

**Vega SES LLC Solar Project
El Centro, California
Draft Biological Resources Technical Report**



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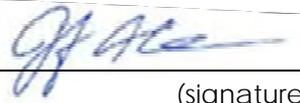
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January 29, 2018

Sign-off Sheet

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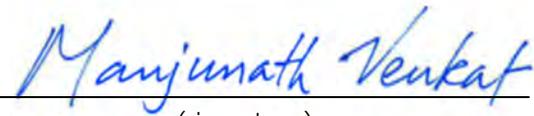
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Executive Summary

This report documents biological resources occurring or potentially occurring at the Vega SES LLC Solar Project (Project) and describes measures that may be implemented to mitigate potential impacts to such resources. It serves as guidance for regulatory protection of special-status resources.

The Project site is located in southwestern Imperial County, California, approximately 10 miles southwest of the City of El Centro and consists of construction of an approximately 494-acre solar photovoltaic (PV) energy generation facility. The Project also includes construction of an approximately 0.4-mile gen-tie line from the western terminus of the solar facility to the proposed Fern Substation to be constructed northwest of the intersection of Liebert Road and Mandrapa Road. Construction of this substation is not included as part of this project.

A reconnaissance-level habitat assessment and focused species-specific surveys were conducted within the Biological Study Area (BSA), which includes the 494-acre Project site, gen-tie route, and proposed Fern Substation site, plus a 150-meter buffer zone surrounding these Project components, for a total survey area of approximately 906 acres. Surveys indicate the presence of one special-status wildlife species on the site, western burrowing owl (*Athene cunicularia*).

The Project is anticipated to permanently impact up to approximately 494 acres within the BSA, consisting of approximately 430 acres of active farmland and 64 acres of associated infrastructure such as unpaved access roads and irrigation ditches.

Two rounds of focused surveys for burrowing owl, listed as a California Species of Special Concern, were conducted within the Project BSA. A total of 33 burrowing owls were documented during these surveys. The preparation and implementation of a Burrowing Owl Mitigation and Monitoring Plan is recommended prior to and during construction to ensure that impacts to resident burrowing owls are reduced to the maximum extent practicable.

Two active mourning dove (*Zenaida macroura*) nests, protected by the federal Migratory Bird Treaty Act and California Fish and Game Code, were observed in a copse of mesquite trees located in the northwest portion of the BSA, adjacent to the Fig Drain, an Imperial Irrigation District (IID) drainage canal that bisects the two halves of the site. Additionally, suitable nesting bird habitat is present throughout the BSA. To mitigate for potential impacts to nesting birds or occupied nests, a pre-construction nesting bird survey is recommended no earlier than 14 days prior to construction or site preparation activities during the nesting/breeding season of native bird species (typically February 1 through August 31).

One sensitive plant community, arrow weed thickets, was observed within buffer zone of the BSA to the south of the Project site, south of Mandrapa Road and the adjacent Westside Main Canal.

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This community has a state rank of S3, indicating that it has been deemed vulnerable. Project construction is not expected to result in impacts to this area.

Being situated in an agricultural area, the Project site and surrounding areas are traversed by a network of drains, canals, and other irrigation infrastructure administered by the IID, much of which constitute potentially jurisdictional features. Primary among these within the Project BSA are the Fig Drain and Westside Main Canal. The Westside Main Canal is a large concrete-lined canal that borders the southwestern portion of the Project area; the Fig Drain is a large, earthen canal that runs north/south, dividing the two halves of the Project site. Both canals ultimately drain to the Salton Sea and likely constitute "waters of the State" and/or "waters of the U.S." Several additional irrigation features occur throughout the BSA and are also likely jurisdictional. Based on the field observations and data collected, approximately 15 acres of potential non-wetland "waters of the U.S." and 25 acres of "waters of the State" occur within the BSA. The drainage features within the BSA occur outside of the area of potential impact and are not expected to be impacted by construction or operation of the proposed Project.

This report contains suggested measures to ensure avoidance of impacts and/or reduction of the level of impacts to natural resources. These include Best Management Practices (BMPs) to be implemented prior to and during construction, such as development and administration of a Worker Environmental Awareness Program (WEAP) and clear demarcation of Project work areas; additional focused surveys for special-status species and general pre-construction surveys; and species-specific measures designed to protect burrowing owl, such as the preparation of a Burrowing Owl Mitigation and Monitoring Plan.

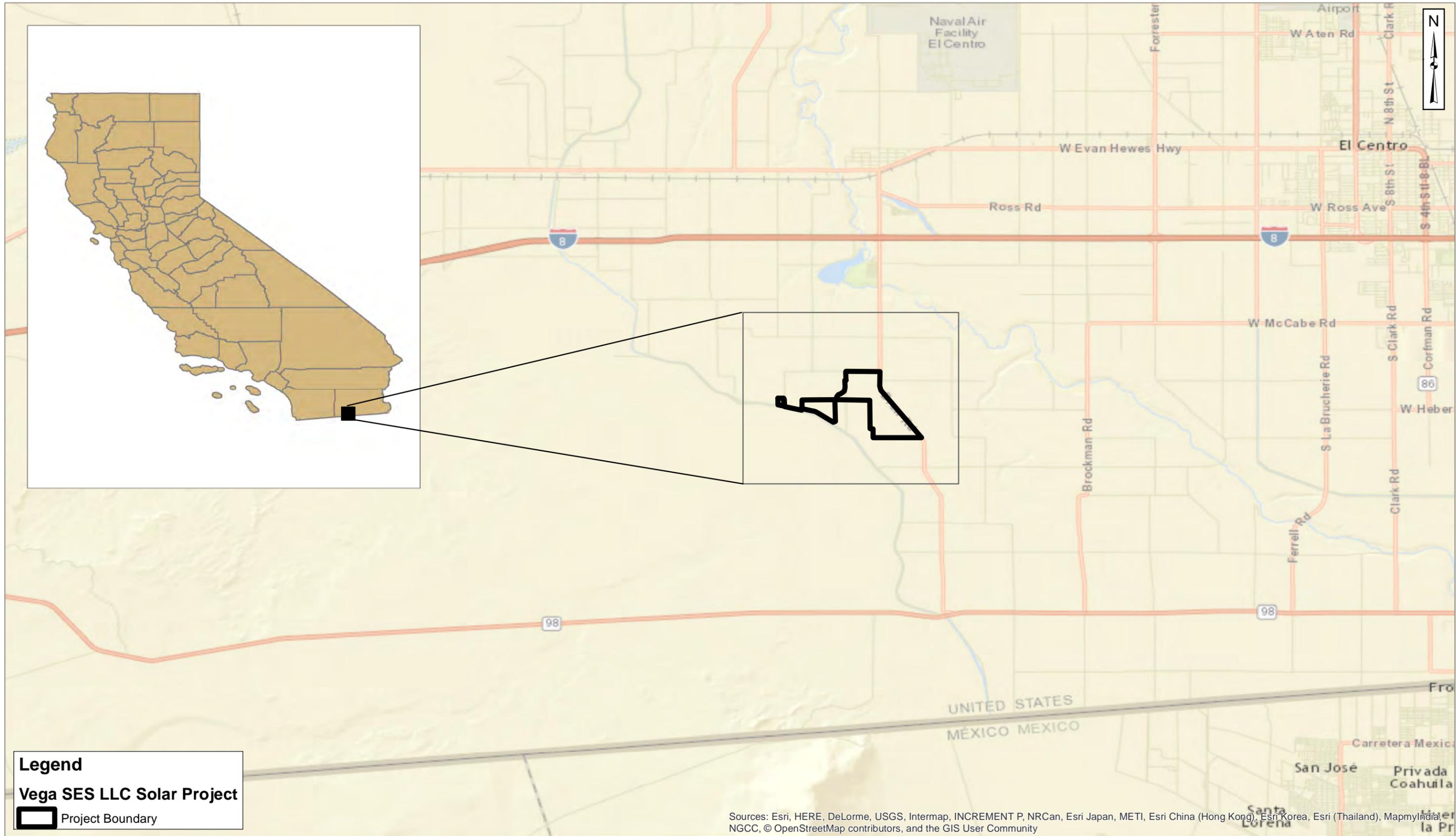
1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

The analyses presented in this Biological Resources Technical Report (BTR) are intended to establish baseline conditions with respect to biological resources and recommend further studies or mitigation measures, if any, which will be appropriate to support environmental compliance and permitting for the Project. This report describes the existing biological character in terms of flora, wildlife, wildlife habitats, and potential jurisdictional waters. Regulated or sensitive resources analyzed herein include special status plant and wildlife species, nesting birds and raptors, sensitive natural communities, and potential jurisdictional waters (including wetlands).

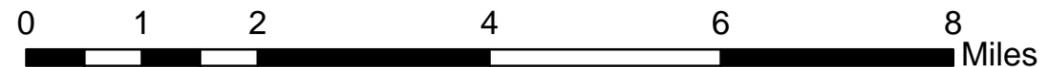
1.2 PROJECT LOCATION

The Project is located within southwestern Imperial County, California, approximately 10 miles southwest of the City of El Centro (Figure 1). It is situated in Township 16 South, Range 12 East of the U.S. Geographical Survey (USGS) Mt. Signal 7.5-minute topographic quadrangle. The Project site consists of two distinct halves, both consisting of currently-farmed agricultural land, generally



Legend
Vega SES LLC Solar Project
 Project Boundary

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community



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Vega SES LLC Solar Project
 Project Location Map

Figure:
1

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

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divided by Vogel Road and/or the Fig Drain (Figure 2). The eastern portion consists of 6 individual parcels bound to the north by W Wixom Road, to the east by Drew Road, to the west by Vogel Road/ Fig Drain/ adjacent farmland, and to the south by adjacent farmland to the north of Lyons Road. The western portion consists of a single parcel bound to the east by Fig Drain, to the south by Mandrapa Road, and to the north and west by adjacent farmland

1.3 PROJECT DESCRIPTION

The Project is a proposed 494-acre solar photovoltaic (PV) energy facility site. The Project also includes construction of an approximately 0.4-mile gen-tie line from the western terminus of the solar facility to the proposed Fig Substation to be constructed at the intersection of Liebert Road and Mandrapa Road. The construction of the Fig Substation is not part of the Project.

1.4 ENVIRONMENTAL SETTING

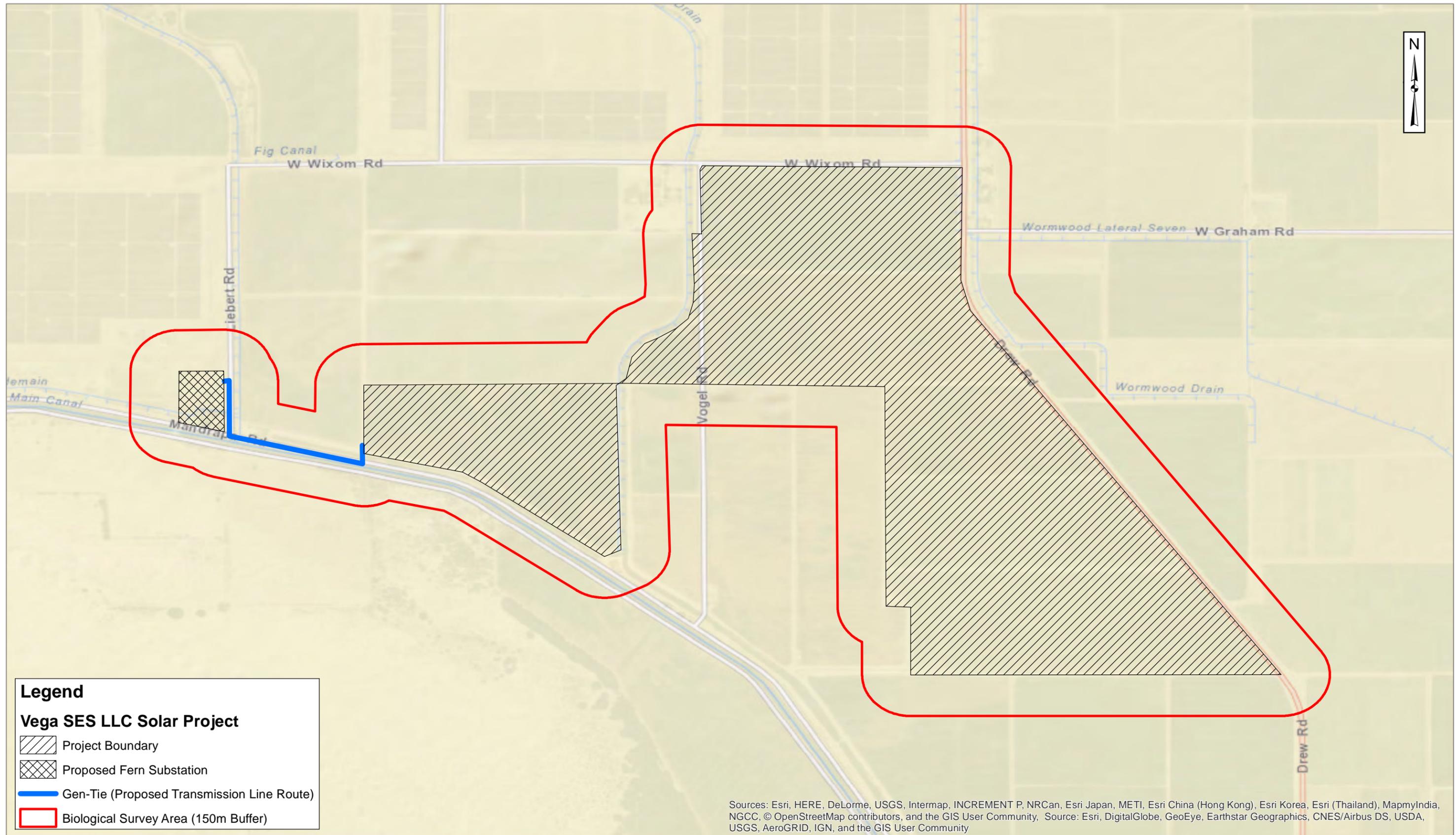
Site topography is generally flat, with elevations ranging from -20 to -35 feet below mean sea level (msl). The region experiences a desert climate characterized by hot, dry summers and warm winters. Average annual temperatures range from 69 degrees Fahrenheit in December to 107 degrees Fahrenheit in July, and average annual precipitation measures 2.87 inches (US Climate Data 2017).

The Project site supports active and temporarily fallow agricultural lands and several unpaved roads, irrigation ditches, and other farming infrastructure occur throughout the BSA. Crops observed at the time of surveys included alfalfa, oat, hay, peppers, and watermelon, and recently plowed/fallow fields were also observed. Several irrigation canals/ditches that ultimately drain into the Salton Sea, north of the Project site, were observed within the BSA. The most prominent of these are the Fig Drain and Westside Main Canal. Irrigation infrastructure in the Imperial Valley is operated and maintained by the IID.

Land Uses

Lands within the Project site are zoned as Agriculture (A). The Project encompasses three agricultural zones: General Agriculture (A2), General Agriculture Rural Zone (A2R), and Heavy Agriculture (A3) (Planning and Development Services Department of County of Imperial 2015). Surrounding lands are also agricultural, with the exception those to the south/southeast of the western portion of the BSA, which are undeveloped.

At the time of survey, adjacent land uses included solar facilities and agricultural lands to the north, rural residences to the northeast, agricultural lands to the east and south, and agricultural lands, solar facilities, and open space to the west.

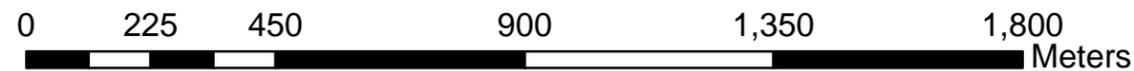


Legend

Vega SES LLC Solar Project

-  Project Boundary
-  Proposed Fern Substation
-  Gen-Tie (Proposed Transmission Line Route)
-  Biological Survey Area (150m Buffer)

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Vega SES LLC Solar Project
 Project Area Map

Figure:
 2

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Soils

The predominant soils within the BSA include:

- Imperial silty clay, wet;
- Holtville silty clay, wet;
- Meloland very fine sandy loam, wet;
- Rosita fine sand, 0 to 2 percent slopes;
- Vint loamy very fine sand, wet;
- Vint and Indio very fine sandy loams, wet; and
- Meloland and Holtville loams, wet (USDA 2017).

Hydrology

The BSA is underlain by the Colorado River Basin, and is within the Imperial Hydrologic Unit and Brawley Hydrologic Area (SWRCB 2006). Irrigation water is supplied to the agricultural fields within and surrounding the BSA by an engineered system of concrete-lined canals or earthen lateral canals operated and maintained by the IID. These canals typically contain water at all times except during maintenance periods and ultimately drain into the Salton Sea. Water generally flows from south to north through the BSA.

The farm fields within the BSA are graded for flood irrigation. When a field is irrigated, water is allowed to flow from the IID delivery canal to a smaller earthen or concrete-lined ditch (typically referred to as a “head ditch”), which distributes the water evenly across the field. At the opposite, lower elevation side of the field, excess water is collected into another ditch (typically referred to as a “tail ditch”) and directed into an IID drain. The ditches present on the BSA are both earthen and concrete-lined, and earthen ditches may be frequently rebuilt when the fields are plowed and disked.

2.0 METHODS

Prior to initiating the analysis presented in this report, a Biological Survey Area (BSA), within which lands were surveyed, was defined. The extent of the BSA includes the proposed Project area, including the gen-tie route, the proposed location for the construction of the Fig Substation, plus a 150-meter buffer zone surrounding these components (Figure 2). The BSA is the area that could be potentially be directly or indirectly impacted during Project construction and operation.

2.1 LITERATURE REVIEW

Prior to conducting biological surveys and habitat assessment, a literature review was conducted to identify special-status biological resources present or potentially present in the vicinity of the Project area. This included a review of the California Natural Diversity Database (CNDDDB) (CDFW 2017) and California Native Plant Society (CNPS) (CNPS 2017) Inventory of Rare and Endangered Plants database. The database query included a six-quadrangle search radius around the BSA. Special-status wildlife and plants within a five-mile radius were mapped (Figure 3). General information regarding wildlife species present in the region was obtained from the following sources: Sibley (2000) for birds, Zeiner, et al. (1990) for mammals, Stebbins (2003) for reptiles and amphibians, and Emmel (1973) for butterflies. General information regarding plant species, identification, and nomenclature was obtained from Baldwin, et al. (2012).

