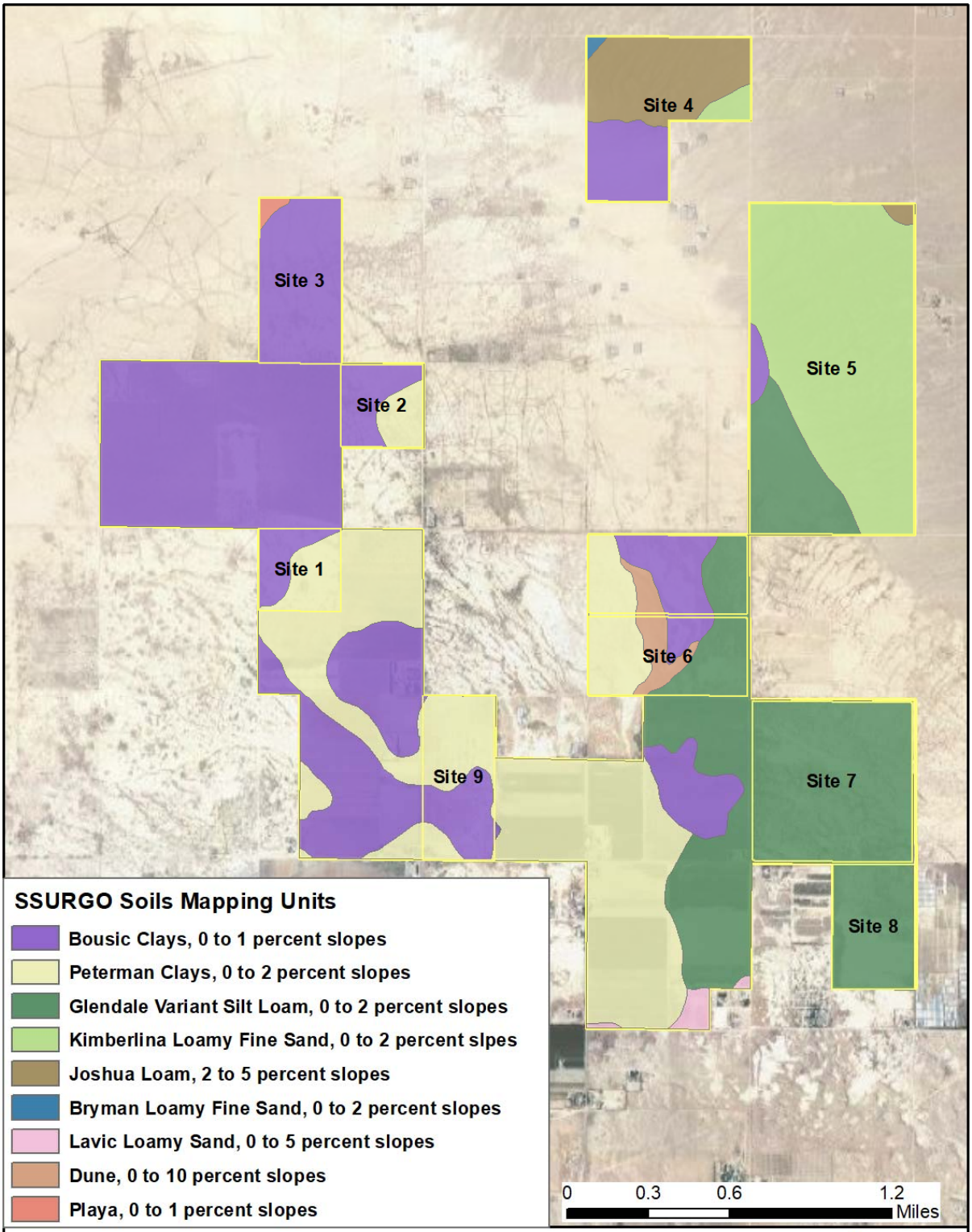

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Figure 2

Proposed Sienna Solar and Storage Project
SSURGO Soils Mapping Units

Aerial Background: 1 October 2020 WV04 Vivid DigitalGlobe/Google Earth Imagery ESRI ArcGIS Basemap Layer
USDA/NRCS Web Soil Survey SSURGO Soils Data

Appendix B

Site Photographs
Proposed Sienna Solar and Storage Project

Site 1 - Looking southwest.
Modified *Atriplex confertifolia* Shrubland Alliance.

Site 1 - Looking Southwest showing sparse vegetation cover (Potential Parish's phacelia habitat) and a portion of Unevaluated Parcel 4 to the south (top of photo), note organic debris on fields.

Site 2 - Looking northwest.
Modified *Atriplex confertifolia* Shrubland Alliance.

Site 2 - Looking southwest showing sparse vegetation cover with shrubs concentrated in fissures, open areas are potential Parish's phacelia habitat, a portion of Unevaluated Parcel 2 to the northwest, note organic debris.

Site 3 - Looking southwest across playa and vegetation.
Modified *Atriplex confertifolia* Shrubland Alliance.

Site 3 - Looking north showing sparse vegetation cover vegetation concentrated in fissures.
Potential Parish's phacelia habitat.

Site 4 - Looking southwest.
***Atriplex canescens* Shrubland Alliance.**

Site 4 - Looking northwest across playa portion of site.
Potential Parish's phacelia habitat.

Site 4 - Looking south-southwest. Broad overview of site showing vegetation and playa. Potential Beaver Dam breadroot habitat in sandy rolling hills in left half of photo.

Site 5 - Looking southwest across Saltbush Scrub to towards playa. *Atriplex polycarpa* Shrubland Alliance.

Site 5 - Looking southwest. Potential Beaver Dam breadroot and marginal desert tortoise habitat. *Larrea tridentata* Shrubland-*Atriplex polycarpa* Shrubland Alliance Transition Zone.

Site 5 - Looking north across playa. Potential Parish's phacelia habitat. Abandoned hemp operation within Site 5 in the distance.

Site 4 - Looking south. Broad overview of site showing vegetation and playa on west half of site. Potential Beaver Dam breadroot habitat in sandy rolling hills in center of photo.

Site 5 - Looking west over abandoned hemp growing operation.
The facility's outer berm encompasses 45 acres and the inner berm with hoop houses is 7 acres.

Site 6 - Looking west over potential *Parish's phacelia* habitat on barren playa substrates.
Modified *Atriplex confertifolia* Shrubland Alliance

Site 6 - Looking northwest across dune habitat, also potential Beaver Dam breadroot habitat.
***Atriplex polycarpa* Shrubland Alliance**

Site 6 - Looking northwest along playa substrate on east half of site. Potential Parish's phacelia habitat on barren substrates.

Site 6 – Small patch of sandy habitat in north portion of site. Potential Beaver Dam breadroot habitat. *Atriplex polycarpa* Shrubland Alliance

Site 6 - Looking southeast. Broad overview of site showing vegetation and playa on west half of site. Unevaluated Parcel 7 in background, note organic debris covering field.

Site 6 - Looking south across site. Potential Beaver Dam breadroot on lower left corner of photo. Unevaluated Parcels, 6, 7, 8, and 9, top of photo. Active alfalfa farming or organic debris on parcels.

Site 7 - Looking northwest on east half of site. Potential Parish's phacelia habitat on barren substrates. *Atriplex polycarpa* Shrubland Alliance

Site 7 - Looking northwest across Saltbush Scrub towards playa. Heavy weed infestation on west and south edges of site.

Site 8 - Looking southeast showing vegetation, weeds, and playa on west half of site.
***Atriplex polycarpa* Shrubland Alliance.**

Site 8 - Looking south across site. Potential Parish's phacelia habitat on barren substrates.
Heavy weed infestation on west edge of site.

Site 9 - Looking northwest. Site was included in Evaluated Sites because CNDDB Parish's phacelia records from 2017 are 0.5 miles from this site in similar conditions.

Site 9 - Looking south-southwest across site. Potential Parish's phacelia habitat at south portion of site in appropriate substrates. Unevaluated Parcels 4 and 5, top of photo, partially tilled and some are covered with organic debris. Parcel 6 on left side of photo is under active alfalfa farming.