2.2 FIELD SURVEY METHODS

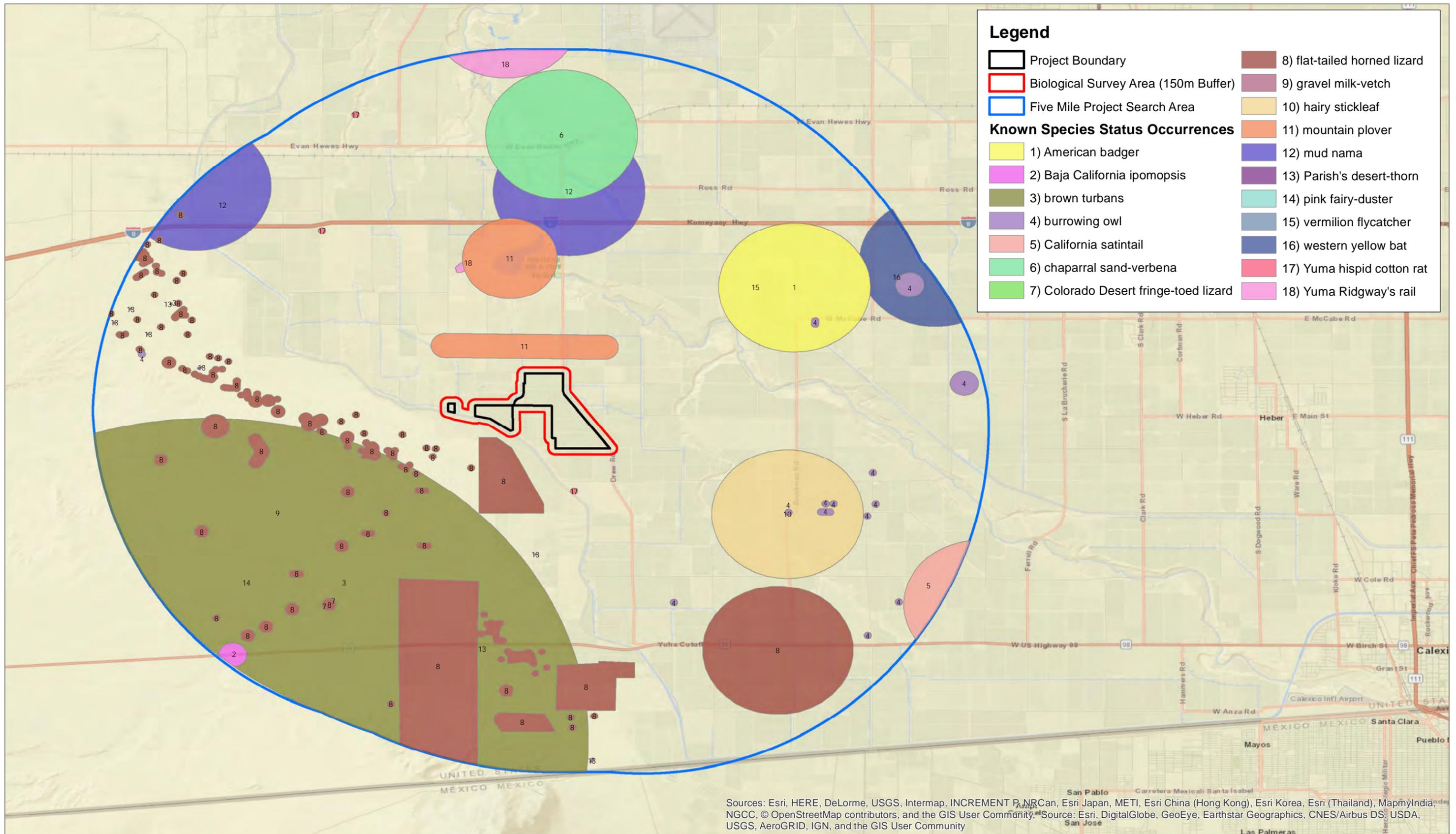
2.2.1 Reconnaissance-level Habitat Assessment

A field evaluation of biological resources was conducted on June 28, 2017 to determine if local, state, or federally listed special-status plant or wildlife species are potentially present within the BSA (Appendix A). Using existing roadways, biologists walked the entire BSA, paying close attention to areas in which special status species may occur such as field and road edges and irrigation canals. Vegetation communities were mapped, common plant and wildlife species observed were noted, and floral and faunal compendiums were drafted (Appendices B and C). Locations of sensitive resources were mapped in the field with the aid of a Trimble Geo 7X hand held Global Positioning System (GPS) unit and plotted on a field map. The locations were later digitized using Geographic Information System (GIS) software and plotted for use in maps attached to this BRTR. Additionally, photos were taken to depict biological resources and current site conditions (Appendix D).

Survey personnel were experienced in the undertaking of field surveys for special-status species, as well as knowledgeable of the identification and ecology of all species with the potential to be present. Survey personnel were familiar with both federal and state statutes related to listed and sensitive species and their collection, in addition to being experienced with analyzing the impacts of development on special-status species, their habitats, and communities. In addition, field teams were knowledgeable of the habitat requirements for each of the target species, locations of various habitats within the BSA, and of the characteristics of vegetative habitat of each target species.

2.2.2 Focused Burrowing Owl Surveys

Burrowing Owl surveys were conducted pursuant to California Burrowing Owl Consortium Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC 1993) and CDFG's Staff Report on Burrowing Owl Mitigation (CDFG 2012). Breeding season surveys of the Vega site were initiated by qualified biologists during the 2017 breeding season (1 February-31 August). Surveys



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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	<p>Job Number: 185803957</p>			<p>Drawn By: Michael Bartosek</p>

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covered suitable habitat within the entire BSA and the locations of potentially suitable burrows, owls, and their sign were recorded using a hand-held GPS unit. Numbers of adults and juveniles were recorded, as well as general behavior. Transect spacing varied from approximately 5 to 20 meters as necessary to ensure complete coverage based on topographical conditions to ensure that all suitable burrows were identified. Photos were taken of representative potential burrows and owl observations were noted.

Surveys were conducted in the morning and evening (between morning civil twilight and 10:00 AM and two hours before sunset to evening civil twilight). Burrows were examined for owl sign during the first observation of suitable burrows. Subsequent observations were conducted from fixed points that provided visual coverage of the burrows using spotting scopes or binoculars.

Surveyors focused on areas surrounding agricultural lands currently being cultivated. Active farmlands are in a constant state of fluctuation, disturbed several times each growing season through disking/plowing, planting, irrigation, application of herbicide/fungicide, and harvesting. These conditions do not allow for the establishment of long-term burrows and generally limit the availability of prey items, therefore greatly reducing the likelihood that owls would use active fields for anything more than occasional perching or foraging.

The initial two of the series of four surveys for burrowing owl (as required by the CDFG protocol) were performed during the 2017 breeding season. Stantec will conduct two additional surveys during the 2018 breeding season to complete the survey protocol. The results of these surveys will be included as an addendum to this report upon completion.

2.2.3 Jurisdictional Delineation

A formal jurisdictional waters delineation per US Army Corps of Engineers (USACE) was conducted as part of this assessment. The BSA was evaluated for potential wetlands and/or waters subject to federal and/or state jurisdiction pursuant to Section 404 and 401 of the Clean Water Act (CWA) concurrently with the field surveys described above. This jurisdictional assessment also included an investigation of areas that could be jurisdictional pursuant to Section 1600 et seq. of the California Fish and Game Code. Prior to conducting the field assessment, Stantec reviewed current and historic aerial imagery, topographic maps, soil maps (USDA 2017), local and state hydric soils lists, and the National Wetlands Inventory (USFWS 2006) to evaluate the potential active channels and wetland features that occur within the BSA. During the field assessment, biologists mapped vegetation and hydrologic features using a GPS unit. Total jurisdictional areas were calculated based on methods described in the USACE Wetland Delineation Manual (USACE 1987) and Arid West Regional Supplement (USACE 2008).

3.0 REGULATORY CONTEXT

Special-status species are those taxa that are legally protected under the State or Federal Endangered Species Act (ESA) or other regulations and considered sufficiently rare by the

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scientific community to qualify for such listing. Special-status plants and animals generally fall into one or more of the following categories:

- Plants or animals listed or proposed for listing as Threatened or Endangered under the Federal ESA (50 Code of Federal Regulations [CFR] 17.12 [listed plants], 1711 [listed animal] and various notices in the Federal Register [FR] [proposed species]);
- Plants or animals that are candidates for possible future listing as Threatened or Endangered under the Federal ESA (61 FR 40, February 28, 1996);
- Plants or animals listed or proposed for listing by the State of California as Threatened or Endangered under the California ESA (14 California Code of Regulations [CCR] 670.5);
- Animal Species of Special Concern to the California Department of Fish and Wildlife (CDFW) (Remsen 1978 [birds], Williams 1986 [mammals], Jennings and Hayes 1994 [reptiles and amphibians], Moyle et al. 1989 [fish]);
- Animals Fully Protected in California (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]);
- Bird species protected under the Migratory Bird Treaty Act;
- Plants contained on the CNPS California Rare Plant Rank (RPR) (CNPS 2001, 2013 and Skinner and Pavlik 1994). Only Listed species and RPR Lists 1 and 2 are considered "special-status" species. This includes plants on List 1A = Plants presumed extinct in California; List 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat); List 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80% occurrences threatened). The RPR also includes Lists 3 and 4. Per the CDFW (2009), these plants typically do not warrant consideration under State CEQA Guidelines §15380 unless the specific circumstances relevant to local distributions make them of potential scientific interest.

A further discussion of the regulatory framework for this document is provided below.

3.1 PROTECTED SPECIES AND HABITATS

Sensitive habitats are those that are considered to support unique vegetation communities, are of value to special-status plant and wildlife species, or have a rank of S1–S3 on the California Department of Fish and Wildlife (CDFW) List of Terrestrial Communities. "S" denotes State Ranking. Unique vegetation communities include habitats found only in the region, local representatives of species not generally found in Orange County, or outstanding examples of CDFW sensitive plant communities. In general, listed species are those plant or wildlife species that are listed as

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threatened or endangered by either the state of California or under the federal Endangered Species Act. Special-status plants include listed species, candidates for listing, and species designated with a California Rare Plant Rank by the CDFW. Special-status wildlife species include federally or state-recognized listed species, candidates for potential listing, and species with a designation from CDFW of "Watch List", "Fully Protected", or "California Species of Concern." (Appendix A provides an explanation of these terms).

3.2 MIGRATORY BIRD TREATY ACT (MBTA)

Native birds and active nests of birds, chicks and eggs are protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703). Under the MBTA it is illegal to directly kill, or destroy a nest of, nearly any native bird species, not just endangered species. Activities that result in removal or destruction of an active nest (a nest with eggs or young being attended by one or more adults) would violate the MBTA. Removal of unoccupied nests, or bird mortality resulting indirectly from disturbance activities, is not considered a violation of the MBTA.

In addition to this federal law, the California Department of Fish and Wildlife Code (FGC) 3513 also provide protection to native birds and "active" nests. Therefore, actions that would result in destruction of active bird nests, eggs, or nestlings can violate the MBTA and Fish and Wildlife Codes. "Active" is indicated by intact eggs, live chicks, or adults inside the nests.

3.3 JURISDICTIONAL WATERS

The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA) regulate the discharge of dredge or fill material into "waters of the U.S." Under Section 404 of the Clean Water Act (CWA), "waters of the U.S." include wetlands and lakes, rivers, streams, and their tributaries. Wetlands are defined for regulatory purposes as areas "...inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated solid conditions" (333 Code of Federal Regulations [CFR] 328.3, 40 CFR 230.3). Areas not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water-filled depressions with no outlet for drainage (33 CFR, Part 328).

Section 401 of the CWA requires an applicant for any federal permit which may result in a discharge into "waters of the U.S.," to obtain a certification from the state that the discharge will comply with provisions of the CWA. The State of California established the State Water Resources Control Board (SWRCB) which oversees the Regional Water Quality Control Board (RWQCB) through the Porter-Cologne Water Quality Control Act (Porter-Cologne). Any condition of water quality certification would be incorporated into the USACE permit. California has a policy of no-net-loss of wetlands and typically requires mitigation for impacts to wetlands before it will issue a water quality certification. It should also be noted that potential discharge of fill material into the waters of the State are not subject to jurisdiction of the USACE pursuant to Section 404 of the CWA,

but may require authorization pursuant to the Porter-Cologne Act, through application for Waste Discharge Requirements (WDRs) or through waiver of WDRs.

3.4 SECTION 3503.5 OF THE CALIFORNIA FISH AND GAME CODE

Section 3503.5 states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

3.5 SECTION 1602 OF THE CALIFORNIA FISH AND GAME CODE

Sections 1600-1603 of the California Fish and Game (CFG) Code regulates all diversions, obstructions, or changes to the natural flow of bed, channel, or bank of any river, stream, or lake, which supports fish and wildlife. “Substantial” modifications to such water bodies that result in modifications to the bed, bank or associated riparian areas or flows within waters bodies require that a Notification for Lake or Streambed Alteration Agreement (LSAA) be provided to CDFW in procurement of a Section 1602 permit.

3.6 CALIFORNIA ENDANGERED SPECIES ACT (CESA)

CDFW has jurisdiction over species listed as threatened or endangered under section 2080 of the California Fish and Wildlife Code. The California Endangered Species Act (CESA) prohibits take of state-listed threatened and endangered species. The state act differs from the federal act in that it does not include habitat destruction in its definition of take. The California Fish and Wildlife Code defines take as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The CDFW may authorize take under the CESA through Sections 2081 agreements.

3.7 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) GUIDELINES SECTION 15380

CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specific criteria. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a “candidate species” that has not yet been listed by the USFWS or CDFW. CEQA, therefore, enables an agency to protect a species from significant project impacts until the respective government agencies have an opportunity to list the species as protected, if warranted.

In general, plants appearing on the California Rare Plant Ranking, formally known as the California Native Plant Society List 1B (plants believed to be extant and rare, threatened or endangered plants in California) and List 2B (rare, threatened, or endangered plants in California but more numerous elsewhere) are considered to meet CEQA’s Section 15380 criteria.

3.8 FEDERAL ENDANGERED SPECIES ACT (FESA)

The US Fish and Wildlife Service (USFWS) has jurisdiction over species listed as threatened or endangered under Section 9 of the FESA. The Act protects listed species from harm or take which is broadly defined as "...the action of harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct." For any project involving a federal agency in which a listed species could be affected, the federal agency must consult with the USFWS in accordance with the FESA (USFWS 1973).

Further, the FESA provides specific mechanisms to achieve its purposes, which includes Section 7. Section 7 requires that Federal agencies develop a conservation program for listed species (i.e., Section 7(a) (1)) and that they avoid actions that will further harm species and their critical habitat (i.e., Section 7(a) (2)). The Section 7(a)(2) directs all Federal agencies to ensure that any action they authorize, fund, or carry-out does not jeopardize the continued existence of an endangered or threatened species or designated or proposed critical habitat (collectively, referred to as protected resources). The implementing regulations, 50 CFR 402, specify how Federal agencies are to fulfill their section 7 consultation requirements. Under the implementing regulations (50 CFR 402), Federal agencies must review their actions and determine whether the action may affect federally listed and proposed species or proposed or designated critical habitat. To accomplish this, Federal agencies must request from the USFWS a list of species and critical habitat that may be in the BSA or they can request USFWS concurrence with their species list. The USFWS must respond to either request within 30 days. Once a species list is obtained or verified as accurate, Federal agencies need to determine whether their actions may affect any of those species or their critical habitat. If no species or their critical habitat is affected, no further consultation is required. If they may be affected, consultation with the USFWS is required. This consultation will conclude either informally with written concurrence from the USFWS or through formal consultation with a biological opinion provided to the Federal agency. Section 10 of the FESA (16 U.S.C. § 1539) provides a means whereby a nonfederal action with the potential to result in the incidental take of a listed species while carrying out an otherwise lawful activity may be authorized under a permit. Application procedures are found in 50 C.F.R. Parts 13 and 17 for species under jurisdiction of the USFWS (USFWS 2014).

3.9 FARMLAND PROTECTION POLICY ACT (FPPA)

The goal of the Farmland Protection Policy Act (FPPA) is to ensure that Federal programs contribute as little as possible to the conversion of farmlands to non-agricultural lands. The FPPA specifies that Federal programs work with State, local, and private farmland protection plans. The U.S. Department of Agriculture (USDA) National Resource Conservation Service (NRCS) oversees the FPPA.

3.10 CALIFORNIA LAND CONSERVATION ACT

California State Legislature enacted the California Land Conservation Act in 1965. Also known as the "Williamson Act," it aims to preserve State agricultural lands and minimize conversion to non-agricultural uses. The Williamson Act also created an agricultural preserve contract system that allows local jurisdictions to enforce a reduced-rate tax on landowners, dependent upon land value for current uses instead of unrestricted market value. By signing a Williamson Act contract, landowners agree to retain their land as agricultural for at least ten years. Contracts are renewed automatically unless a landowner files for non-renewal with the County.

3.11 IMPERIAL COUNTY LAND USE CODE

Per Section 90508 of the Imperial County Land Use Code, land uses allowed with implementation of a Conditional Use Permit (CUP), within land zoned as A-2 or A-2R, include electrical generation plants less than 50 megawatts (MW), electrical power generating plants excluding nuclear or coal fired, and electrical substations within electrical transmission systems (500-kV/230-kV/161 kV). Land uses allowed with implementation of a Conditional Use Permit (CUP), within land zoned as A-2, A-2R or A-3 include facilities relating to the generation and transmission of electrical energy, provided such facilities are not, under state or federal law, to be approved exclusively by an agency or agencies of the state and/or federal governments and provided that such facilities shall be approved subsequent to coordination and review with the Imperial Irrigation District for electrical matters.

3.12 IMPERIAL COUNTY GENERAL PLAN

The Imperial County General Plan Agricultural Element Goal 1, Objective 1.8, states that agricultural land shall be allowed to be converted to non-agricultural uses, including renewable energy use, "only when a clear and immediate need can be demonstrated, based on economic benefits, population projections and lack of other available land."

4.0 RESULTS

The habitats present within the BSA have the potential to support nesting birds, special-status wildlife, and sensitive vegetation communities. This section contains a discussion of special-status species; including vegetation communities, plants and wildlife, migratory birds and potential jurisdictional waters.

4.1 VEGETATION COMMUNITIES/LAND COVER TYPES

The mapping and description of plant communities follows the MCV II classification system described in the second edition of A Manual of California Vegetation (Sawyer et al. 2009).

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Scientific names and common names are according to the second edition of The Jepson Manual (Baldwin et al. 2012).

The research and fieldwork conducted indicate that the BSA supports five major types of vegetation communities/landcover types: arrow weed thickets (*Pluchea sericea* Shrubland Alliance), arrow weed-common reed thickets (*Pluchea sericea-Phragmites-australis* Shrubland Alliance), ruderal scrub, agricultural land, and developed/disturbed land (Figure 4). Descriptions of the plant species present within each vegetation type are provided below.

Arrow Weed Thickets (*Pluchea sericea* Shrubland Alliance)

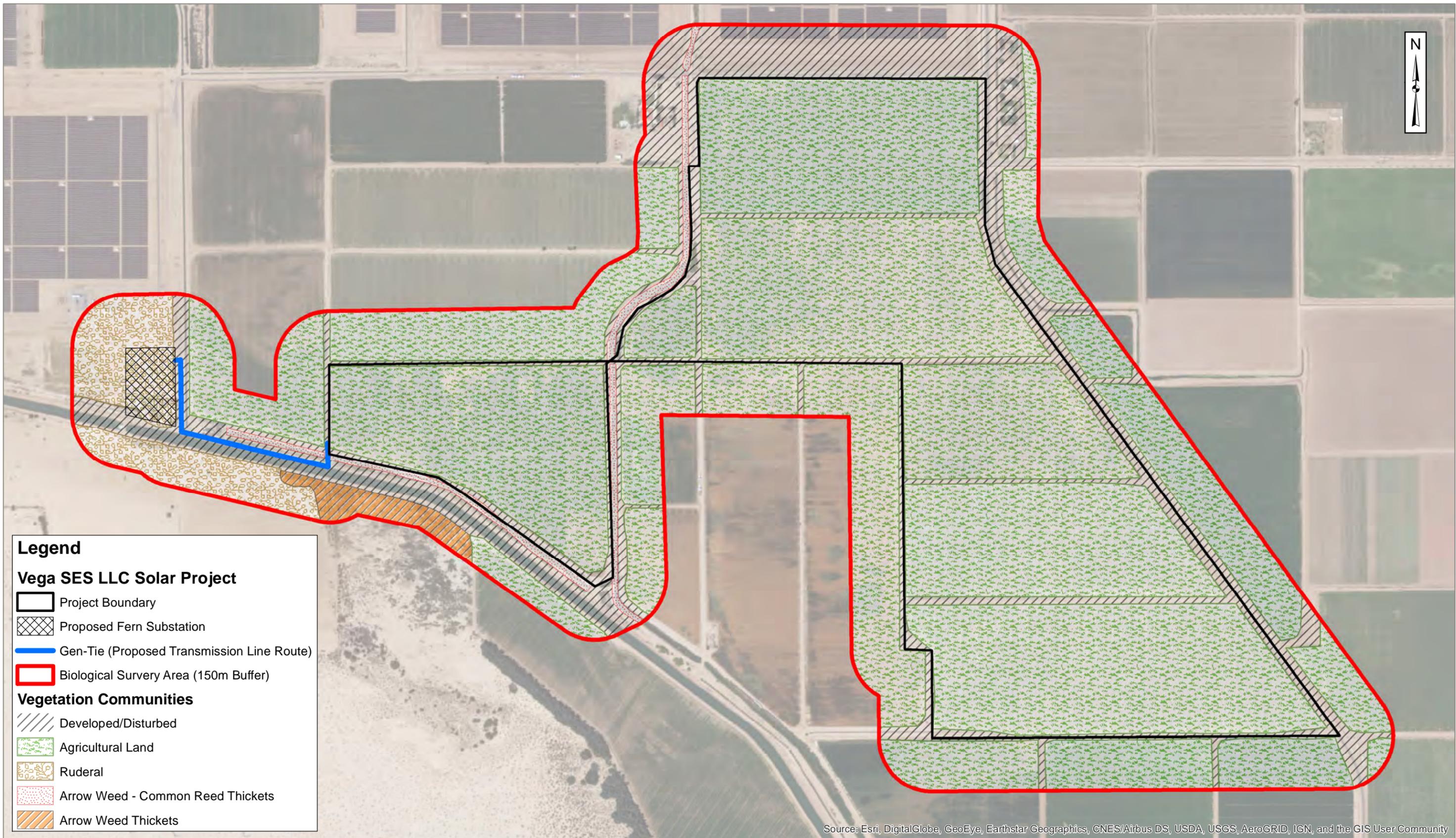
This vegetation community observed within the BSA as described in *A Manual of California Vegetation* (Sawyer et al. 2009) is typically dominated or co-dominated by arrow weed. Co-dominant plants and associated species commonly include saltbush (*Atriplex* sp.), mulefat (*Baccharis salicifolia*), tamarisk (*Tamarix* sp.), and narrowleaf willow (*Salix exigua*). Emergent Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), and honey mesquite (*Prosopis glandulosa*) trees may be present at low cover. The shrub layer is less than 5 meters tall with intermittent to continuous cover. The herbaceous understory is sparse with seasonal annuals. This community is found at elevations of -75 to 900 meters. This vegetation community is commonly found around springs, seeps, irrigation ditches, canyon bottoms, stream borders, and seasonally flooded washes. Soils are alluvial or aeolian-derived sands or clay loams, usually alkaline or saline. Arrow weed is also recognized by the USFWS Wetland Inventory as a Facultative Wetland plant (FACW; usually occurring in wetlands but occasionally found in non-wetlands).

Approximately 12.7 acres of arrow weed thickets were observed within the BSA buffer area to the south of the western portion of the Project site, bordering the southern edge of the Westside Main Canal. Where present within the BSA, this community is closely associated with drainage areas. Other species observed within this community at the time of survey included tamarisk and mesquite (*Prosopis* sp.). Construction of the Project is not expected to result in impacts to this vegetation community.

Arrow Weed-Common Reed Thickets (*Pluchea sericea-Phragmites-australis* Shrubland Alliance)

This vegetation community is not specifically described within *A Manual of California Vegetation* (Sawyer, et al. 2009). At the time of survey, this community was observed to be co-dominated by arrow weed and common reed. Associated species included southern cattail (*Typha domingensis*). Arrow weed and common reed are also recognized by the USFWS Wetland Inventory as Facultative Wetland plants (FACW; usually occurring in wetlands but occasionally found in non-wetlands).

Approximately 12.7 acres of arrow weed-common reed thickets were observed within the BSA, confined within the two major IID drainages, Fig Drain and Westside Main Canal. Construction of the Project is not expected to result in impacts to this vegetation community.



Legend

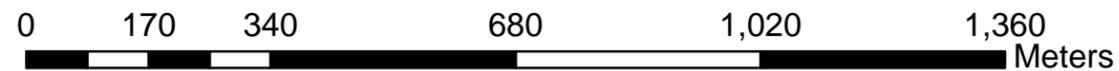
Vega SES LLC Solar Project

- Project Boundary
- Proposed Fern Substation
- Gen-Tie (Proposed Transmission Line Route)
- Biological Survey Area (150m Buffer)

Vegetation Communities

- Developed/Disturbed
- Agricultural Land
- Ruderal
- Arrow Weed - Common Reed Thickets
- Arrow Weed Thickets

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Vega SES LLC Solar Project
 Vegetation Communities
 Map

Figure:
4

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

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Ruderal Herbaceous Scrub

This vegetation community is not specifically described within *A Manual of California Vegetation* (Sawyer, et al. 2009). Within the BSA, this community was observed to be co-dominated by non-native Russian thistle (*Salsola tragus*) and Bermuda grass (*Cynodon dactylon*). Additional associated species included few eucalyptus (*Eucalyptus* sp.) and mesquite trees.

Within the BSA, approximately 38.9 acres of ruderal scrub was observed occupying the proposed Fern substation site and in the undeveloped area to the southwest of the proposed gen-tie route, bordering the southern edge of the Westside Main Canal. Construction of the Project is not expected to result in impacts to this vegetation community.

Agricultural Land

This land cover type is not described within *A Manual of California Vegetation* (Sawyer, et al. 2009). At the time of survey, this land cover type was observed to contain active and fallow fields, and associated irrigation canals immediately adjacent to the fields.

Approximately 673 acres of agricultural land was observed throughout the BSA. The proposed Project would potentially result in permanent impacts to approximately 430 acres of agricultural land.

Developed/Disturbed Land

This land cover type is not described within *A Manual of California Vegetation* (Sawyer, et al. 2009), but includes developed areas such as roads, residences, and existing solar facilities. These areas are predominantly devoid of vegetation, though do support the sparse growth of ruderal herbaceous scrub, including non-native annual grasses and other weedy species.

Approximately 171 acres of developed/disturbed land was observed throughout the BSA. The Project would potentially result in permanent impacts to approximately 64 acres this land use type.

4.2 SPECIAL-STATUS VEGETATION COMMUNITIES

Per CDFW, alliances with state ranks of S1-S3 and all associations within them are considered to be highly imperiled (S1) to vulnerable (S3). Impacts to high-quality occurrences of S1, S2 and S3 communities may be considered significant under CEQA.

During the reconnaissance level survey conducted on June 28, 2017, one special-status plant community, arrow weed thickets, listed with a state rank of S3, was detected within the BSA. This community was observed within the buffer zone to the south of Mandrapa Road and the adjacent Westside Main Canal. It is not expected that the Project construction will result in impacts to this area.

4.3 SPECIAL-STATUS PLANT SPECIES

“Listed” or special-status plant species are those that are regulated by resource agencies or are identified in local or regional plans and policies for protection. These include state or federally threatened and endangered plant species as well as plants contained on the CNPS California Rare Plant Rank (RPR). Only Listed species and RPR Lists 1 and 2 are considered “special status” species, per the RPR code definitions:

- List 1A = Plants presumed extinct in California;
- List 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat);
- List 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80% occurrences threatened);
- List 1B.3 = Rare or endangered in California and elsewhere, not very endangered in California (<20% of occurrences threatened or no current threats known);
- List 2 = Rare, threatened or endangered in California, but more common elsewhere;

The RPR also includes Lists 3 and 4. Per the CDFW (2009), these plants typically do not warrant consideration under State CEQA Guidelines §15380 unless the specific circumstances relevant to local distributions make them of potential scientific interest.

During the reconnaissance-level survey conducted on June 28, 2017, no special-status plant species were detected within the BSA. Focused surveys for special-status plant species were not conducted, as the reconnaissance level field survey was not performed during optimal blooming periods for all special-status plant species known to occur in the region. A five-mile radius CNDDDB query returned occurrences of nine special-status plants species: Baja California ipomopsis (*Ipomopsis effusa*), brown turbans (*Malperia tenuis*), California satintail (*Imperata brevifolia*), chaparral sand-verbena (*Abronia villosa* var. *aurita*), gravel milk-vetch (*Astragalus sabulonum*), hairy stickleaf (*Mentzelia hirsutissima*), mud nama (*Nama stenocarpa*), Parish’s desert-thorn (*Lycium parishii*), and pink fairy-duster (*Calliandra eriophylla*) (Appendix A). Based on the site survey, the BSA does not contain suitable habitat to support these species. Lands throughout the BSA have experienced significant long-term disturbance related to their function as active agricultural areas. This land use has altered soil profiles, plant species composition, drainage patterns, and other ecological factors generally required by these sensitive species to occur.

4.4 SPECIAL-STATUS WILDLIFE SPECIES

“Listed” species are those species that are listed as “threatened” or “endangered” by either the State of California or under the Federal Endangered Species Act. Special-status wildlife species include federally or state-recognized listed species, candidates for potential listing, and species

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with a designation from CDFW of “Watch List”, “Fully Protected”, or “California Species of Concern.”

During the reconnaissance-level survey conducted on June 28, 2017, and subsequent focused surveys, one special-status wildlife species, burrowing owl (*Athene cunicularia*), was observed within the BSA. Locations of burrowing owls and their burrows are depicted in Figure 5. Additionally, the BSA contains habitat that could potentially support five special-status wildlife species known to occur in the region (per CNDDDB query): Colorado Desert fringe-toed lizard (*Uma notata*), flat-tailed horned lizard (*Phrynosoma mcallii*), mountain plover (*Charadrius montanus*), vermilion flycatcher (*Pyrocephalus rubinus*), and Yuma hispid cotton rat (*Sigmodon hispidus eremicus*) (Appendix A). Other special-status species known to inhabit the region are not expected to occur within the BSA due to lack of suitable habitat or high levels of ongoing disturbance and are not discussed further in this report. Recorded observations of special-status wildlife within five miles of the BSA are depicted in Figure 3.

Burrowing owl (*Athene cunicularia*)

Regulatory Status: California Species of Special Concern.

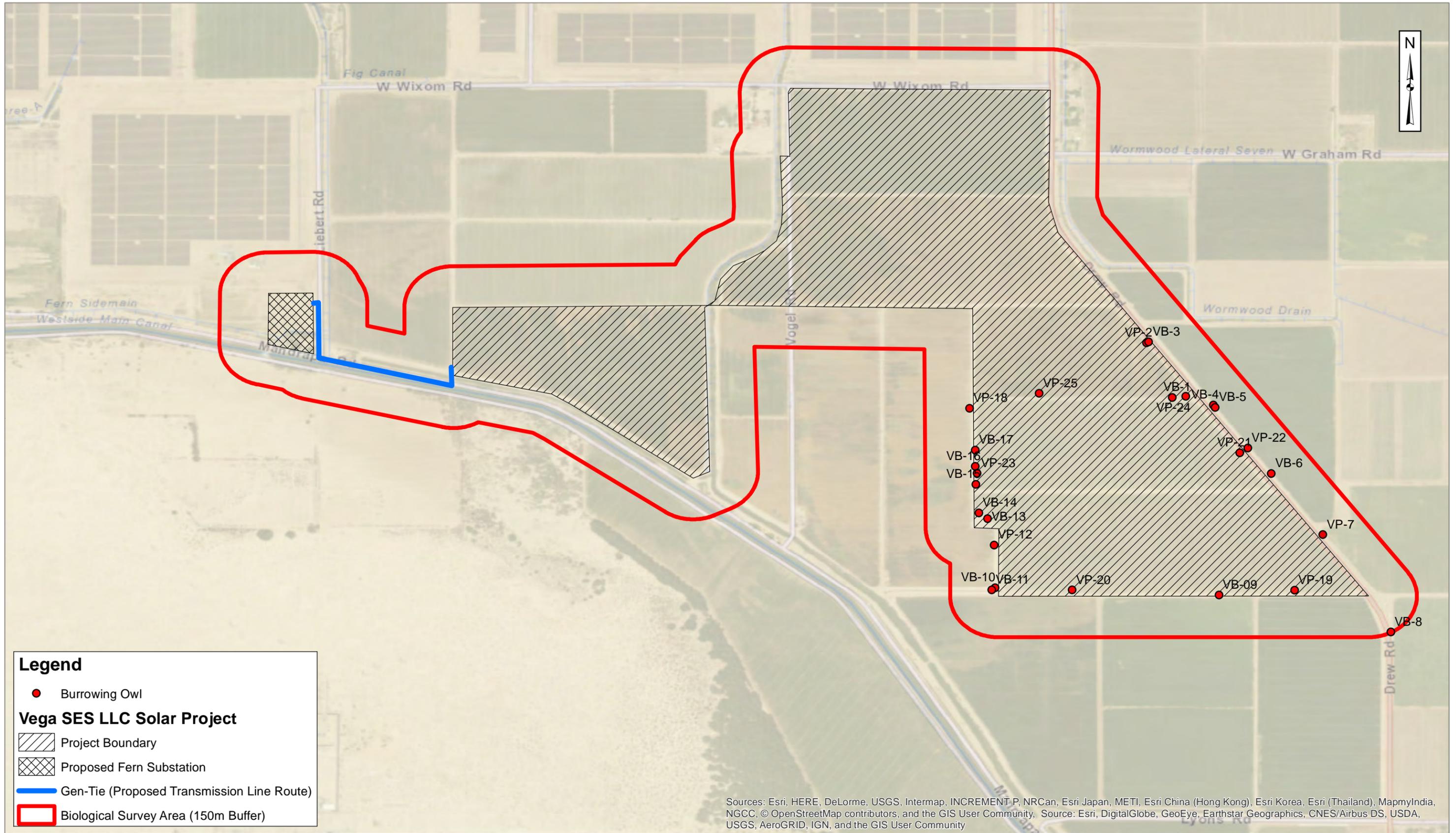
The burrowing owl is a small, ground-dwelling species. Burrowing owls have long legs, yellow eyes, and are mottled brown in color. Burrowing owl habitat includes open, generally flat areas that are dry and contain short-grass vegetation. Burrowing owls also utilize agricultural areas, vacant fields, and ruderal areas if the areas contain suitable burrows and habitat for foraging. Burrowing owls often use burrows created by other species, such as round-tailed ground squirrel (*Citellus tereticaudus*). Burrowing owls typically feed on small rodents, arthropods, amphibians, reptiles, small birds, and carrion. Burrowing owls are comparatively easy to detect because they are frequently visible outside their burrows during the day, generally active at dusk and dawn, but sometimes also at night. The nesting season for these birds begins in late March or April.

Focused burrowing owl surveys were conducted within the BSA on June 27, June 28, July 18, and July 19, 2017. A total of 33 burrowing owls were documented during these surveys. A detailed burrowing owl report is attached to this report as Appendix E.

Colorado Desert fringe-toed lizard (*Uma notata*)

Regulatory Status: California Species of Special Concern.

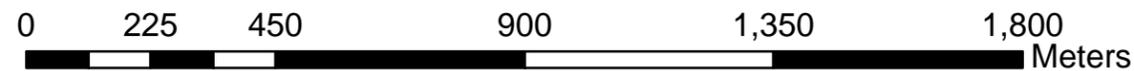
The Colorado Desert fringe-toed lizard is a medium-sized, flat-bodied lizard. The species is typically white with contrasting dark pattern over the body. The underside is typically pale, with orange striping along the sides of the belly. Habitats include sand dunes, sandy beaches, riverbanks, desert washes, and sparse desert scrub. The species is found in areas with fine, loose, windblown sandy soils, which it requires for burrowing. The diet primarily consists of ants, beetles, and grasshoppers.



Legend

- Burrowing Owl
- Vega SES LLC Solar Project**
- Project Boundary
- Proposed Fern Substation
- Gen-Tie (Proposed Transmission Line Route)
- Biological Survey Area (150m Buffer)

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Vega SES LLC Solar Project
 Burrowing Owl
 Survey Results

Figure:
5

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

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No Colorado Desert fringe-toed lizards were observed within the BSA during site surveys. Sandy areas occurring on the site potentially provide habitat for the species; however, their potential to occur is low due to the fragmentation of these sandy areas and ongoing disturbance throughout the BSA during the course of agricultural activities.

Flat-tailed horned lizard (*Phrynosoma mcallii*)

Regulatory Status: California Species of Special Concern.

The flat-tailed horned lizard is a medium-sized, flat-bodied lizard, with a wide, oval-shaped body. It has pointed scales along its upper body and tail. Eight horns are located on the back of its head. Typical coloring is beige, light brown, and light gray, and matches soil or sand color. A dark stripe is located along the back, with dark spots along each side of the stripe. Habitats include desert washes and desert flats. The species requires fine sand in which to burrow, and sparse vegetation. The diet primarily consists of Harvester ants, but will occasionally eat other small invertebrates.

No flat-tailed horned lizards were observed within the BSA during the reconnaissance survey. Fine sandy areas along irrigation canals, dirt roads, and open space within the buffer provide high potential habitat for the species. Additionally, ants were observed throughout the BSA.

Mountain plover (*Charadrius montanus*)

Regulatory Status: California Species of Special Concern.

The mountain plover is a medium-sized shorebird. It is sandy brown in color with a pale underside, with a black forehead and black coloration connecting the eye to the bill in adult breeding plumage. The species prefers flat land including short grassland habitat, plowed fields, sprouting grain fields, and sod farms. Breeding grounds are typically within the western Great Plains, with nest placement on the ground. The species typically eats insects.

No mountain plovers were observed within the BSA during the reconnaissance survey. The agricultural fields within the BSA provide high potential for foraging habitat for the species.

Vermilion flycatcher (*Pyrocephalus rubinus*)

Regulatory Status: California Species of Special Concern.

The vermilion flycatcher is a small flycatcher; males are typically bright red and black or dark brown, while females are typically gray-brown with light reddish underparts and white streaked breast. The species is found in desert riparian habitat, typically adjacent to irrigated/cultivated fields, pastures, and other open areas. It nests in forks of trees within desert riparian habitat. It typically perches in the open, and primarily preys on insects and other small arthropods.

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No vermilion flycatchers were observed within the BSA during the reconnaissance survey. The agricultural fields, irrigation ditches, and canals provide moderately suitable foraging habitat for the species.

Yuma hispid cotton rat (*Sigmodon hispidus eremicus*)

Regulatory Status: California Species of Special Concern.

The Yuma hispid cotton rat is a thick-bodied, brown rat found along the Lower Colorado River. The species is typically found in grass areas near irrigation water bodies, and prefers dense herbaceous cover in order to make runways. The species may nest above ground or within burrows. The species may breed year-round, and typically feeds on grasses, other vegetation, and occasional insects.

No Yuma hispid cotton rats were observed within the BSA during the reconnaissance survey. Vegetated areas along earthen canals within the BSA provide moderately suitable habitat for the species.

4.5 RESIDENT AND MIGRATORY BIRDS

Native and non-native vegetation within the BSA support foraging and nesting habitat for raptors and passerines. In addition, existing structures within developed areas could support nesting birds. During the reconnaissance survey conducted on June 28, 2017, two mourning dove (*Zenaida macroura*) nests were observed within mesquite trees located in the northwest portion of the BSA, adjacent to the Fig Drain River.

4.6 JURISDICTIONAL WATERS

A jurisdictional delineation was conducted on June 28, 2017, to determine the extent of USACE, CDFG, and RWQCB resources within the BSA. The results of this delineation are summarized below and depicted in Figure 6. Additional details are provided in the included Jurisdictional Delineation Report (Appendix F).