Appendix C

Natural Community Alliances Map
Proposed Sienna Solar and Storage Project

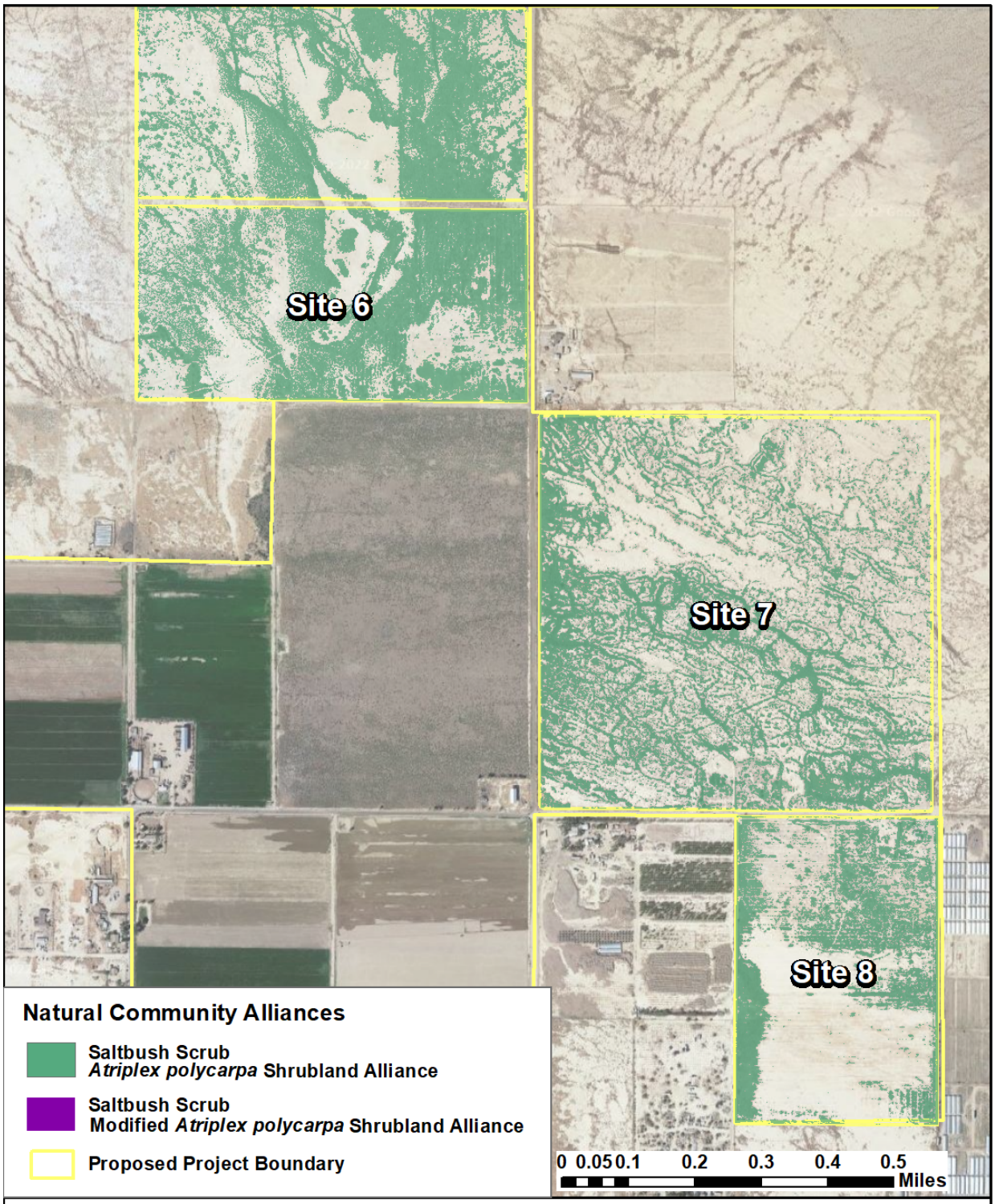

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Figure 3
Proposed Sienna Solar and Storage Project
Natural Community Alliances Map
***Atriplex polycarpa* Shrubland Alliance**
Modified *Atriplex confertifolia* Shrubland Alliance

Aerial Background: 1 October 2020 WV04 Vivid DigitalGlobe/Google Earth Imagery ESRI ArcGIS Basemap Layer