4.6.1 USACE Jurisdictional Waters

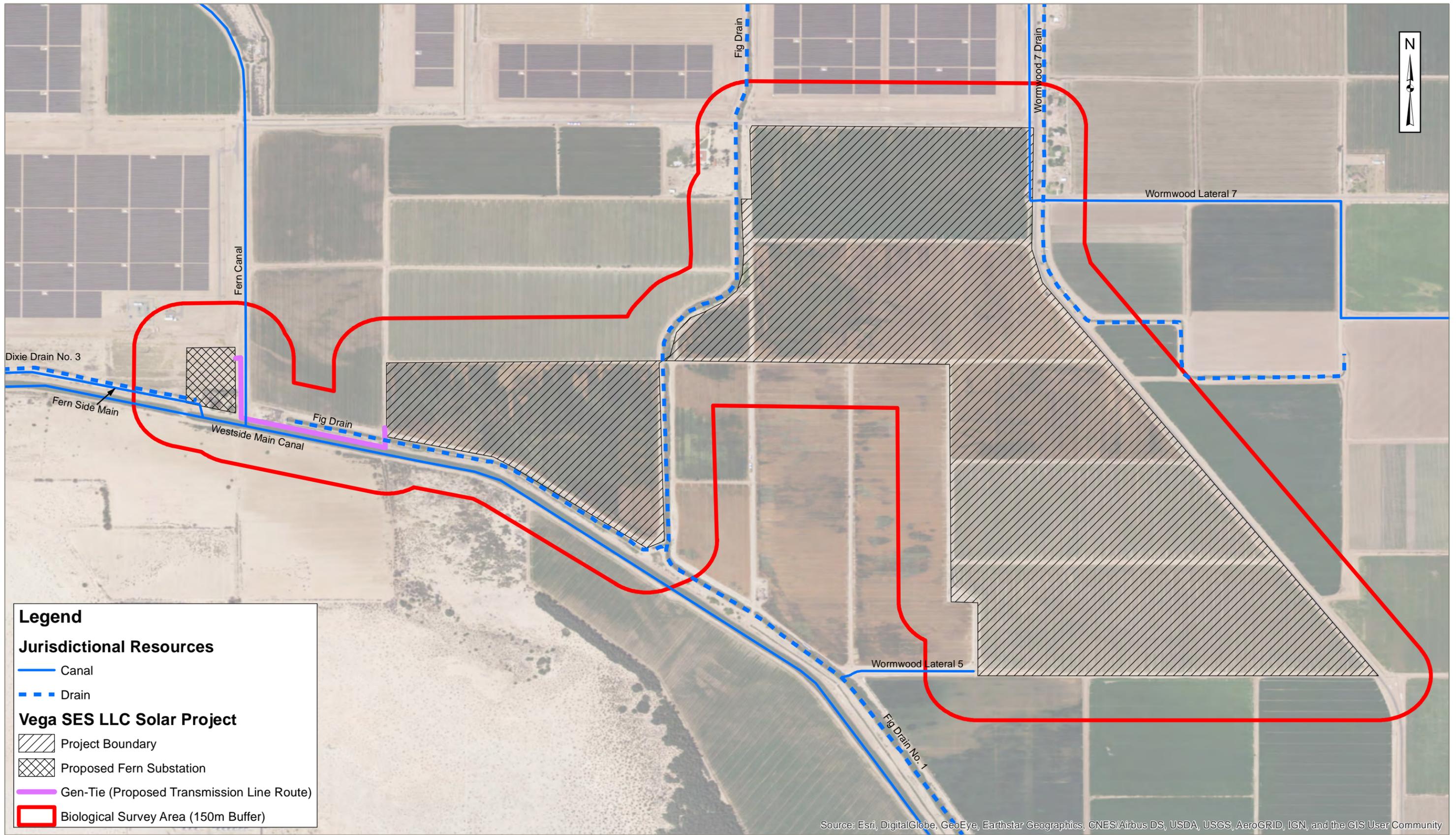
Wetlands

No USACE wetland areas were identified within the BSA.

Non-wetland Waters of the U.S.

The USACE (22 CFR Part 328) and Environmental Protection Agency definition of "Waters of the United States" per the Clean Water Act Proposed Rule (40 CFR Part 110, 112, 116, et al.) exempts irrigation ditches and maintained drainage ditches controlled by farmers, ranchers, and foresters

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Legend

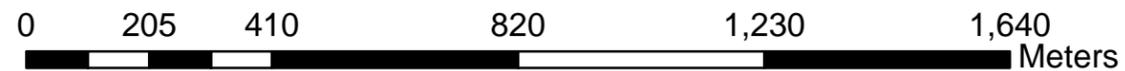
Jurisdictional Resources

- Canal
- - - Drain

Vega SES LLC Solar Project

- Project Boundary
- Proposed Fern Substation
- Gen-Tie (Proposed Transmission Line Route)
- Biological Survey Area (150m Buffer)

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Jurisdictional Resources

Figure:

6

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from the Clean Water Act Section 404. Drainages that are excavated in dry land, do not flow perennially, or do not flow into a jurisdictional water area, are not considered “Waters of the U.S.”

All the drainage features within the BSA are man-made, constructed entirely within uplands, and used solely for agricultural irrigation. Head and tail ditches are typically dry and convey water only during periodic and infrequent irrigation events. Thus, they would not meet the definition of a Relatively Permanent Water (RPW) and would not be considered jurisdictional. The larger, IID-administered canals (supply) and drains (drainage), however, generally convey water year-round and ultimately flow into the Salton Sea, which is considered a Traditionally Navigable Water, and would likely be considered federally jurisdictional.

4.6.2 CDFW Jurisdictional Waters

CDFW generally takes jurisdiction of all stream features, including drains and canals. The CDFW jurisdiction extends between the tops of a channel’s banks, or the limits of associated riparian vegetation if the vegetation extends beyond the tops of the banks. Wetlands need only to fulfill one of the three USACE criteria (hydrology, hydric soils, and wetland vegetation) to be considered CDFW-jurisdictional wetlands.

Under Section 1600 of the California Fish and Game Code, CDFW jurisdiction includes “...bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit....” Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial benefit (Cylinder 1995).

The head and tail ditches present within the BSA do not experience regular flow or support riparian habitat, and, as is the case with many tail ditches, are plowed under and re-created each time the field is replanted. Head ditches convey water during periodic and infrequent irrigation events and are generally dry. As such, these features would not be considered state jurisdictional. Some of the larger, IID-administered canals and drains, however, generally convey water year-round and support some riparian vegetation and/or aquatic life, and would likely be considered state jurisdictional.

4.7 HABITAT CONNECTIVITY AND WILDLIFE CORRIDORS

Wildlife movement corridors and habitat linkages are areas that connect suitable habitat in a region that may be fragmented by topography, vegetation changes, or human disturbance. Corridors are generally relatively short local pathways with little change in vegetation, while linkages span larger distances between very large core areas of habitat and may traverse several thousand feet and incorporate many vegetation communities. To function effectively, a corridor must accomplish two basic functions: 1) it must effectively link two or more large patches of habitat and; 2) the corridor must be suitable to the focal target species so that they will use the corridor frequently enough to achieve the desired demographic and genetic exchange between

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populations. Natural features such as drainages, ridgelines, or areas of dense vegetative cover may provide corridors and linkages for wildlife travel. The connectivity provided by these pathways serves as an important factor in species dispersion, access to food and water, and maintenance of genetic diversity between potentially distinct populations.

Avian and terrestrial wildlife are able to move unimpeded throughout the BSA and are not restricted to specific corridors or linkages. Due to the presence of available water and increased vegetative cover present in some of the IID irrigation infrastructure, these features experience increased use as local pathways for wildlife movement. The Project is not expected to impact these larger canals and drains or the vegetation composition within them.

The Imperial Valley is an important component of the Pacific Flyway, which is a major north-south passage for migratory birds extending from Alaska to Patagonia. The Salton Sea is known to serve as a stopover for birds migrating along this flyway, hosting as many as 400 different species. The Project site is situated approximately 25 miles south of the Salton Sea.

5.0 IMPACT ANALYSIS

5.1 DIRECT IMPACTS

“Direct” impacts are those that result in disturbance to habitat or adverse impacts to wildlife, generally occurring at the time of construction and from activities such as excavation, grading or grubbing. Direct impacts to wildlife could be injury or mortality of individuals from construction equipment or vehicles either by being struck or run over by vehicles. Grading can also crush or entrap animals occupying burrows. Direct impacts include both permanent and temporary impacts. Permanent impacts include activities such as grading and paving. Temporary impacts include activities such as vegetation trimming or best management practice (BMP) installation. Direct impacts are further addressed in Section 5.3, below.

5.2 INDIRECT IMPACTS

Indirect impacts from development projects often include those from dust, noise, night-time lighting, runoff/decreased water quality, and colonization/spread of invasive, non-native plant species. These potential indirect impacts are addressed below.

Dust

Activities such as grading and driving equipment on unpaved roadways have the potential to result in indirect impacts to surrounding vegetation communities from increased levels of dust that may settle on the plants. Increased levels of dust on plants can adversely affect plants' photosynthetic capabilities, adversely affect their productivity and nutritional qualities, and degrade the overall health of the vegetation communities, which may also adversely affect

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wildlife dependent on them. These impacts have the potential to be significant, but may be minimized via the measures identified in Section 6.5 to less than significant levels.

Noise

Breeding birds and mammals may temporarily or permanently leave their territories to avoid noisy activities, including abandoning active nests, which could lead to reduced reproductive success and increased mortality. These impacts can be adverse but less than significant for animal species that are not special status. Implementation of measures identified in Section 6.5 would reduce impacts to a less than significant level. These may include the utilization of a biological monitor during the initial ground-disturbing phase or throughout construction and establishment of appropriate buffer areas around sensitive biological resources.

5.3 IMPACTS TO VEGETATION AND LANDSCAPED/DEVELOPED AREAS

Table 1 indicates the estimated direct impacts to vegetation from proposed Project implementation.

Table 1: Summary of Impacts to Land Cover/Vegetation Types within the Project Area

Vegetation Type	Estimated Permanent Impact (acres)	CDFW Nature Serve Protection Status*
Agricultural	430	--
Ruderal	--	--
Arrow Weed Thickets	--	G3, S3
Arrow Weed-Common Reed Thickets	--	--
Developed/Disturbed	64	--
Total	494	--
*CDFW Rare: G3 or S3Vulnerable to extirpation or extinction Globally or Subnationally (state)		

5.4 IMPACTS TO SENSITIVE HABITATS

One sensitive habitat, arrow weed thickets, is present within the BSA. This habitat has an S3 state ranking. Per CDFW, alliances with state ranks of S1-S3 and all associations within them are



considered to be highly imperiled (S1) to vulnerable (S3). Impacts to high-quality occurrences of S1, S2 and S3 communities may be considered significant under CEQA. Impacts from Project construction are expected to be confined to areas that are currently disturbed by active agricultural operations or existing infrastructure such as roads and irrigation infrastructure.

5.5 IMPACTS TO SPECIAL-STATUS PLANT SPECIES

Based on existing conditions within the BSA and analysis of the species occurrence potential (Appendix A), special-status plant species mentioned above do not have a moderate or high potential to occur within the BSA. No special-status plant species were detected during the survey; however, seasonally-timed rare plant surveys were not conducted. Impacts to special-status plant species are not anticipated as a result of construction related activities.

5.6 IMPACTS TO SPECIAL-STATUS WILDLIFE SPECIES

Special-Status Wildlife

Habitat within the BSA supports burrowing owl. Vermilion flycatcher and Yuma hispid cotton rat have a moderate potential to occur on the site, and habitat is potentially highly suitable for flat-tailed horned lizard and mountain plover. Impacts to special-status wildlife would be reduced to a less than significant level with implementation of mitigation measures described in sections 6.2, 6.3, and 6.6.

Nesting Birds

Nesting birds can be adversely affected from noise or human activity generated during construction, resulting in decreased reproductive success or abandonment of a nest or an area defined as nesting habitat. If implementation of the Project resulted in such adverse effects, it may be considered a violation of the MBTA, which would be considered a significant impact.

During the reconnaissance survey conducted on June 28, 2017, two mourning dove nests were observed within mesquite trees located in the northwest portion of the BSA, adjacent to the Fig Drain. The BSA supports potential nesting habitat for raptors and passerines; therefore, construction activities have the potential to directly and indirectly impact nesting birds, particularly if activity occurs within nesting bird season. The mitigation measure described in Section 6.3 would reduce impacts to a less than significant level.

5.7 JURISDICTIONAL WATERS

Approximately 15 acres of potential waters of the United States, subject to USACE jurisdiction, and approximately 25 acres of waters of the state, subject to CDFW and RWQCB jurisdiction, were identified within the BSA. Project construction is expected to occur wholly within upland areas and will not impact IID-administered canals or drains; therefore, it will not be necessary to acquire

Clean Water Act Section 401/404 or CDFW Lake and Streambed Alteration Agreement permits and no mitigation would be required.

6.0 PROPOSED MITIGATION MEASURES AND RECOMMENDATIONS

The proposed mitigation measures and recommendations identified in this section have been recommended to ensure the protection of special-status species and their habitats and nesting birds.

6.1 BURROWING OWL

Burrowing owls are known to occur within the BSA, particularly along the irrigation canals within active agricultural fields. To avoid, minimize, and mitigate impacts to burrowing owls during construction, the following measures are provided:

1. To the extent feasible, construction grading/clearing of the Project footprint should occur between September 1 and January 31 in order to avoid impacts to breeding owls. If occupied burrows are discovered, they shall not be removed during nesting season (February 1 through August 31), unless a qualified biologist can determine that either the owls have not laid eggs or are incubating eggs, or that any young from the burrows are able to forage independently. If initial grading is scheduled to occur during nesting season, the following measures shall be implemented.
 - a. No more than fourteen days prior to initial grading or clearing, a qualified, agency-approved biologist shall conduct a pre-construction clearance survey, in accordance with the CDFG *Staff Report on Burrowing Owl Mitigation*, to determine the presence or absence of burrowing owl within the proposed grading area.
 - b. If removal of occupied burrows is necessary, passive relocation outside of nesting season shall be implemented under the supervision of the qualified biologist. This shall include covering/excavation of burrows and installation of one-way doors as necessary. One-way doors will allow owls inside the burrow to exit, but not allow them to re-enter. The biologist shall wait a minimum of one week before the burrow may be excavated, in order to allow the owls time to leave the area. Removal of owl burrows within the Project area will require construction of new, artificial burrows, or enhancement of previously unsuitable burrows, at a mitigation ratio of 2:1, at a minimum of 50 meters from the Project area.
 - c. A qualified biologist shall prepare a Burrowing Owl Mitigation and Monitoring Plan that will include detailed descriptions of mitigation methodology, to be approved by CDFW prior to implementation.

6.2 PRE-CONSTRUCTION FOCUSED TERRESTRIAL SURVEYS

The BSA contains potentially suitable habitat for special-status species such as vermilion flycatcher, Yuma hispid cotton rat, flat-tailed horned lizard, and mountain plover. A pre-construction survey for these and other sensitive biological resources will be conducted by a qualified biologist 14 days prior to initiating ground disturbance activities. The survey will consist of full coverage of the proposed disturbance limits and a 150-meter buffer, and can be performed concurrently with nesting bird surveys. If any special-status species are found during pre-construction surveys, a biological monitor may be needed during construction. If determined necessary, biological compliance monitoring will be conducted by a qualified biologist during construction.

6.3 NESTING BIRD SURVEYS

To avoid impacts to nesting birds and to comply with the MBTA, clearing of vegetation should occur between non-nesting (or non-breeding) season for birds (generally, September 1 to January 31). If this avoidance schedule is not feasible, the alternative is to carry out the clearing of vegetation associated with construction under the supervision of a qualified biologist. This will entail a pre-construction nesting bird survey conducted by a qualified biologist 14 days prior to initiating ground disturbance activities. The survey will consist of full coverage of the proposed disturbance limits and up to a 500-foot buffer area, determined by the biologist and taking into account the species nesting in the area and the habitat present. If no active nests are found, no additional measures are required. If "occupied" nests are found, their locations will be mapped, species documented, and, to the degree feasible, the status of the nest (e.g., incubation of eggs, feeding of young, near fledging) recorded. The biologist will establish a no-disturbance buffer around each active nest. The buffer area will be determined by the biologist based on the species present, surrounding habitat, and type of construction activities proposed in the area. No construction or ground disturbance activities will be conducted within the buffer until the biologist has determined the nest is no longer active and has informed the construction supervisor that activities may resume.

6.4 VEGETATION COMMUNITIES

Native vegetation removal is not expected to occur as a result of Project construction. However, if necessary, impacts to native vegetation should be minimized to the maximum extent feasible. If arrow weed thickets are proposed to be removed, this community should be replaced at a mitigation ratio of 1:1. No trees are proposed to be removed during Project construction.

6.5 CONSTRUCTION MONITORING AND BEST MANAGEMENT PRACTICES

If pre-construction surveys determine either the presence of special-status species, sensitive biological resources, or nesting birds, a biological monitor may be warranted during construction.

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If determined necessary, biological compliance monitoring during construction will be conducted by a qualified biologist. The biologist shall be given authority to execute the following functions:

- Prepare and conduct a Worker Environmental Awareness Training to all construction personnel that provides regulatory information, special-status species and sensitive habitat information, and best management practices;
- Establish construction exclusion zones and make recommendations for implementing erosion and dust control measures in temporary impact areas;
- Ensure all construction activities stay within the staked construction zone and do not go beyond the limits of approved disturbance;
- Minimize trimming/removal of vegetation within the Project impact areas;
- Restrict non-essential equipment to the existing roadways and/or disturbed areas to avoid disturbance to existing adjacent native vegetation; and
- Install and maintain appropriate erosion/sediment control measures, as needed, throughout the duration of work activities.

During construction, biological monitors will inspect and verify field conditions, as needed, to ensure that wildlife and vegetation adjacent to the proposed Project areas are not impacted. The biological monitor will coordinate with the construction foreman and construction crew and shall have the authority to immediately stop any activity that has the potential to impact special-status species or remove vegetation not specified in this report.

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APPENDICES

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Appendix A Special-Status Species Potentially Occurring in the BSA
January 29, 2018

**Appendix A SPECIAL-STATUS SPECIES POTENTIALLY
OCCURRING IN THE BSA**

**Vega SES LLC Solar Project
Special-Status Species Potentially Occurring in the Biological Survey Area (BSA)**

Common Name/Scientific Name	Listing Status	Habitat Requirements	Potential for Occurrence in the Biological Survey Area
Wildlife			
American badger/ <i>Taxidea taxus</i>	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Low Potential to Occur: Marginal friable soil and uncultivated ground present within the BSA. This species was not observed during surveys, and CNDDB occurrences within three miles of the BSA are historic (1911).
Burrowing owl/ <i>Athene cunicularia</i>	SSC	Found in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Present: Owls and burrows were observed within the BSA during 2017 protocol-level surveys.
Colorado Desert fringe-toed lizard/ <i>Uma notata</i>	SSC	Found in Colorado Desert region; in sand dunes, dry lakebeds, sandy beaches or riverbanks, desert washes, or sparse desert scrub. Requires fine, loose, windblown sand (for burrowing); shrubs or annuals for arthropod production.	Low Potential to Occur: Open expanses of fine, loose sand are not present within BSA. This species was not observed during surveys, but there are CNDDB occurrences within five miles of the BSA.
Flat-tailed horned lizard/ <i>Phrynosoma mcallii</i>	SSC	Restricted to desert washes and desert flats in central Riverside, eastern San Diego, and Imperial counties. Critical habitat element is fine sand, into which lizards burrow to avoid temperature extremes; requires vegetative cover and ants.	Moderate Potential to Occur: Limited fine sand substrate is present within the BSA, though areas of vegetative cover, and prey resources were observed. Species was not observed during surveys, but there are CNDDB occurrences within one mile of the BSA.

Mountain plover/ <i>Charadrius montanus</i>	SSC	Inhabits short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents. Breeding grounds typically within western Great Plains.	High Potential to Occur (Foraging): Foraging habitat within plowed agricultural fields present within the BSA. Species typically does not breed in California. This species was not observed during surveys, but there are CNDDDB occurrences within one mile of the BSA.
Vermilion flycatcher/ <i>Pyrocephalus rubinus</i>	SSC	During nesting, inhabits and forages in desert riparian adjacent to irrigated fields, irrigation ditches, pastures, desert scrub, and other open, mesic areas. Nest in cottonwood, willow, mesquite, and other large desert riparian trees.	Moderate Potential to Occur (Foraging): Suitable riparian nesting habitat not present in BSA. Moderate foraging habitat present within open, irrigated areas in BSA. This species was not observed during surveys, but there are previous CNDDDB occurrences within five miles of the BSA (1909).
Western yellow bat/ <i>Lasiurus xanthinus</i>	SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	Low Potential to Occur: Drainage channels within BSA provide marginal foraging habitat. This species was not observed during surveys, and previous CNDDDB occurrences within five miles of the BSA are historic (1977).
Yuma hispid cotton rat/ <i>Sigmodon hispidus eremicus</i>	SSC	Found along the Colorado River and in grass and agricultural areas near irrigation waters. Wetlands and uplands with dense grass and herbaceous plants. Makes runways through vegetation. Nests on surface and in burrows.	Moderate Potential to Occur: Moderately suitable agricultural and irrigation habitat present in BSA. This species was not observed during surveys, but there are previous CNDDDB occurrences within one mile of the BSA.
Yuma Ridgway's rail/ <i>Rallus obsoletus yumanensis</i>	FE ST FP	Nests in freshwater marshes along the Colorado River and along the south and east ends of the Salton Sea. Prefers stands of cattails and tules dissected by narrow channels of flowing water; principle food is crayfish.	Low Potential to Occur: Marginal aquatic habitat and vegetation present within the BSA. This species was not observed during surveys, but there are previous CNDDDB occurrences within five miles of the BSA.

Plants			
Baja California ipomopsis/ <i>Ipomopsis effusa</i>	2B.1	Annual herb, blooms April-June. Found in Sonoran Desert scrub, chaparral. In alluvial washes in California; in Baja, on gravelly flats and open stands in pinyon woodland. 0-100 m.	Low Potential to Occur: Suitable chaparral, scrub, and wash habitat not present within the BSA. This species was not observed during surveys, and CNDDDB occurrences within five miles of the BSA are historic (1987).
Brown turbans/ <i>Malperia tenuis</i>	2B.3	Annual herb, blooms March-April. Found in Sonoran Desert scrub. Prefers sandy places and rocky slopes. 0-550 m.	Low Potential to Occur: Suitable scrub habitat not present within the BSA. This species was not observed during surveys, but there are CNDDDB occurrences within five miles of the BSA.
California satintail/ <i>Imperata brevifolia</i>	2B.1	Perennial grass, blooms September-May. Found in coastal scrub, chaparral, riparian scrub, Mojavean desert scrub, meadows and seeps (alkali), riparian scrub. Mesic sites, alkali seeps, riparian areas. 3-1495 m.	Low Potential to Occur: Suitable chaparral, scrub, and alkali habitat not present within the BSA. This species was not observed during surveys, and CNDDDB occurrences within five miles of the BSA are historic (1963).
Chaparral sand-verbena/ <i>Abronia villosa</i> var. <i>aurita</i>	1B.1	Annual herb, blooms January-September. Found in chaparral, coastal scrub, and desert dunes. Sandy areas. -60-1570 m.	Low Potential to Occur: Suitable chaparral, scrub, and dune habitat not present within the BSA. This species was not observed during surveys, and CNDDDB occurrences within five miles of the BSA are historic (1949).
Gravel milk-vetch/ <i>Astragalus sabulonum</i>	2B.2	Annual herb, blooms February-July. Found in desert dunes, Mojavean desert scrub, Sonoran Desert scrub. Sandy or gravelly flats, washes, and roadsides. -60-885 m.	Low Potential to Occur: Suitable dune, wash, and scrub habitat not present within the BSA. This species was not observed during surveys, and CNDDDB occurrences within five miles of the BSA are historic (1961).

Hairy stickleaf/ <i>Mentzelia hirsutissima</i>	2B.3	Annual herb, blooms March-May. Found in Sonoran Desert scrub. Washes, fans, slopes; coarse rubble and talus slopes; rocky sites. 0-700 m.	Low Potential to Occur: Suitable scrub, wash, and slope habitat not present within the BSA. This species was not observed during surveys, and CNDDDB occurrences within five miles of the BSA are historic (1961).
Mud nama/ <i>Nama stenocarpa</i>	2B.2	Annual herb, blooms January-July. Found in marshes and swamps, lake shores, river banks, and intermittently wet areas. 5-500 m.	Low Potential to Occur: Marginal aquatic present within the BSA. This species was not observed during surveys, and CNDDDB occurrences within five miles of the BSA are historic (1903).
Parish's desert-thorn/ <i>Lycium parishii</i>	2B.3	Shrub, blooms March-April. Found in coastal scrub, Sonoran Desert scrub. 135-1000 m.	Low Potential to Occur: Suitable scrub habitat not present within the BSA. This species was not observed during surveys, but there are CNDDDB occurrences within five miles of the BSA.
Pink fairy-duster/ <i>Calliandra eriophylla</i>	2B.3	Shrub, blooms February-March. Found in Sonoran Desert scrub. Sandy or rocky sites in the desert. 120-1500 m.	Low Potential to Occur: Suitable scrub habitat not present within the BSA. This species was not observed during surveys, and CNDDDB occurrences within five miles of the BSA are historic (1970).

Listing Status

FE = Federally listed Endangered

ST = State Listed Threatened

FP = CDFW Fully Protected

SSC = CDFW California Species of Special Concern

California Rare Plant Ranking (CRPR) System (Formerly CNPS List)

CRPR Threat Ranks

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

0.1- Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

CRPR 2B = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

0.2- Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

CRPR 4 = Plants Presumed Extirpated in California, But More Common Elsewhere

0.3- Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

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Appendix B Wildlife Species Observed
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Appendix B WILDLIFE SPECIES OBSERVED

Scientific Name	Common Name	Notes
Birds		
<i>Agelaius phoeniceus</i>	Red-winged blackbird	
<i>Ardea alba</i>	Great egret	
<i>Ardea herodias</i>	Great blue heron	
<i>Athene cunicularia</i>	Burrowing owl	
<i>Cathartes aura</i>	Turkey vulture	
<i>Charadrius vociferus</i>	Killdeer	
<i>Columba livia</i> *	Rock pigeon	
<i>Corvus corax</i>	Common raven	
<i>Egretta thula</i>	Snowy egret	
<i>Falco sparverius</i>	American kestrel	
<i>Geococcyx californianus</i>	Greater roadrunner	
<i>Geothlypis trichas</i>	Common yellowthroat	
<i>Melospiza aberti</i>	Abert's towhee	
<i>Numenius americanus</i>	Long-billed curlew	
<i>Pelecanus occidentalis</i>	Brown pelican	Carcass observed
<i>Phasianus colchicus</i> *	Ring-necked pheasant	
<i>Poliophtila melanura</i>	Black-tailed gnatcatcher	
<i>Quiscalus mexicanus</i> *	Great-tailed grackle	
<i>Sayornis nigricans</i>	Black phoebe	
<i>Streptopelia decaocto</i> *	Eurasian collared-dove	
<i>Sturnella neglecta</i>	Western meadowlark	
<i>Sturnus vulgaris</i> *	European starling	
<i>Tyrannus verticalis</i>	Western kingbird	
<i>Zenaidura macroura</i>	Mourning dove	
Mammals		
<i>Canis latrans</i>	Coyote	Scat observed
<i>Procyon lotor</i>	Raccoon	Track observed
<i>Sylvilagus audubonii</i>	Desert cottontail	
<i>Xerospermophilus tereticaudus</i>	Round-tailed ground squirrel	
Reptiles		
<i>Uta stansburiana elegans</i>	Western side-blotched lizard	

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Appendix C Plant Species Observed
January 29, 2018

Appendix C PLANT SPECIES OBSERVED

Scientific Name	Common Name
Arecaceae	
<i>Syagrus romanzoffiana</i>	Queen palm
<i>Washingtonia robusta</i>	Mexican fan palm
Asteraceae	
<i>Ambrosia dumosa</i>	White bursage
<i>Encelia frutescens</i>	Rayless encelia
<i>Garaea canescens</i>	Desert sunflower
<i>Isocoma acradenia</i>	Goldenbush
<i>Malacothrix glabrata</i>	Desert dandelion
<i>Pluchea odorata</i> var. <i>odorata</i>	Salt marsh fleabane
<i>Pluchea sericea</i>	Arrow weed
<i>Rafenesquia nemexicana</i>	Desert chicory
Brassicaceae	
<i>Brassica tournefortii</i>	Sahara mustard
<i>Sisymbrium irio</i>	London rocket
Chenopodiaceae	
<i>Atriplex canescens</i>	Shadscale
<i>Atriplex lentiformis</i>	Quailbush
<i>Bassia hyssopifolia</i>	Five-hook bassia
<i>Chenopodium murale</i>	Nettle-leaf goosefoot
<i>Salsola tragus</i>	Russian thistle
Fabaceae	
<i>Melilotus indicus</i>	Indian sweetclover
<i>Prosopis pubescens</i>	Screw bean mesquite
Myrtaceae	
<i>Eucalyptus</i> sp.	Eucalyptus
Poaceae	
<i>Avena fatua</i>	Wild oat
<i>Cynodon dactylon</i>	Bermuda grass
<i>Distichlis spicata</i>	Salt grass
<i>Phragmites australis</i>	Common reed
<i>Polypogon monspeliensis</i>	Rabbitsfoot grass
<i>Schismus arabicus</i>	Arabian schismus
Solanaceae	
<i>Lycium</i> sp.	Desert box-thorn
Tamaricaceae	
<i>Tamarix ramosissima</i>	Tamarisk
Typhaceae	
<i>Typha latifolia</i>	Cattail

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Appendix D Photographic Log
January 29, 2018

Appendix D PHOTOGRAPHIC LOG

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 1: June 27, 2017



View of northern portion of proposed Project site, looking south.

Photo 2: June 27, 2017



View of northern portion of proposed Project site, looking west-southwest.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 3: June 27, 2017



View of northeastern portion of proposed Project site, looking northwest.

Photo 4: June 27, 2017



View of northeastern portion of proposed Project site, looking south.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 5: June 27, 2017



View of northwestern portion of proposed Project site, looking east.

Photo 6: June 28, 2017



View of central portion of proposed Project site, looking northeast.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 7: June 28, 2017



View of central portion of proposed Project site, looking east.

Photo 8: June 28, 2017



View of southern portion of proposed Project site, looking northeast.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 9: June 28, 2017



View of southern portion of proposed Project site, looking east.

Photo 10: June 28, 2017



View of southeastern portion of proposed Project site, looking northwest.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 11: June 28, 2017



View of proposed Project site north of Gen-tie line, looking southeast.

Photo 12: June 28, 2017



View of proposed Fern Substation site (not part of the Project), looking southwest.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 13: June 28, 2017



View of proposed Fern Substation site (not part of the Project), looking north.

Photo 14: June 28, 2017



View of New River adjacent to southwestern portion of proposed Project site, looking south.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 15: June 28, 2017



View of burrowing owl in burrow at VB-3.

Photo 16: June 28, 2017



View of suitable burrowing owl burrow observed within the Biological Study Area (BSA).

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 17: June 28, 2017



View of suitable burrowing owl burrow within BSA.

Photo 18: June 28, 2017



View of suitable burrowing owl burrow within BSA.

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
DRAFT BIOLOGICAL RESOURCES TECHNICAL REPORT**

Appendix E Burrowing Owl Survey Report
January 29, 2018

Appendix E BURROWING OWL SURVEY REPORT

**Vega SES LLC Solar Project
El Centro, California
Burrowing Owl Survey Report**



Prepared for:
Vega SES LLC
604 Sutter Street, Suite 250
Folsom, California 95630

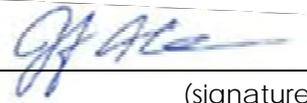
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January 30, 2018

Sign-off Sheet

This document entitled "Vega SES LLC Solar Project – El Centro, California – Burrowing Owl Survey Report" was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Vega SES LLC ("Client"). Any reliance on this document by any third party other than Vega SES LLC is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by



(signature)

Jenny Alvarado, Project Biologist

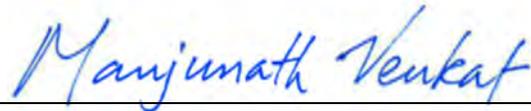
Reviewed by



(signature)

Rocky Brown, Associate Biologist

Approved by



(signature)

Manju Venkat, Senior Biologist

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1.0 INTRODUCTION

The burrowing owl (*Athene cunicularia*) is a California Species of Special Concern and a BLM Sensitive Species, and is protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Sections 3503, 3503.5, and 3513. Burrowing owls are primarily found in California and Mexico, with approximately 70% of the population residing in Imperial County year-round (Wilkerson and Siegel, 2010). Burrowing owl habitat includes open, generally flat areas that are dry and contain short-grass vegetation. Burrowing owls also utilize agricultural areas, man-made structures such as culverts, vacant fields, and ruderal areas if the areas contain suitable burrows and habitat for foraging. Burrowing owls often use burrows created by other species, such as round-tailed ground squirrel (*Citellus tereticaudus*) (Department of Fish and Game [DFG], 2012). The presence or absence of colonial mammal burrows is often the major factor that limits the presence or absence of burrowing owls.

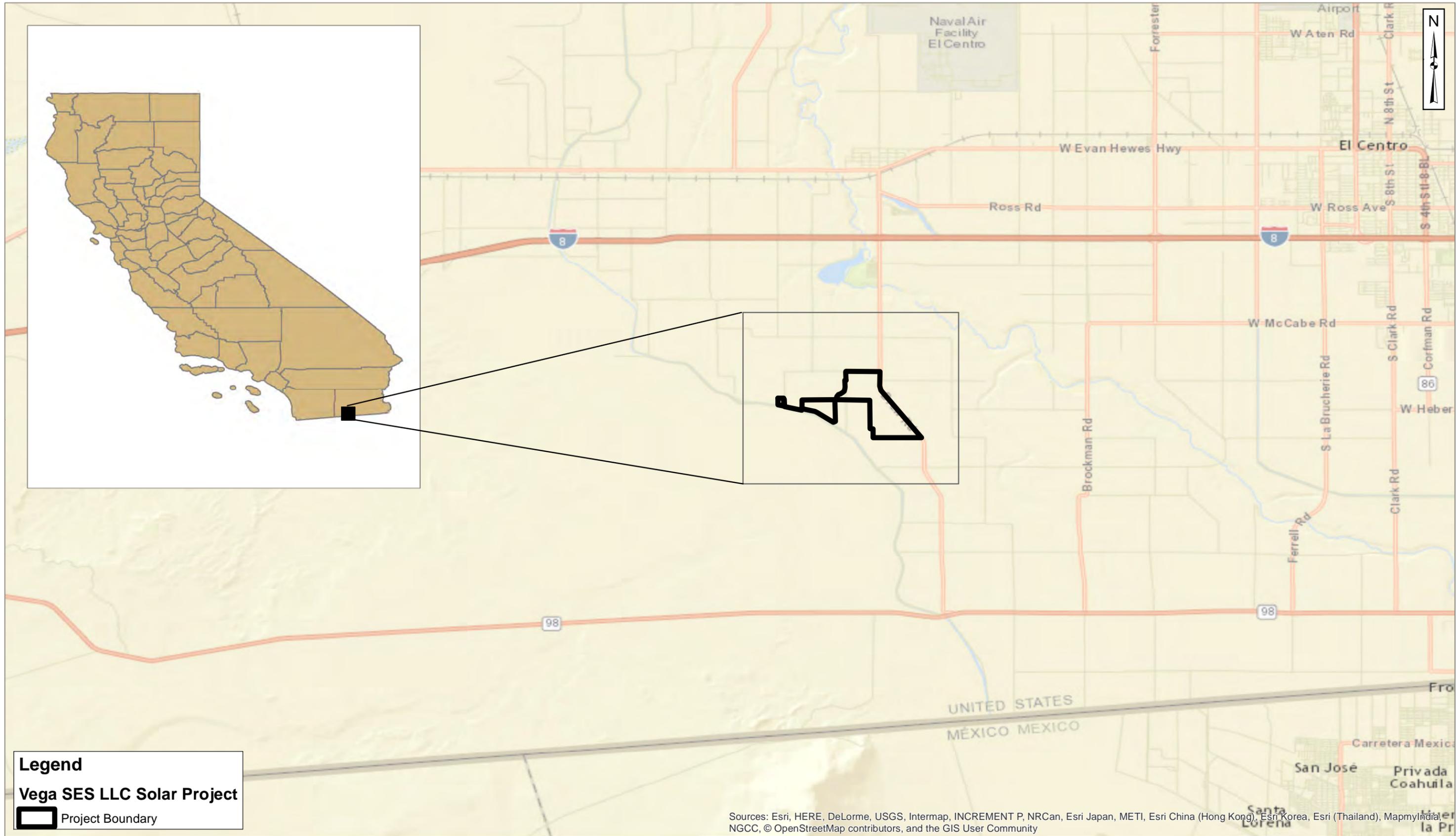
The Staff Report on Burrowing Owl Mitigation (DFG, 2012) provides technical guidance on burrowing owl survey protocols, mitigation measures, and conservation strategies for the species. The 2012 report is an updated, revised report that takes into account the California Burrowing Owl Consortium's (CBOC) Survey Protocol and Mitigation Guidelines (CBOC, 1993), and is an update to the DFG's 1995 Staff Report on Burrowing Owl Mitigation.

The analyses presented in this Burrowing Owl Survey Report are intended to establish baseline conditions with respect to burrowing owls and their burrows within the Vega Solar Project area. Burrowing owls are known to occur in the area and had been identified as a species of interest in the vicinity of the Project site.

1.1 PROJECT LOCATION

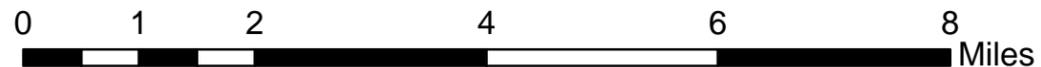
The Project is located within southwestern Imperial County, California, approximately 10 miles southwest of the City of El Centro (Figure 1). It is situated in Township 16 South, Range 12 East of the U.S. Geographical Survey (USGS) Mt. Signal 7.5-minute topographic quadrangle. The Project site consists of two distinct halves, both consisting of currently-farmed agricultural land, generally divided by Vogel Road and/or the Fig Drain (Figure 2). The eastern portion consists of 6 individual parcels bound to the north by W Wixom Road, to the east by Drew Road, to the west by Vogel Road/ Fig Drain/ adjacent farmland, and to the south by adjacent farmland to the north of Lyons Road. The western portion consists of a single parcel bound to the east by Fig Drain, to the south by Mandrapa Road, and to the north and west by adjacent farmland.

Prior to initiating the analysis presented in this report, a Biological Survey Area (BSA) within which lands were surveyed was defined. The extent of the BSA includes the proposed Project site, plus a 150-meter buffer (Figure 2).