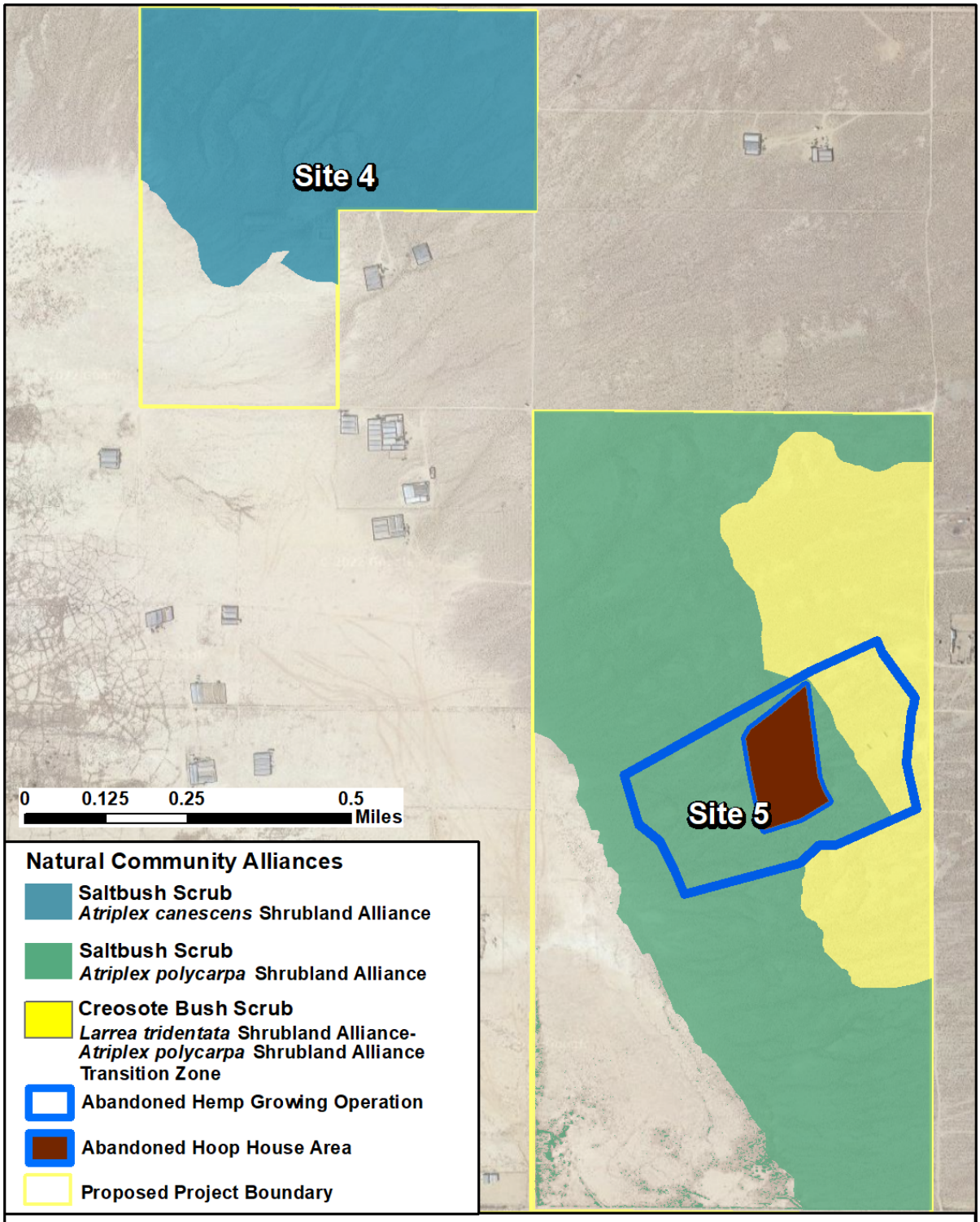

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Figure 4

Proposed Sienna Solar and Storage Project
Natural Community Alliances Map
***Atriplex canescens* Shrubland Alliance**
***Atriplex polycarpa* Shrubland Alliance**
***Larrea tridentata* Shrubland Alliance- *Atriplex polycarpa* Shrubland Alliance Transition Zone**

Aerial Background: 1 October 2020 WV04 Vivid DigitalGlobe/Google Earth Imagery ESRI ArcGIS Basemap Layer