Legend
Vega SES LLC Solar Project
 Project Boundary

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community



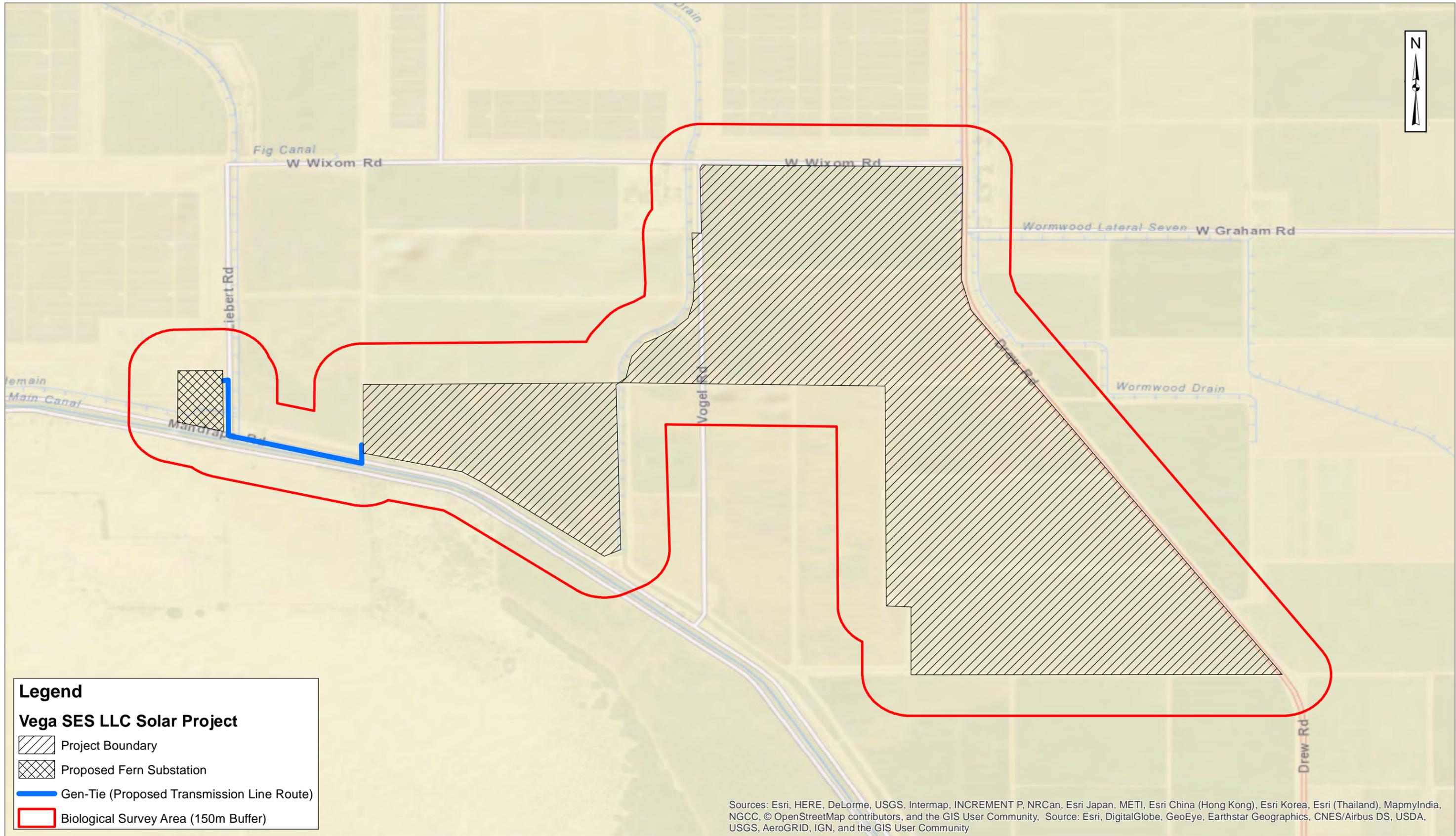
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Vega SES LLC Solar Project
 Project Location Map

Figure:
1

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

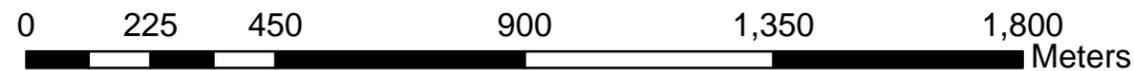


Legend

Vega SES LLC Solar Project

-  Project Boundary
-  Proposed Fern Substation
-  Gen-Tie (Proposed Transmission Line Route)
-  Biological Survey Area (150m Buffer)

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



 290 Conejo Ridge Ave Thousand Oaks, CA 91361 Phone 805.405.0256 Fax 805.230.1277 www.stantec.com	For:	Vega SES LLC 604 Sutter Street Folsom, CA 95630	Vega SES LLC Solar Project Project Area Map	Figure: 2					
	Job Number:	185803957	Drawn By:	Michael Bartosek	Checked By:	Michael Bartosek	Approved By:	Jennifer Alvarado	Date:

1.2 PROJECT DESCRIPTION

The Project is a proposed 494-acre solar photovoltaic (PV) energy facility site. The Project also includes construction of an approximately 0.4-mile gen-tie line from the western terminus of the solar facility to the proposed Fig Substation to be constructed at the intersection of Liebert Road and Mandrapa Road. The construction of the Fig Substation is not part of the Project.

1.3 ENVIRONMENTAL SETTING

The Project site supports active and temporarily fallow agricultural lands and several unpaved roads, irrigation ditches, and other farming infrastructure occur throughout the BSA. Crops observed at the time of surveys included alfalfa, oat, hay, peppers, and watermelon, and recently plowed/fallow fields were also observed. Several irrigation canals/ditches that ultimately drain into the Salton Sea, north of the Project site, were observed within the BSA. The most prominent of these are the Fig Drain and Westside Main Canal. Irrigation infrastructure in the Imperial Valley is generally administered and maintained by the IID.

Site topography is generally flat, with elevations ranging from -20 to -35 feet below mean sea level (msl). The region experiences a desert climate characterized by hot, dry summers and warm winters. Average annual temperatures range from 69 degrees Fahrenheit in December to 107 degrees Fahrenheit in July, and average annual precipitation measures 2.87 inches (US Climate Data 2017).

Land Uses

Lands within the Project site are zoned as Agriculture (A). The Project encompasses three agricultural zones: General Agriculture (A2), General Agriculture Rural Zone (A2R), and Heavy Agriculture (A3) (Planning and Development Services Department of County of Imperial 2015). Surrounding lands are also agricultural, with the exception those to the south/southeast of the western portion of the BSA, which are undeveloped.

At the time of survey, adjacent land uses included solar facilities and agricultural lands to the north, rural residences to the northeast, agricultural lands to the east and south, and agricultural lands, solar facilities, and open space to the west.

2.0 METHODS

2.1 BREEDING SEASON SURVEY METHODS

Based on species data for Imperial County and Stantec's project experience in the region, it was assumed there was a high probability that either burrowing owls or their habitat were present within the Project area. Additionally, a desktop review of the California Natural Diversity Database

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

(CNDDDB) (CDFW 2017) yielded multiple recorded occurrences of burrowing owls within three miles of the Project area.

Breeding season for this species typically occurs between February 1 and August 31, with peak breeding season occurring between April 15 to July 15. A minimum of four survey visits are typically required, with at least one survey between February 15 and April 15, and three surveys between April 15 and July 15, spaced three weeks apart (Staff Report 2012).

As of the preparation of this report, two of the four required breeding season surveys have been performed by qualified Stantec biologists within the Vega Solar BSA in June and July of the 2017 breeding season. Transects were spaced approximately 10 meters apart and surveys were conducted between morning civil twilight and 1000 hours, or within two hours of evening civil twilight. Any burrow openings large enough to provide entry for owls were carefully checked for prey remains, whitewash, or other sign, and potentially suitable and occupied burrow locations were recorded using a handheld global positioning system (GPS) unit. Observations of burrow conditions, sign, and burrowing owl observations were documented. Survey details, including timing and weather conditions, are provided in Table 1, and observations are summarized in Table 2.

Representative photographs are included in Appendix A. The third and fourth breeding season surveys required to complete the CDFW protocol are scheduled to be conducted during the 2018 breeding season.

3.0 SURVEY RESULTS

3.1 BREEDING SEASON SURVEY RESULTS

A total of 15 suitable burrowing owl burrows and a total of 33 burrowing owls were documented during the 2017 breeding season surveys. All of the 15 suitable burrows observed were active at the time of the surveys. Ten burrows were located within the Project area, and 5 burrows were located within the 150-meter buffer area. No burrows were observed within the gen-tie corridor or proposed Fig Substation areas. Locations of burrowing owls or their sign detected within the Vega Solar BSA are depicted in Figure 3.

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

Table 1. Breeding Season Survey Details

Date	Time	Weather Conditions	Project Component
June 27, 2017	0600-1000	81-107°F, sunny, clear, winds 1-3mph	Solar Facility Site and Buffer
June 28, 2017	0515-1000	78-101°F, sunny, clear, winds 3-8mph	Solar Facility Site, Gen-Tie, Substation, and Buffer
July 18, 2017	0530-1000; 1815-2015	85-104°F, sunny, clear, winds 1-3mph; 101-106°F, sunny, clear, winds 5-10mph	Solar Facility Site and Buffer; Solar Facility Site and Buffer
July 19, 2017	0800-1000	95-105°F, sunny, clear, winds 1-5mph	Gen-Tie, Substation, and Buffer

Table 2 below depicts detailed accounts of burrows, burrowing owls, and burrowing owl sign observed.

Table 2. Breeding Season Survey Findings

ID #*	2017 Breeding Season		Burrow Description	Notes
	Date	# Owls		
VB-1	06/27/2017	2	Burrow within concrete drainage pipe, 0.5m x 13cm	Tracks at entrance, whitewash on surrounding perches. 2 owls observed at burrow.
	07/18/2017	2		Tracks, whitewash at entrance. 2 owls observed at burrow.
VP-2	06/27/2017	1		Perched adult, pellets observed adjacent to perch.
	07/18/2017	0		No owl observed.

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

ID #*	2017 Breeding Season		Burrow Description	Notes
	Date	# Owls		
VB-3	06/27/2017	0	Earthen burrow against concrete drainage, 0.3 m x 1.3cm	Feathers, tracks, whitewash at entrance.
	07/18/2017	0		Claw marks, eggshell fragments at entrance. Appears to be dug out.
VB-4	06/28/2017	2	Burrow within 16" x 16" drainage pipe	2 pellets at entrance. 2 owls observed at burrow.
	07/18/2017	0		Whitewash, tracks, feathers, pellets, decorative debris, frog prey remains at entrance.
VB-5	06/28/2017	0	Earthen burrow against concrete drainage, 16cm x 10 cm	Whitewash at entrance; possibly occupied by VB-4 owls.
	07/18/2017	0		Whitewash, tracks, feathers at entrance.
VB-6	06/28/2017	1	Burrow within 16" concrete irrigation pipe	Pellet outside entrance, adjacent whitewash. 1 owl observed at burrow.
	07/18/2017	1		Pellets, whitewash, tracks, feathers at entrance. 1 owl observed at burrow.
VP-7	06/28/2017	1		1 adult perched along irrigation canal.
	07/18/2017	1		1 adult perched along irrigation canal.

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

ID #*	2017 Breeding Season		Burrow Description	Notes
	Date	# Owls		
VB-8	06/28/2017	3	Earthen burrow against concrete drainage, 16cm x 14cm	Tracks, pellets, whitewash at entrance. Previously flagged nest. 3 owls observed at burrow.
	07/18/2017	0		Feathers, prey remains, whitewash, tracks, pellets at entrance.
VB-9	06/28/2017	1	Burrow adjacent to concrete drainage, one, 17cm x 15 cm	Adult perched adjacent; pellets, whitewash, feathers at entrance.
	07/18/2017	0		Did not locate burrow.
VB-10	06/28/2017	1	Burrow within concrete pile, 21cm x 19cm	Whitewash, pellets, tracks observed adjacent. 1 owl observed on top of burrow.
	07/18/2017	0		Whitewash at entrance.
VB-11	06/28/2017	0	Burrow within earthen berm adjacent to canal, 20cm x 16cm	Feathers, pellets, tracks, ants at entrance; previously flagged burrow.
	07/18/2017	0		Feathers, pellets at entrance.
VP-12	06/28/2017	1		Adult perched on concrete drain.
	07/18/2017	0		No owl observed.
VB-13	06/28/2017	1	Burrow adjacent to concrete drainage, 18cm x 16cm	Flapping heard inside burrow, one adult perched, whitewash adjacent, feathers, pellets at entrance.
	07/18/2017	0		Whitewash, prey remains at entrance.

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

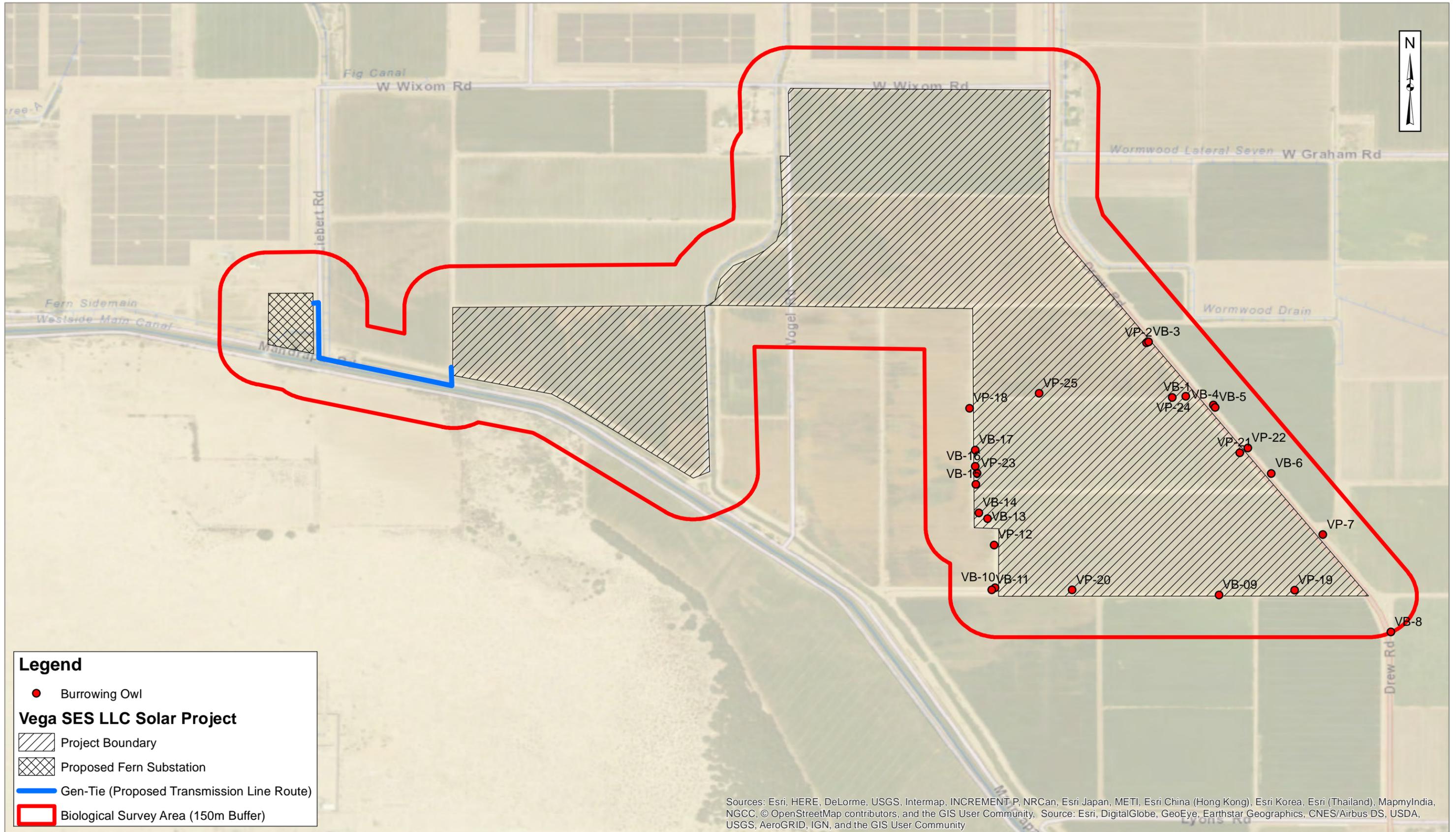
ID #*	2017 Breeding Season		Burrow Description	Notes
	Date	# Owls		
VB-14	06/28/2017	1	Burrow against concrete drainage, 21cm x 17cm	Feathers and tracks at entrance. 1 owl observed at burrow.
	07/18/2017	2		Tracks, whitewash, pellets, prey remains at entrance. 2 owls observed at burrow.
VB-15	06/28/2017	1	Burrow against concrete drainage, 20cm x 19cm	Feathers, whitewash, pellets, prey remains, decorative debris at entrance. 1 owl observed at burrow.
	07/18/2017	2		Feathers, whitewash, pellets, prey remains, decorative debris at entrance. 2 owls observed at burrow.
VB-16	06/28/2017	0	Burrow against concrete drainage, 13cm x 17 cm	Tracks, whitewash, pellets at entrance.
	07/18/2017	0		Feathers, whitewash, tracks, prey remains at entrance. Whitewash on adjacent perch.
VB-17	06/28/2017	0	Burrow against concrete drainage, 2 entrances, 16cm x 15cm and 13cm x 12cm	Feathers, tracks, whitewash at entrances.
	07/18/2017	0		Tracks, feathers, whitewash at entrance. Whitewash on adjacent perch.

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

ID #*	2017 Breeding Season		Burrow Description	Notes
	Date	# Owls		
VP-18	06/28/2017	1		One adult perched along irrigation canal, whitewash and feathers adjacent.
	07/18/2017	0		Owl not observed.
VP-19	07/18/2017	1		Adult perched on haybale bordering irrigation canal.
VP-20	07/18/2017	1		Adult perched on haybale bordering irrigation canal.
VP-21	07/18/2017	1		Adult perched along irrigation canal.
VP-22	07/18/2017	1		Adult perched on haybale bordering irrigation canal.
VP-23	07/18/2017	1		Adult perched along irrigation canal.
VP-24	07/18/2017	2		Pellet, whitewash within canal drainage pipe. 2 adults adjacent.
VP-25	07/18/2017	1		Adult perched on haybale bordering irrigation canal.

* VB= Burrow; VP= Perched owl, no burrow

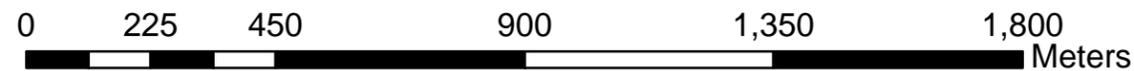
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Legend

- Burrowing Owl
- Vega SES LLC Solar Project**
- Project Boundary
- Proposed Fern Substation
- Gen-Tie (Proposed Transmission Line Route)
- Biological Survey Area (150m Buffer)

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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For: Vega SES LLC
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Vega SES LLC Solar Project
 Burrowing Owl
 Survey Results

Figure:
3

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

4.0 REFERENCES

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**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
BURROWING OWL SURVEY REPORT**

Photographic Log

Appendix A PHOTOGRAPHIC LOG

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 1: June 27, 2017



Representative view of Project site.

Photo 2: June 27, 2017



Representative view of Project site.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 3: June 28, 2017



View of representative burrow observed in roadside berm on the Project site.

Photo 4: June 28, 2017



View of representative burrow observed in roadside berm on the Project site.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 5: June 28, 2017



View of representative burrow in concrete rubble.

Photo 6: June 28, 2017



Representative view of burrowing owl in burrow. Note: burrow had been previously marked with flagging.