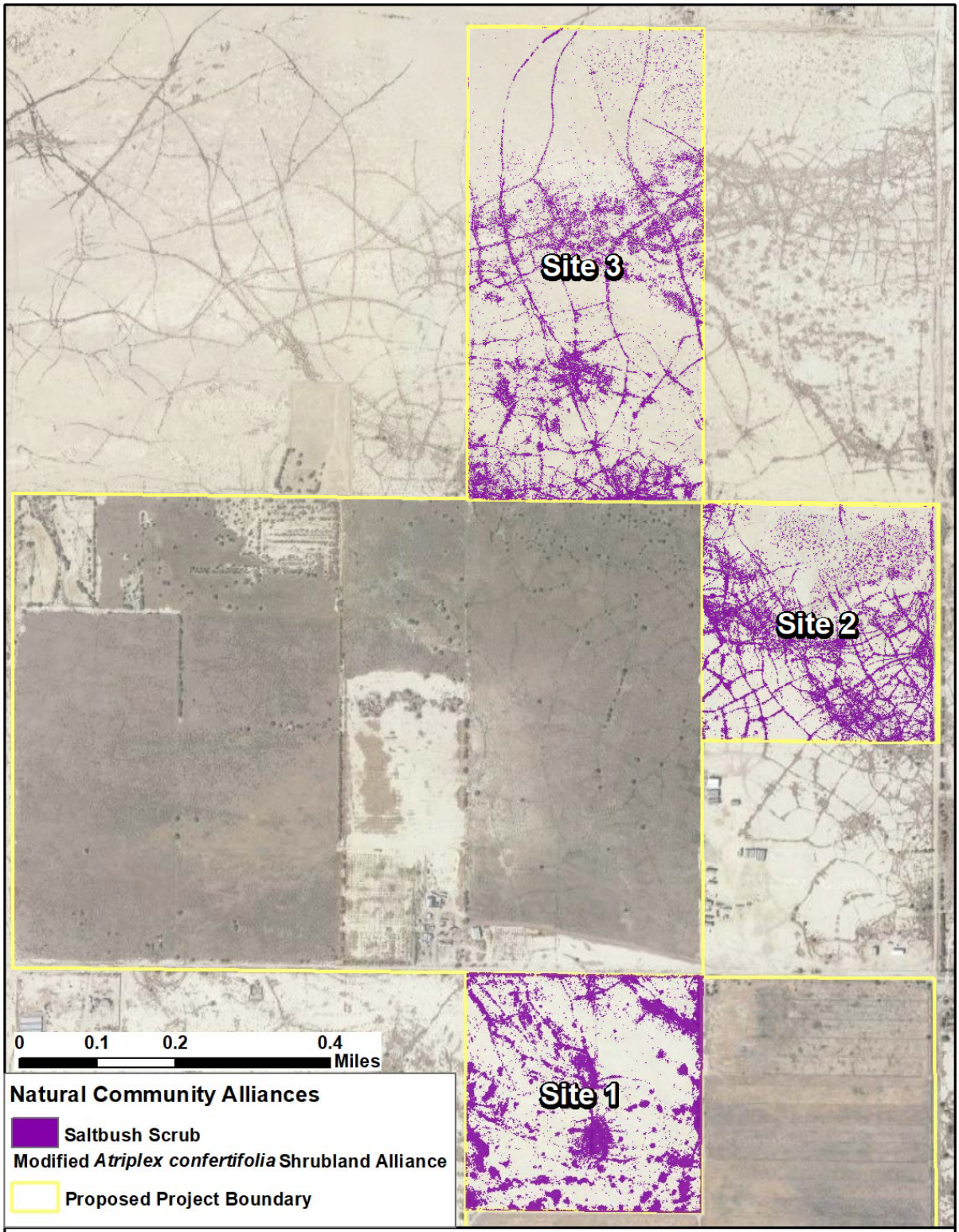

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Figure 5

Proposed Sienna Solar and Storage Project
Natural Community Alliances Map
Modified *Atriplex confertifolia* Shrubland Alliance

Aerial Background: 1 October 2020 WV04 Vivid DigitalGlobe/Google Earth Imagery ESRI ArcGIS Basemap Layer

Appendix D

General Plant and Wildlife Species Observed
Proposed Sienna Solar and Storage Project

Table 7 – General Plant List for the Proposed Sienna Solar and Storage Project

Family Name	Scientific Name	Common Name	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9
ASTERACEAE	*Ambrosia dumosa*	burroweed	I		I	I	O	I			
ASTERACEAE	*Artemisia spinescens*	budsage		O	I	O	C	O	I	I	
ASTERACEAE	*Chaenactis sp.*	pincushion	I	I	I	O	C	I			
ASTERACEAE	*Ericameria nauseosa*	rubber rabbitbrush					I	I			
ASTERACEAE	*Gutierrezia microcephala*	sticky snakeweed	C			I	I				
ASTERACEAE	*Isocoma acradenia*	alkali goldenbush	O	O	C			O	I	I	
ASTERACEAE	*Stephanomeria pauciflora*	wire lettuce		C	O	I	O	I		I	I
ASTERACEAE	*Tetradymia glabrata*	littleleaf horsebrush	C	I				O			
ASTERACEAE	*Xylorhiza tortifolia*	Mojave aster				I	I				
BORAGINACEAE	*Amsinckia tessellata*	devil's lettuce	C			O	O	I	I	O	
BORAGINACEAE	*Greeneocharis circumscissa*	matted cryptantha				I					
BRASSICACEAE	*Descurainia pinnata ssp. glabra*	smooth western	O							C	C
BRASSICACEAE	*Lepidium fremontii*	desert pepper grass	C	C	I	C	C	C			
BRASSICACEAE	*Lepidium lasiocarpum*	shaggyfruit					O	O			
BRASSICACEAE	*Sisymbrium irio*	London rocket	O	C	O	C	O	C	C	C	C
BRASSICACEAE	*Stanleya pinnata*	prince's plume	O	I		O	I	O			
BRASSICACEAE	*Streptanthella longirostris*	long beaked twist			I	C					
CACTACEAE	*Cylindropuntia echinocarpa*	silver cholla				O	C				
CHENOPODIACEAE	*Atriplex argentea*	silverscale	O	C	O	O	C	O	O		I
CHENOPODIACEAE	*Atriplex canescens*	four-wing saltbush			O	C	I	O	I	I	
CHENOPODIACEAE	*Atriplex confertifolia*	shadscale	C	C	C	C	O		I		I
CHENOPODIACEAE	*Atriplex polycarpa*	allscale saltbush		O	O	C	C	C	C	C	I
CHENOPODIACEAE	*Atriplex torreyi*	Torry's saltbush	O	C	O	I	I			C	
CHENOPODIACEAE	*Bassia hyssopifolia*	fivehorn	I	I	I	I	I	O	C		O
CHENOPODIACEAE	*Krascheninnikovia lanata*	winterfat						O			
CHENOPODIACEAE	*Salsola tragus*	Russian thistle		O	O		I			C	
CHENOPODIACEAE	*Suaeda nigra*	bush seepweed	C	C	C	C	C	C		I	C
EPHEDRACEAE	*Ephedra nevadensis*	Nevada ephedra	O	I		C	C	C		I	
EUPHORBIACEAE	*Euphorbia albomarginata*	rattlesnake sandmat				I	I				
FABACEAE	*Astragalus didymocarpus*	two-seeded				I					
GERANIACEAE	*Erodium cicutarium*	redstem filaree					I				
LOASACEAE	*Petalonyx thurberi ssp. thurberi*	Thurber's sandpaper				I	I				
NITRARIACEAE	*Peganum harmala*	African rue							I		
ONAGRACEAE	*Eremothera boothii ssp. condensata*	clustered booth's			I	O	O	I		I	
POACEAE	*Stipa hymenoides*	Indian rice grass					I	I			
POACEAE	*Bromus rubens*	red brome			O						

Family Name	Scientific Name	Common Name	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9
POACEAE	*Bromus tectorum*	cheatgrass	O	O	C			O	O	C	
POACEAE	*Hilaria rigida*	big galleta grass					I	I			
POACEAE	*Hordeum murinum*	wall barley							I		
POACEAE	*Schismus barbatus*	old han schismus			C	C	O	C	O	I	
POLEMONIACEAE	*Eriastrum sp*	woolly star						O			
POLYGONACEAE	*Eriogonum deflexum*	skeleton weed	I	I	I	O	C	C	O	I	
POLYGONACEAE	*Eriogonum nidularium*	birdnest wild				I	I				
POLYGONACEAE	*Eriogonum palmerianum*	Palmer's wild				O	I				
RANUNCULACEAE	*Delphinium parishii*	Parish's larkspur				I					
SOLANACEAE	*Lycium andersonii*	Anderson's desert	O			O	O	O			
SOLANACEAE	*Lycium pallidum*	pale desert thorn	I			O	I				
TAMARICACEAE	*Tamarix ramosissima*	tamarisk	O	O	O		I		I	O	
ZYGOPHYLLACEAE	*Larrea tridentata*	creosote bush				O	O	I			

C = Common – Plants seen every few hundred feet in a survey location

O = Occasional – Plants seen randomly through in a survey location

I = Incidental – 1 or 2 plants seen in a survey location

Table 8 – General Wildlife List for the Proposed Sienna Solar and Storage Project

Group	Scientific Name	Common Name	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9
Reptiles	*Aspidoscelis tigris*	western whiptail lizard	X	X	X	X	X	X	X	X	
	Callisaurus draconoides	zebra-tail lizard				X	X				
	Gambelia wislizenii	long-nosed leopard lizard				X	X				
	Uta stansburiana	common sideblotch				X	X	X	X	X	
Birds	*Corvus corax*	common raven	X	X	X	X	X	X	X	X	X
	Eremophila alpestris	horned lark				X		X	X		
	Artemisiospiza belli	Bell's sparrow				X	X	X	X		
	Lanius ludovicianus	loggerhead shrike									X
	Athene cunicularia	western burrowing owl				X	X				
	Toxostoma lecontei	Le Conte's thrasher						X			
	Buteo jamaicensis	red-tailed hawk	X	X			X	X		X	
	Zonotrichia leucophrys	white-crowned sparrow	X	X	X	X	X	X	X	X	X
	Sturnus vulgaris	European starling							X	X	
	Streptopelia decaocto	Eurasian collared dove							X	X	
	Mimus polyglottos	Northern mockingbird							X	X	
	Stelgidopteryx serripennis	Northern rough-winged swallow				X	X		X	X	
	Callipepla californica	California quail								X	
Mammals	*Lepus californicus*	black-tailed jackrabbit	X	X	X	X	X	X	X	X	
	Ammospermophilus leucurus	white tailed antelope squirrel		X		X	X	X	X		
	Canis familiaris	domestic dog (feral/free roaming)	X	X	X	X	X	X	X	X	X
	Canis latrans	coyote (vocalizations)					X		X		