**VEGA SES LLC SOLAR PROJECT
EL CENTRO, CALIFORNIA
DRAFT BIOLOGICAL RESOURCES TECHNICAL REPORT**

Appendix F Jurisdictional Delineation Report
January 29, 2018

Appendix F JURISDICTIONAL DELINEATION REPORT

**Vega SES LLC Solar Project
El Centro, California
Preliminary Jurisdictional
Waters/Wetlands Delineation
Report**



Prepared for:
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604 Sutter Street, Suite 250
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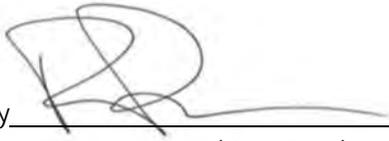
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January 30, 2018

Sign-off Sheet

This document entitled "Vega SES LLC Solar Project – Preliminary Jurisdictional Waters/Wetlands Delineation Report" was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Vega SES LLC (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

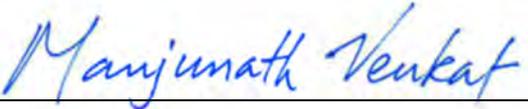
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Manjunath Venkat, Senior Biologist

Approved by _____



(signature)

Jared Varonin, Principal Biologist

VEGA SES LLC SOLAR PROJECT PRELIMINARY JURISDICTIONAL WATERS/WETLANDS DELINEATION REPORT

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**VEGA SES LLC SOLAR PROJECT PRELIMINARY JURISDICTIONAL WATERS/WETLANDS DELINEATION
REPORT**

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Executive Summary

This Jurisdictional Delineation (JD) Report serves as guidance in establishing baseline conditions for resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the Colorado River Basin Regional Water Quality Control Board (RWQCB) for the Vega SES LLC Solar Project (Project). Specifically, the purpose of the JD was to determine the location and extent of waters and/or wetlands subject to potential jurisdictional authority within a defined Biological Survey Area (BSA; proposed Project limits of construction plus a 150-meter buffer).

The Project site is located in southwestern Imperial County, California, approximately 10 miles southwest of the City of El Centro and consists of construction of an approximately 494-acre solar photovoltaic (PV) energy generation facility. The Project also includes construction of an approximately 0.4-mile gen-tie line from the western terminus of the solar facility to the proposed Fern Substation to be constructed northwest of the intersection of Liebert Road and Mandrapa Road. Construction of this substation is not included as part of this project.

Being situated in an agricultural area, the Project site and surrounding areas are traversed by a network of drains, canals, and other irrigation infrastructure administered by the Imperial Irrigation District (IID), much of which constitute potentially jurisdictional features. Primary among these within the Project BSA are the Fig Drain and Westside Main Canal. The Westside Main Canal is a large concrete-lined canal that borders the southwestern portion of the Project area; the Fig Drain is a large, earthen canal that runs north/south, dividing the two halves of the Project site. Both canals ultimately drain to the Salton Sea and likely constitute "waters of the State" and/or "waters of the U.S." Several additional irrigation features occur throughout the BSA and are also likely jurisdictional. Based on the field observations and data collected, approximately 15 acres of potential non-wetland "waters of the U.S." and 25 acres of "waters of the State" occur within the BSA.

The drainage features within the BSA occur outside of the area of potential impact and are not expected to be impacted by construction or operation of the proposed Project. If impact avoidance is not feasible, then the proposed Project will likely be subject to USACE jurisdiction ("Waters of the U.S.") and California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB) jurisdiction ("Waters of the State"). Such impacts would require the procurement of a USACE Section 404 Permit; RWQCB Section 401 Water Quality Certification; and CDFW Section 1602 Lake and Streambed Alteration Agreement.

1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report presents the findings of an investigation of jurisdictional features conducted by Stantec Consulting Services, Inc. (Stantec) for the Vega SES LLC (Project). The assessment of jurisdictional wetlands, other “waters of the U.S.,” waters of the State, and riparian habitat was conducted by Stantec biologists to determine the extent of resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (CDFW) that occur within the proposed Project area.

1.2 PROJECT LOCATION

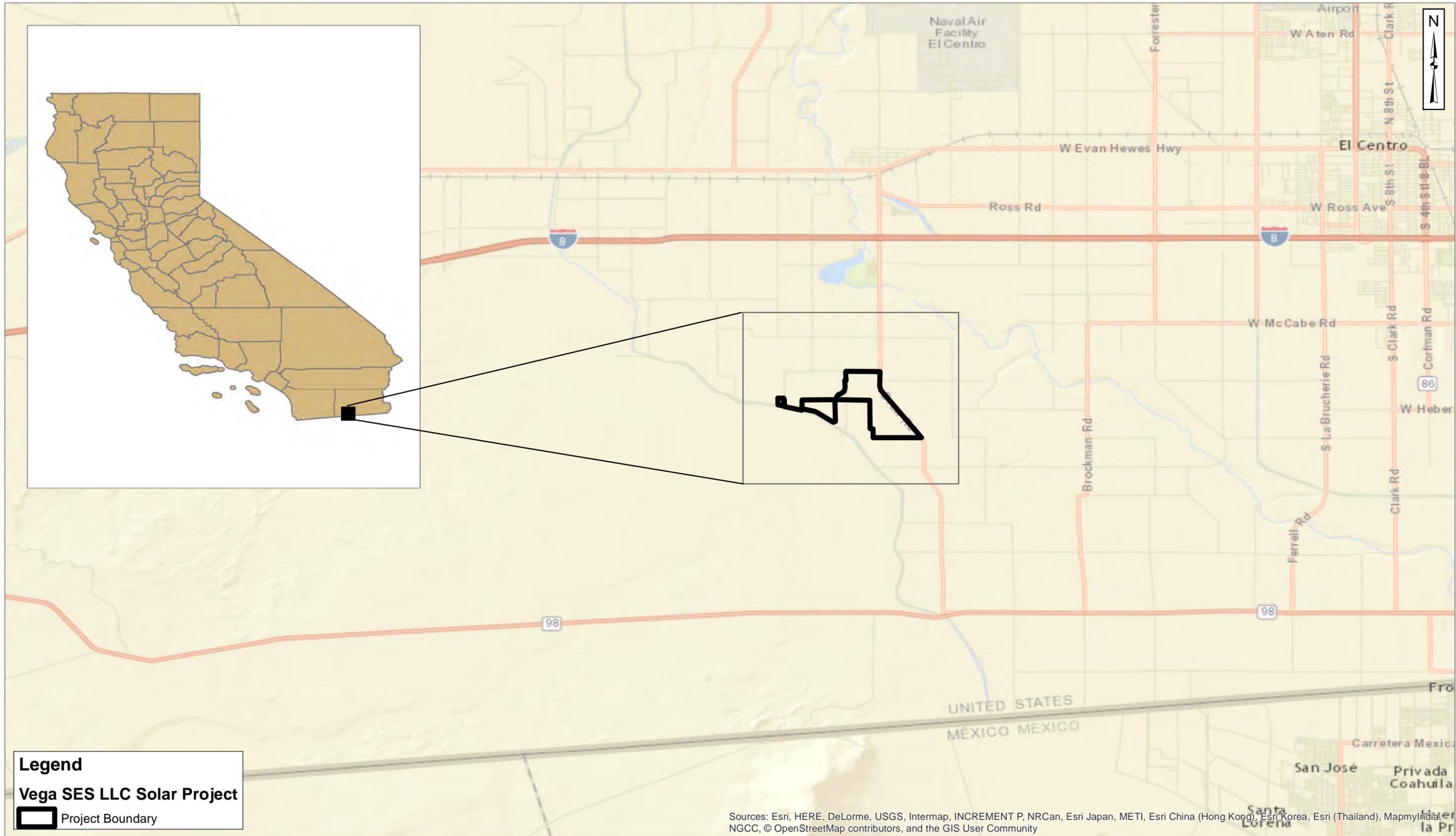
The Project is located within southwestern Imperial County, California, approximately 10 miles southwest of the City of El Centro (Figure 1). It is situated in Township 16 South, Range 12 East of the U.S. Geographical Survey (USGS) Mt. Signal 7.5-minute topographic quadrangle. The Project site consists of two distinct halves, both consisting of currently-farmed agricultural land, generally divided by Vogel Road and/or the Fig Drain (Figure 2). The eastern portion consists of 6 individual parcels bound to the north by W Wixom Road, to the east by Drew Road, to the west by Vogel Road/Fig Drain/adjacent farmland, and to the south by adjacent farmland to the north of Lyons Road. The western portion consists of a single parcel bound to the east by Fig Drain, to the south by Mandrapa Road, and to the north and west by adjacent farmland

1.3 PROJECT DESCRIPTION

The Project is a proposed 494-acre solar photovoltaic (PV) energy facility site. The Project also includes construction of an approximately 0.4-mile gen-tie line from the western terminus of the solar facility to the proposed Fig Substation to be constructed at the intersection of Liebert Road and Mandrapa Road. The construction of the Fig Substation is not part of the Project.

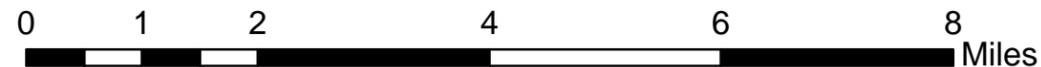
1.4 LEAD AGENCY NAME AND ADDRESS

County of Imperial
940 West Main Street
El Centro, California 92243



Legend
Vega SES LLC Solar Project
 Project Boundary

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community



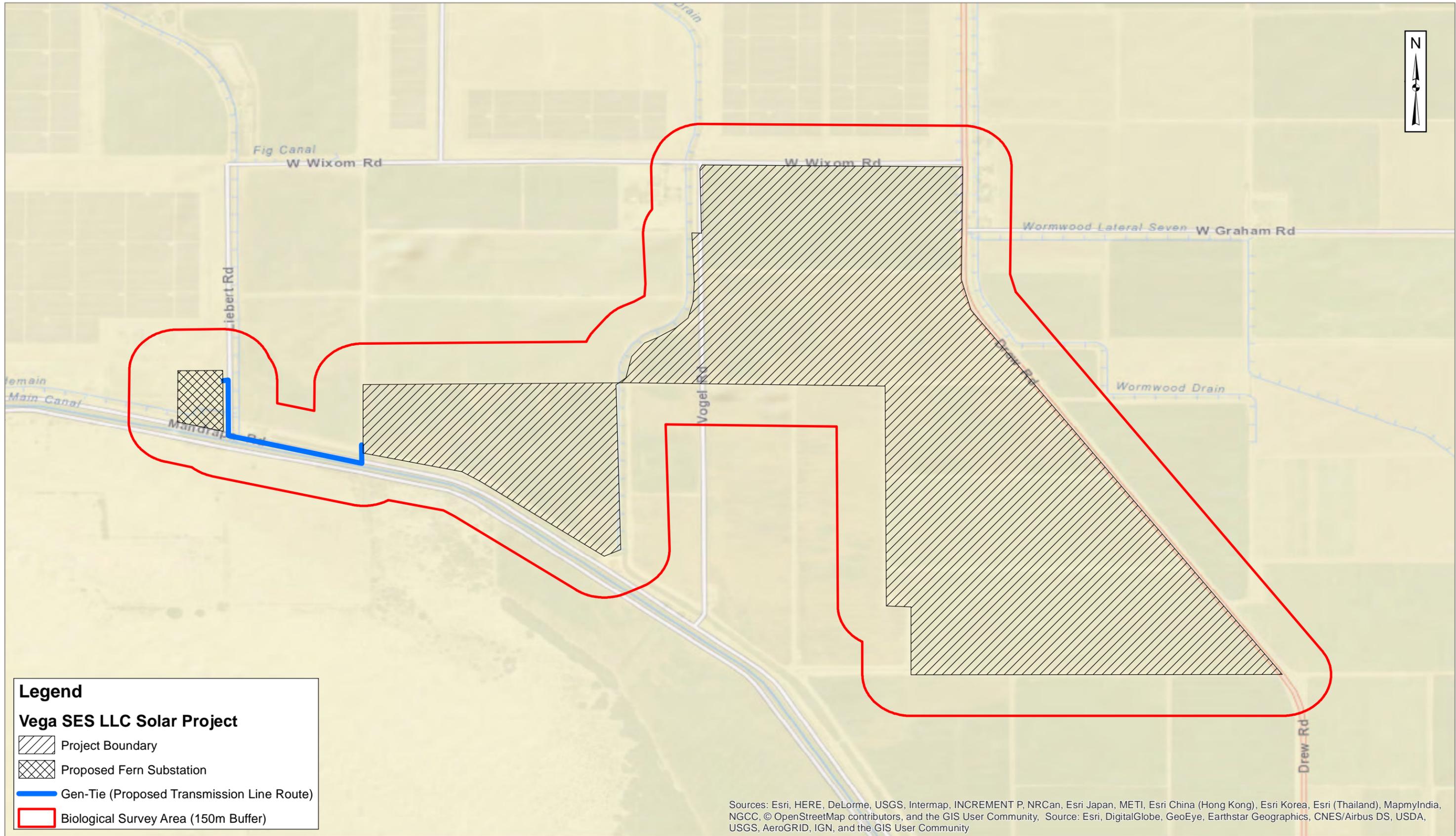
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 www.stantec.com

For:
 Vega SES LLC
 604 Sutter Street
 Folsom, CA 95630

Vega SES LLC Solar Project
 Project Location Map

Figure:
1

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

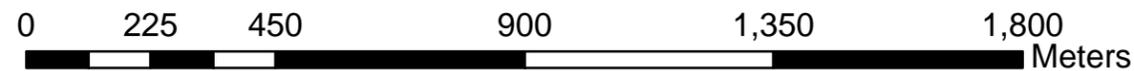


Legend

Vega SES LLC Solar Project

-  Project Boundary
-  Proposed Fern Substation
-  Gen-Tie (Proposed Transmission Line Route)
-  Biological Survey Area (150m Buffer)

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



 290 Conejo Ridge Ave Thousand Oaks, CA 91361 Phone 805.405.0256 Fax 805.230.1277 www.stantec.com	For:	Vega SES LLC 604 Sutter Street Folsom, CA 95630	Vega SES LLC Solar Project Project Area Map	Figure: 2					
	Job Number:	185803957	Drawn By:	Michael Bartosek	Checked By:	Michael Bartosek	Approved By:	Jennifer Alvarado	Date:

1.5 CONTACT PERSON AND PHONE NUMBER

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2.0 EXISTING CONDITIONS

2.1 TOPOGRAPHY AND SURROUNDING LAND USES

The Project is located in the Yuha Basin of the Colorado Desert. Site topography is generally flat, with elevations ranging from -20 to -35 feet below mean sea level (msl). The Project site supports active and temporarily fallow agricultural lands and several unpaved roads, irrigation ditches, and other farming infrastructure occur throughout the BSA. Crops observed at the time of surveys included alfalfa, oat, hay, peppers, and watermelon, and recently plowed/fallow fields were also observed.

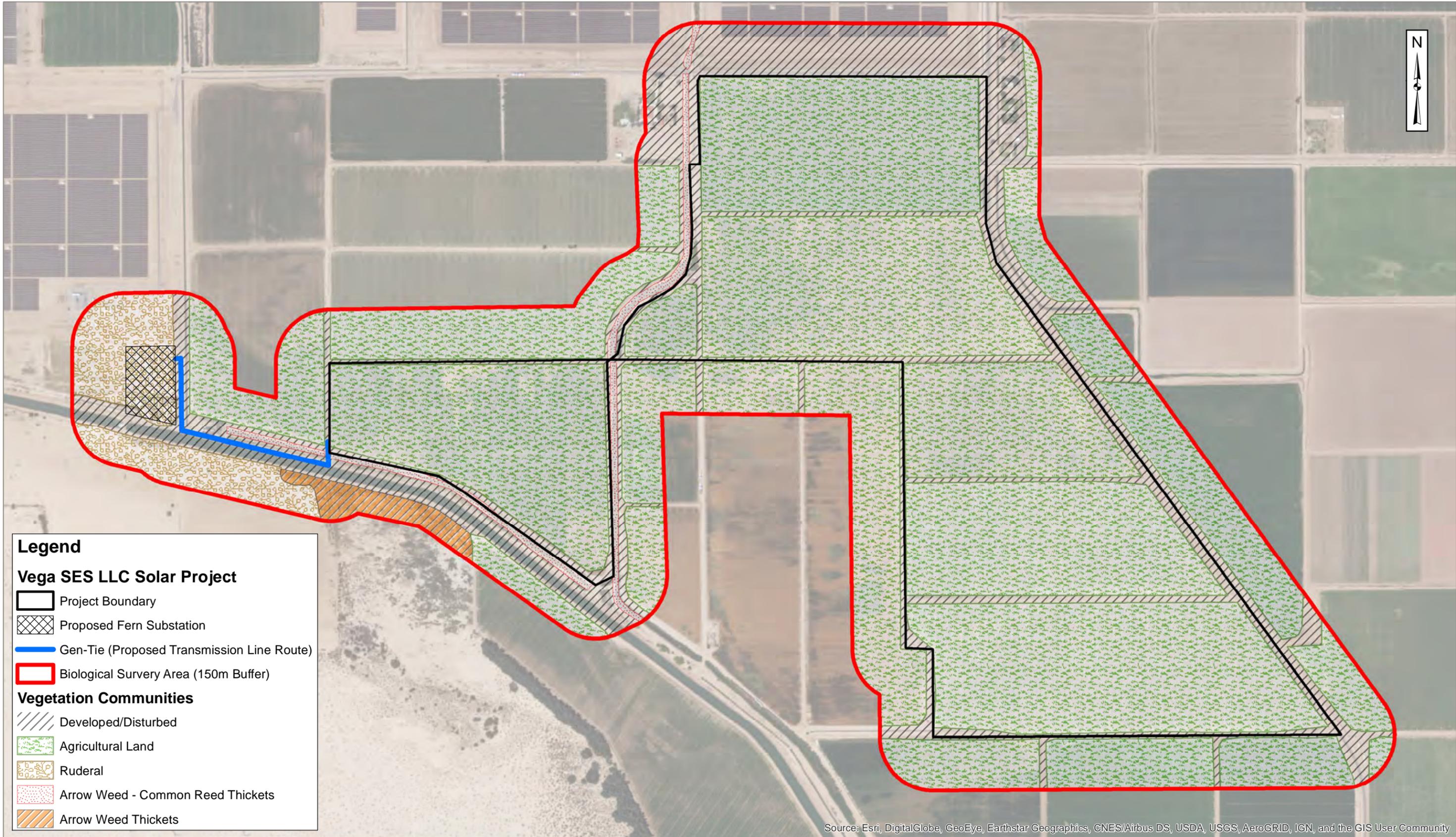
Lands within the Project site are zoned as Agriculture (A). The Project encompasses three agricultural zones: General Agriculture (A2), General Agriculture Rural Zone (A2R), and Heavy Agriculture (A3) (Planning and Development Services Department of County of Imperial 2015). Surrounding lands are also agricultural, with the exception those to the south/southeast of the western portion of the BSA, which are undeveloped.

At the time of survey, adjacent land uses included solar facilities and agricultural lands to the north, rural residences to the northeast, agricultural lands to the east and south, and agricultural lands, solar facilities, and open space to the west.

2.2 VEGETATION

The mapping and description of plant communities follows the MCV II classification system described in the second edition of A Manual of California Vegetation (Sawyer et al. 2009). Species scientific and common names correspond to those described in the second edition of The Jepson Manual (Baldwin et al. 2012).

The BSA supports five major types of vegetation communities/landcover types: arrow weed thickets (*Pluchea sericea* Shrubland Alliance), arrow weed-common reed thickets (*Pluchea sericea-Phragmites-australis* Shrubland Alliance), ruderal scrub, agricultural land, and developed/disturbed land. (Figure 3). Descriptions of these communities are provided below.