X = Observed during surveys

Appendix E

Western Burrowing Location Map and Photos
Proposed Sienna Solar and Storage Project

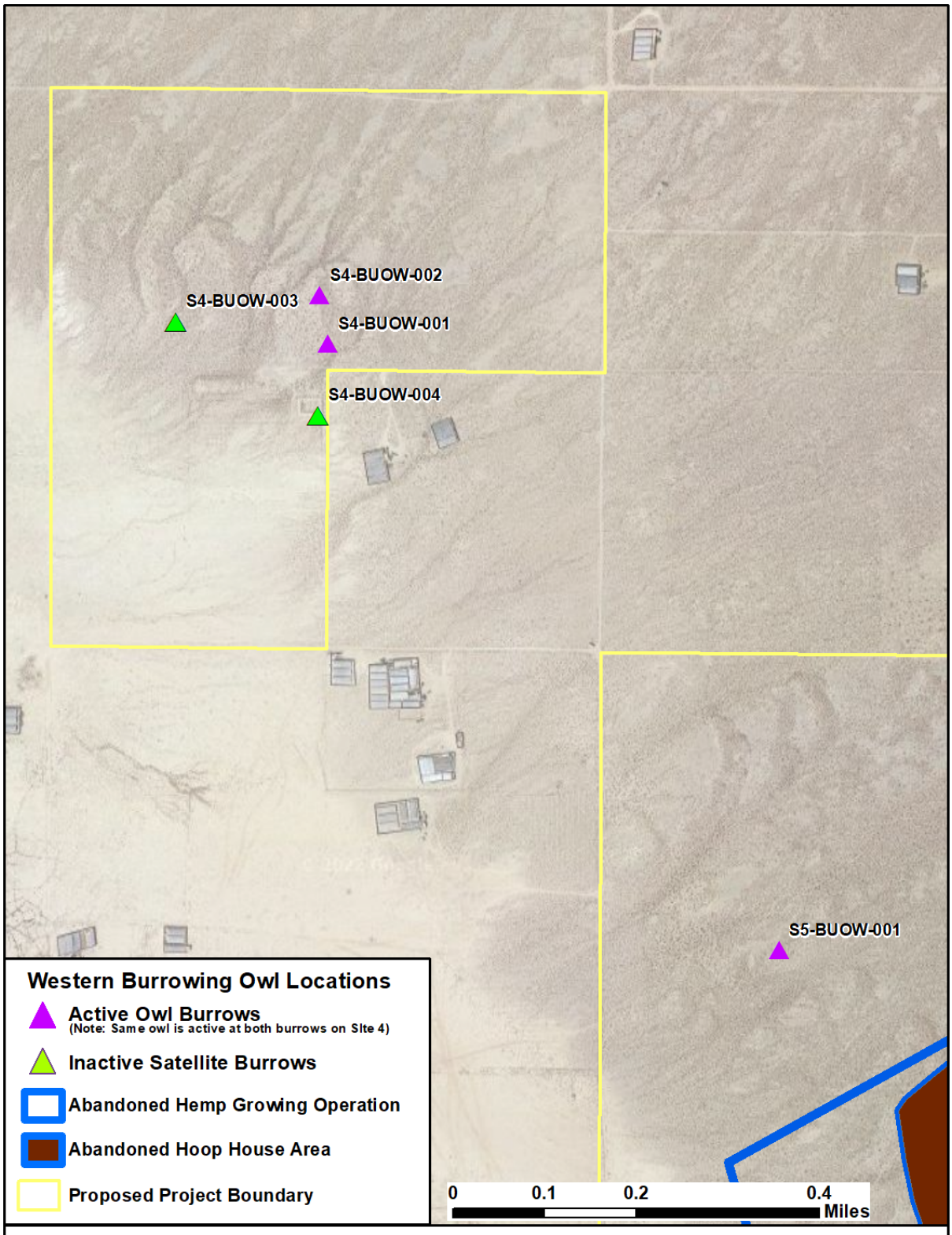

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Figure 6

Proposed Sienna Solar and Storage Project
Western Burrowing Owl Location Map

Aerial Background: 1 October 2020 WV04 Vivid DigitalGlobe/Google Earth Imagery ESRI ArcGIS Basemap Layer

Site 5 - Adult western burrowing owl on S5-BUOW-001 burrow ramp.

Site 5 –Western burrowing owl burrows (S5-BUOW-001) located in an inactive desert kit fox natal den complex.

Site 4 Western burrowing owl burrows at S4-BUOW-001 in an inactive desert kit fox natal den complex.

Site 4 - Satellite burrow (S4-BUOW-002), 240 feet north of S4-BUOW-001. Same adult owl is using both burrows. Canine scat has been used as decoration at this burrow mouth.

Site 4 - Satellite burrow S4-BUOW-003. Inactive and rarely used.

Site 4 –Inactive western burrowing owl burrow. South of S4-BUPW-001 at base of a dry, bermed, water catchment. Old pellets and minor whitewash. No sign of recent use.

Appendix F

Potential Habitat for Special Status Plants
Proposed Sienna Solar and Storage Project

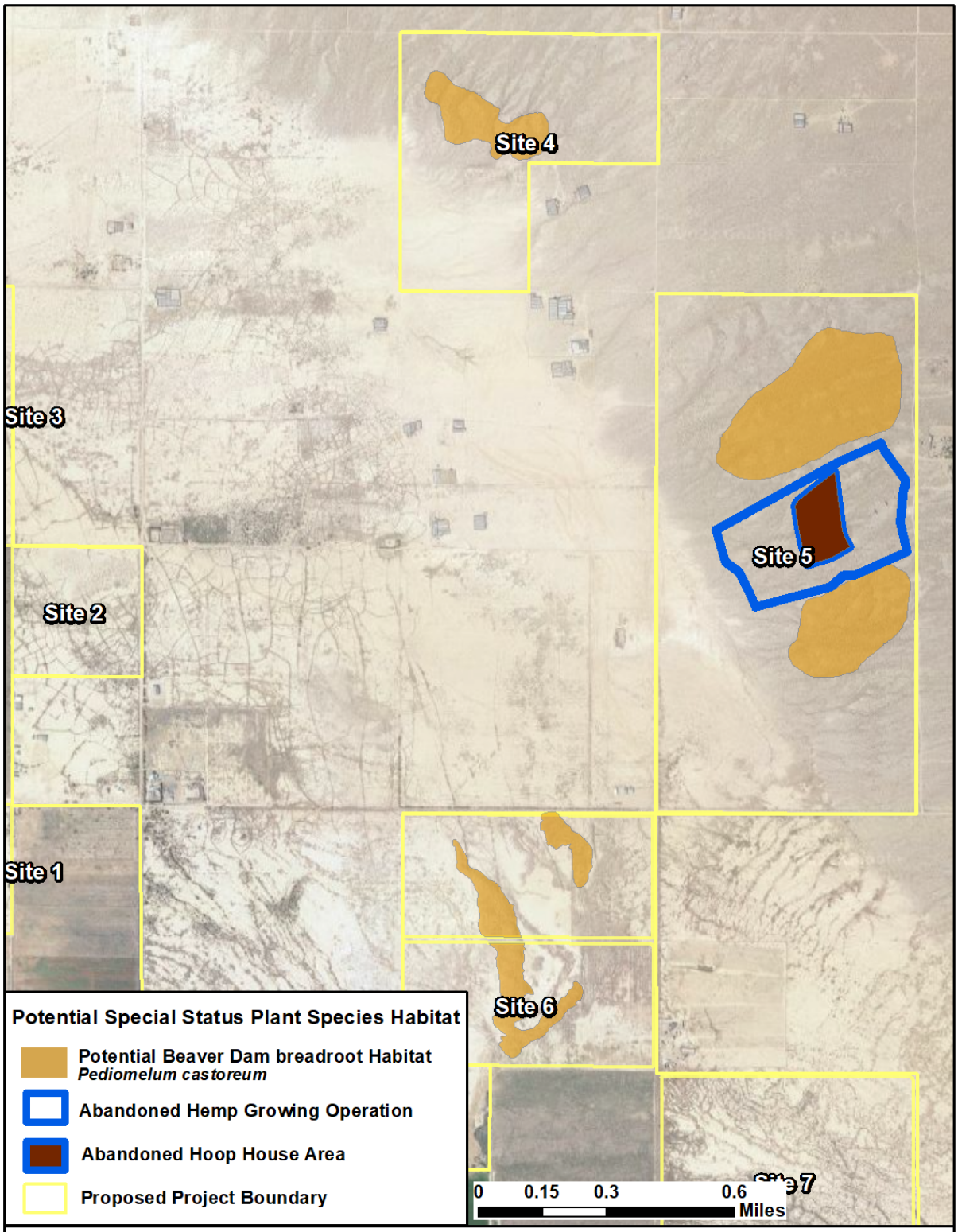

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Figure 7

Proposed Sienna Solar and Storage Project
Potential Beaver Dam breadroot Habitat
Location Map

Aerial Background: 1 October 2020 WV04 Vivid DigitalGlobe/Google Earth Imagery ESRI ArcGIS Basemap Layer