Legend

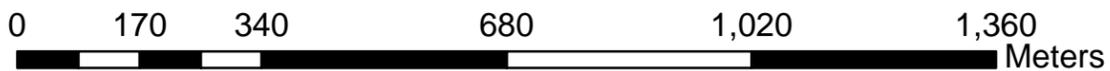
Vega SES LLC Solar Project

- Project Boundary
- Proposed Fern Substation
- Gen-Tie (Proposed Transmission Line Route)
- Biological Survey Area (150m Buffer)

Vegetation Communities

- Developed/Disturbed
- Agricultural Land
- Ruderal
- Arrow Weed - Common Reed Thickets
- Arrow Weed Thickets

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Vega SES LLC Solar Project
 Vegetation Communities
 Map

Figure:
3

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

Arrow Weed Thickets (*Pluchea sericea* Shrubland Alliance)

This vegetation community observed within the BSA, as described in *A Manual of California Vegetation* (Sawyer et al. 2009), is typically dominated or co-dominated by arrow weed. Co-dominant plants and associated species commonly include saltbush (*Atriplex* sp.), mulefat (*Baccharis salicifolia*), tamarisk (*Tamarix* sp.), and narrowleaf willow (*Salix exigua*). Emergent Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), and honey mesquite (*Prosopis glandulosa*) trees may be present at low cover. The shrub layer is less than 5 meters tall with intermittent to continuous cover. The herbaceous understory is sparse with seasonal annuals. This community is found at elevations of -75 to 900 meters. This vegetation community is commonly found around springs, seeps, irrigation ditches, canyon bottoms, stream borders, and seasonally flooded washes. Soils are alluvial or aeolian-derived sands or clay loams, usually alkaline or saline. Arrow weed is also recognized by the USFWS Wetland Inventory as a Facultative Wetland plant (FACW; usually occurring in wetlands but occasionally found in non-wetlands).

Approximately 9.6 acres of arrow weed thickets were observed within the BSA buffer area to the south of the western portion of the Project site, bordering the southern edge of the Westside Main Canal. Where present within the BSA, this community is closely associated with drainage areas. Other species observed within this community at the time of survey included tamarisk and mesquite (*Prosopis* sp.).

Arrow Weed-Common Reed Thickets (*Pluchea sericea*-*Phragmites-australis* Shrubland Alliance)

This vegetation community is not specifically described within *A Manual of California Vegetation* (Sawyer, et al. 2009). At the time of survey, this community was observed to be co-dominated by arrow weed and common reed. Associated species included southern cattail (*Typha domingensis*). Arrow weed and common reed are also recognized by the USFWS Wetland Inventory as Facultative Wetland plants (FACW; usually occurring in wetlands but occasionally found in non-wetlands).

Approximately 12.7 acres of arrow weed-common reed thickets were observed within the BSA, confined within the two major IID drainages, Fig Drain and Westside Main Canal.

Ruderal Herbaceous Scrub

This vegetation community is not specifically described within *A Manual of California Vegetation* (Sawyer, et al. 2009). Within the BSA, this community was observed to be co-dominated by non-native Russian thistle (*Salsola tragus*) and Bermuda grass (*Cynodon dactylon*). Additional associated species included few eucalyptus (*Eucalyptus* sp.) and mesquite trees.

Within the BSA, approximately 38.9 acres of ruderal scrub was observed occupying the proposed Fern substation site and in the undeveloped area to the southwest of the proposed gen-tie route, bordering the southern edge of the Westside Main Canal.

Agricultural Land

This land cover type is not described within *A Manual of California Vegetation* (Sawyer, et al. 2009). At the time of survey, this land cover type was observed to contain active and fallow fields, and associated irrigation canals immediately adjacent to the fields.

Approximately 673 acres of agricultural land was observed throughout the BSA.

Developed/Disturbed Land

This land cover type is not described within *A Manual of California Vegetation* (Sawyer, et al. 2009), but includes developed areas such as roads, residences, and existing solar facilities. These areas are predominantly devoid of vegetation, though do support the sparse growth of ruderal herbaceous scrub, including non-native annual grasses and other weedy species.

Approximately 171 acres of developed/disturbed land was observed throughout the BSA.

2.3 CLIMATE

The region experiences a desert climate characterized by hot, dry summers and warm winters. Average annual temperatures range from 69 degrees Fahrenheit in December to 107 degrees Fahrenheit in July, and average annual precipitation measures 2.87 inches (US Climate Data 2017).

2.4 HYDROLOGY AND GEOMORPHOLOGY

The BSA is underlain by the Colorado River Basin, and is within the Imperial Hydrologic Unit and Brawley Hydrologic Area (SWRCB 2006). Irrigation water is supplied to the agricultural fields within and surrounding the BSA by an engineered system of concrete-lined canals or lateral canals operated and maintained by the IID. These canals typically contain water at all times except during maintenance periods. Water generally flows from south to north through the BSA.

The farm fields within the BSA are graded for flood irrigation. When a field is irrigated, water is allowed to flow from the IID delivery canal to a smaller earthen or concrete-lined ditch (typically referred to as a "head ditch"), which distributes the water evenly across the field. At the opposite, lower elevation side of the field, excess water is collected into another ditch (typically referred to as a "tail ditch") and directed into an IID drain. The ditches present on the BSA are both earthen and concrete-lined, and earthen ditches may be frequently rebuilt when the fields are plowed and disked.

A large concrete-lined canal, the Westside Main Canal, borders the southwestern portion of the Project area and another large, earthen channel, the Fig Drain, bisects the Project area from north to south (Figure 2). The Fig Drain contributes flows to the New River, which passes to the north of the Project area. The New River flows from Mexico into California, and ultimately empties into the

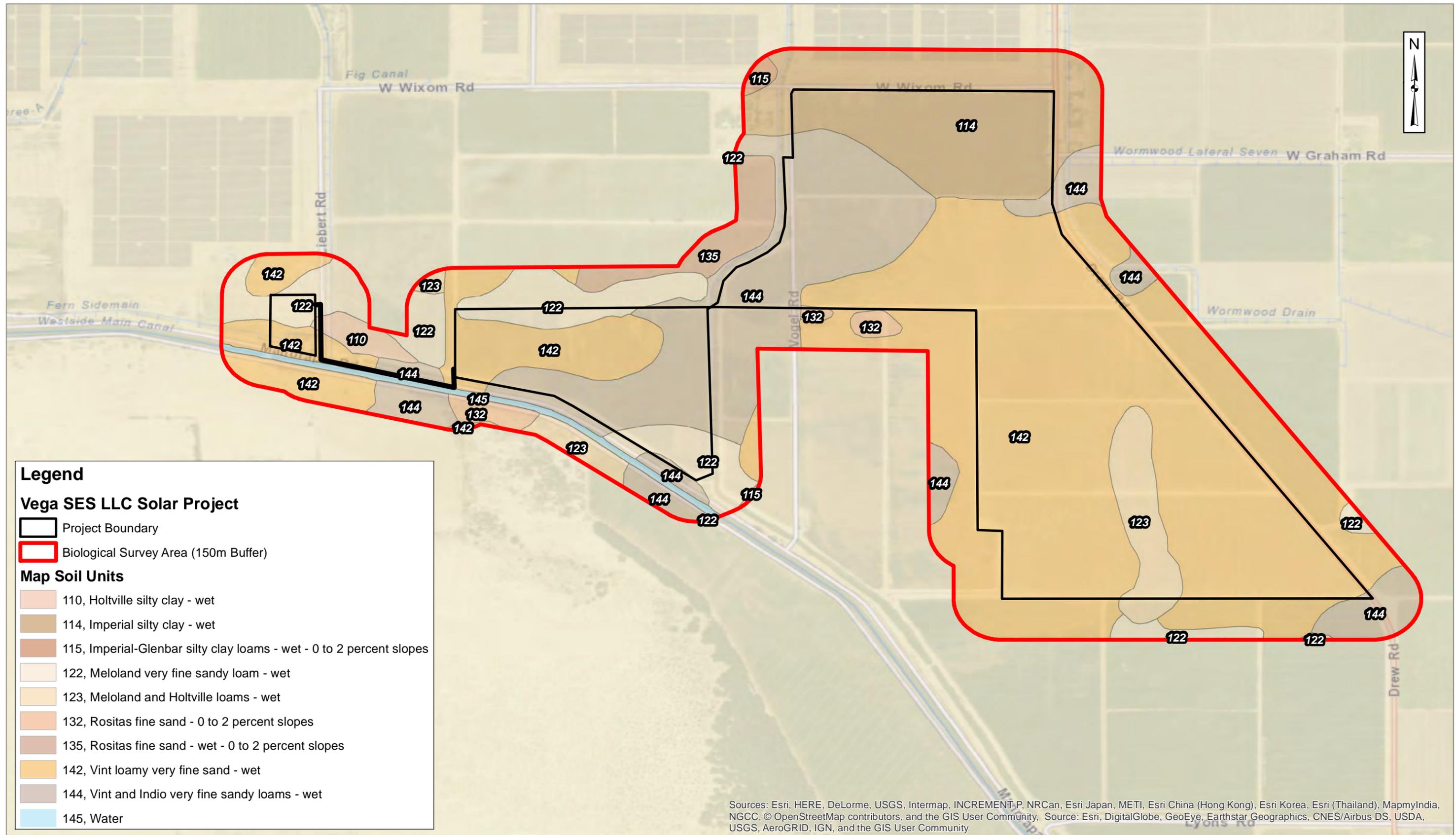
Salton Sea. The majority of runoff into the New River comes from agriculture, municipal discharge, and industrial discharge. The Westside Main Canal services agricultural lands along the western side of the Imperial Valley and empties directly into the Salton Sea. Additional IID-administered irrigation drainage features present within the BSA also ultimately flow to the Salton Sea.

2.5 SOILS

Soils within the proposed Project area were dominated by fine sandy to silty clay loam soils. Soil data from the Natural Resources Conservation Service (NRCS) using Web Soil Survey was used to determine potential soil types, including where hydric soils have historically occurred (Figure 4). Soils present within the BSA are not considered to be hydric soils. Table 1 below summarizes the soils occurring within the BSA.

Table 1. Soil Units Occurring within the Vega BSA

Map Unit Name	Description	Acres Within BSA	% Total Within BSA
Vint laomy very fine sand, wet	A moderately well-drained soil that occurs on basin floors at elevations between -230 to 250 feet; parent material consists of alluvium derived from mixed sources and/or eolian deposits derived from mixed sources; very low runoff; loamy very fine sand (0-10"), loamy fine sand (10-60")	280.52	56.8
Vint and Indio very fine sandy loams, wet	A moderately well-drained soil that occurs on basin floors at elevations between -230 to 300 feet; parent material consists of alluvium derived from mixed sources and/or eolian deposits derived from mixed sources; very low runoff; very fine sandy loam (0-10"), loamy fine sand (10-40"), silty clay (40-60")	108.32	21.9
Imperial silty clay, wet	A moderately well-drained soil that occurs on basin floors at elevations between -230 to 200 feet; parent material consists of clayey alluvium derived from mixed sources and/or clayey lacustrine deposits derived from mixed sources; silty clay (0-12"), silty clay loam (12-60")	58.34	11.8
Meloland and Holtville loams, wet	A moderately well-drained soil that occurs on basin floors at elevations between -230 to 300 feet; parent material consists of alluvium derived from mixed sources and/or eolian deposits derived from mixed sources; low runoff; loam (0-12"), stratified loamy fine sand to silt loam (12-26"), clay (26-38"), stratified silt loam to loamy fine sand (38-60")	22.19	4.5
Meloland very fine sandy loam, wet	A moderately well-drained soil that occurs on basin floors at elevations between -230 to 200 feet; parent material consists of alluvium derived from mixed sources and/or eolian deposits derived from mixed sources; low runoff; very fine sandy loam (0-12"), stratified loamy fine sand to silt loam (12-26"), clay (26-71")	18.45	3.7
Water	Open water	5.02	1.0



Legend

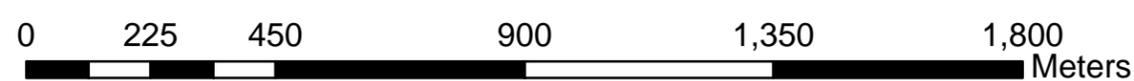
Vega SES LLC Solar Project

- Project Boundary
- Biological Survey Area (150m Buffer)

Map Soil Units

- 110, Holtville silty clay - wet
- 114, Imperial silty clay - wet
- 115, Imperial-Glenbar silty clay loams - wet - 0 to 2 percent slopes
- 122, Meloland very fine sandy loam - wet
- 123, Meloland and Holtville loams - wet
- 132, Rositas fine sand - 0 to 2 percent slopes
- 135, Rositas fine sand - wet - 0 to 2 percent slopes
- 142, Vint loamy very fine sand - wet
- 144, Vint and Indio very fine sandy loams - wet
- 145, Water

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



 290 Conejo Ridge Ave Thousand Oaks, CA 91361 Phone 805.405.0256 Fax 805.230.1277 www.stantec.com	For: Environmental Management Associates, Inc. 1861 Arbolita Drive La Habra, CA 90631	Vega SES LLC Solar Project Natural Resource Conservation Service Soils	Figure: <div style="font-size: 2em; font-weight: bold; text-align: center;">4</div>
Job Number: 185803957	Drawn By: Michael Bartosek	Checked By: Michael Bartosek	Approved By: Jennifer Alvarado
GEOGRAPHIC INFORMATION SYSTEMS (GIS)			
Date: 09/14/2017			

Map Unit Name	Description	Acres Within BSA	% Total Within BSA
Rositas fine sand, wet, 0 to 2 percent slopes	A moderately well-drained soil that occurs on basin floors at elevations between -230 to 350 feet; parent material consists of alluvium derived from mixed sources and/or eolian deposits derived from mixed sources; very low runoff; fine sand (0-9"), sand (9-60")	0.76	0.1
Rositas fine sand, 0 to 2 percent slopes	A somewhat excessively drained soil that occurs on basin floors at elevations between -230 to 350 feet; parent material consists of alluvium derived from mixed sources and/or eolian deposits derived from mixed sources; very low runoff; fine sand (0-9"), sand (9-60")	0.44	0.0
Total		494.04	100

3.0 REGULATORY BACKGROUND

Jurisdictional waters, wetlands, and riparian habitat are regulated by the USACE, RWQCB, and CDFW. The USACE Regulatory Program regulates activities pursuant to Section 404 of the federal Clean Water Act (CWA); the CDFW regulates activities under California Fish and Game Code Sections 1600-1607; the LARWQCB regulates activities under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. Refer to Appendix E for additional details on regulatory authorities and background.

4.0 WATERS/WETLANDS DELINEATION

4.1 DELINEATION METHODOLOGY

This section describes the methods employed by Stantec during the survey conducted to determine the extent of potentially jurisdictional wetlands and/or waters that occur within the BSA. Prior to conducting the field assessment, Stantec reviewed current and historic aerial photographs, detailed topographic maps, soil maps of the proposed Project area (NRCS 2017), and local and state hydric soil lists to evaluate the potential active channels and wetland features that occur within the BSA. During the field assessment, vegetation and hydrology were mapped using a Trimble Geo 7X global positioning system (GPS) and drawn on aerial photographs. Field maps were digitized using Global Information Technology (GIS) and total jurisdictional area for each jurisdiction was calculated.

Federal Wetlands/Waters

Jurisdictional non-wetland "waters of the U.S." are delineated based on the limits of the ordinary high water mark (OHWM) as determined by changes in physical and biological features, such as bank erosion, deposited vegetation or debris, and vegetative characteristics. Jurisdictional

wetlands are delineated using a routine determination in accordance with the methods outlined in the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2011) based on three wetland parameters: dominant hydrophytic vegetation, wetland hydrology, and hydric soils. Tables 1 and 2 in Appendix D (Potential Geomorphic and Vegetative Indicators of Ordinary High Water Marks for the Arid West) provide a list of key physical features for determining the OHWM identified by the arid west manual.

CDFW Jurisdictional Waters

CDFW jurisdiction is delineated to the top of the banks of the channel and/or to the edge of the associated riparian canopy/riparian habitat, whichever is wider. Within the BSA, the CDFW jurisdictional boundary of the IID-administered irrigation canals is wider than the OHWM. Therefore, the total acreage of CDFW jurisdictional waters is greater than the combined acreage of federal jurisdictional waters.

4.1.1 Wetland Vegetation

Vegetation percent cover was estimated for plant species in each of the four strata (tree, sapling/shrub, herb, and woody vine). Plant species in each stratum was ranked based on canopy dominance (USACE 2008). Species that contributed to a cumulative coverage total of at least 50 percent and any species that comprised at least 20 percent of the total coverage for each stratum were recorded on the Field Data Sheets (50/20 rule). Wetland indicator status was assigned to each dominant species using the Region 0 List of Plant Species that Occur in Wetlands: 1996 National Summary (USFWS 1997), Wetland Plants of Specialized Habitats in the Arid West (USACE, 2007), and the Arid West Region of The National Wetland Plant List (USACE, 2012). If greater than 50 percent of the dominant species from all strata were Obligate, Facultative-wetland, or Facultative species, the criteria for wetland vegetation was considered to be met (refer to Appendix D, Table 3).

4.1.2 Wetland Hydrology

The presence of wetland hydrology is assessed by evaluating the presence of primary and secondary hydrology indicators (refer to Appendix E, Tables 4 and 5). These indicators are designed to determine whether an area has a high probability of being inundated or saturated (flooded, ponded, or tidally influenced) long enough during the growing season to develop anaerobic conditions in the surface soil environment, especially in the root zone (USACE, 1987 and 2008b). The Arid West Supplement includes two additional indicator groups that can be utilized during dry conditions or in areas where surface water/saturated soils are not present; these are Group B (evidence of recent inundation) and Group C (evidence of recent soil saturation) (USACE, 2008). The indicators are divided into two categories (primary and secondary indicators) and presence of one primary indicator from any of the groups is considered evidence of wetland hydrology. If only secondary indicators are present, two or more must be observed to conclude presence of wetland hydrology. Indicators are intended to be one-time observations of site

conditions representing evidence of wetland hydrology when hydrophytic vegetation and hydric soils are present (USACE, 2008).

4.2 RESULTS

Two types of jurisdictional features were documented within the BSA: USACE non-wetland waters and CDFW State Waters. All the drainage features within the BSA are man-made, constructed entirely within uplands, and used solely for agricultural irrigation. Head and tail ditches are typically dry and convey water only during periodic and infrequent irrigation events. They do not support riparian habitat and, as is the case with many tail ditches, are plowed under and re-created each time a field is replanted. Thus, they would not meet the definition of a Relatively Permanent Water (RPW) and would not be considered federally or state jurisdictional. The larger, IID-administered canals (supply) and drains (drainage), however, generally convey water year-round and ultimately flow into the Salton Sea, which is considered a Traditionally Navigable Water, and would likely be considered federally and state jurisdictional.

Table 2 summarizes the jurisdictional features present within the BSA and their acreages; Figure 5 depicts their location within the BSA. Appendix A contains the OHWM Data Forms completed during the assessment. According to the NRCS Hydric Soils List (NRCS 2014a and 2014b), there are no mapped hydric soils within the BSA.

Table 2. Acreage of Jurisdictional Waters within the Vega BSA

Feature ID	OHWM (feet)	Top of Bank (feet)	Distance	USACE/RWQCB Waters (acres)	CDFW Jurisdictional Waters (acres)
Fern Canal	13	22	1,254	0.37	0.63
Fern Side Main	2	6	630	0.03	0.09
Fig Drain	25	60	5,385	4.53	9.62
Fig Drain #1	17	26	3,685		
Westside Main Canal	25	60	440	0.25	0.61
Westside Main Canal	70	90	5,435	8.73	11.23
Wormwood Lateral 5	4	8	4,145	0.38	0.76
Wormwood Lateral 7	3	8	1,223	0.14	0.31
Wormwood Lateral 7	5		475		
Wormwood 7 Drain	10	30	2,790	0.64	1.92
TOTAL			25,462	15.07	25.17

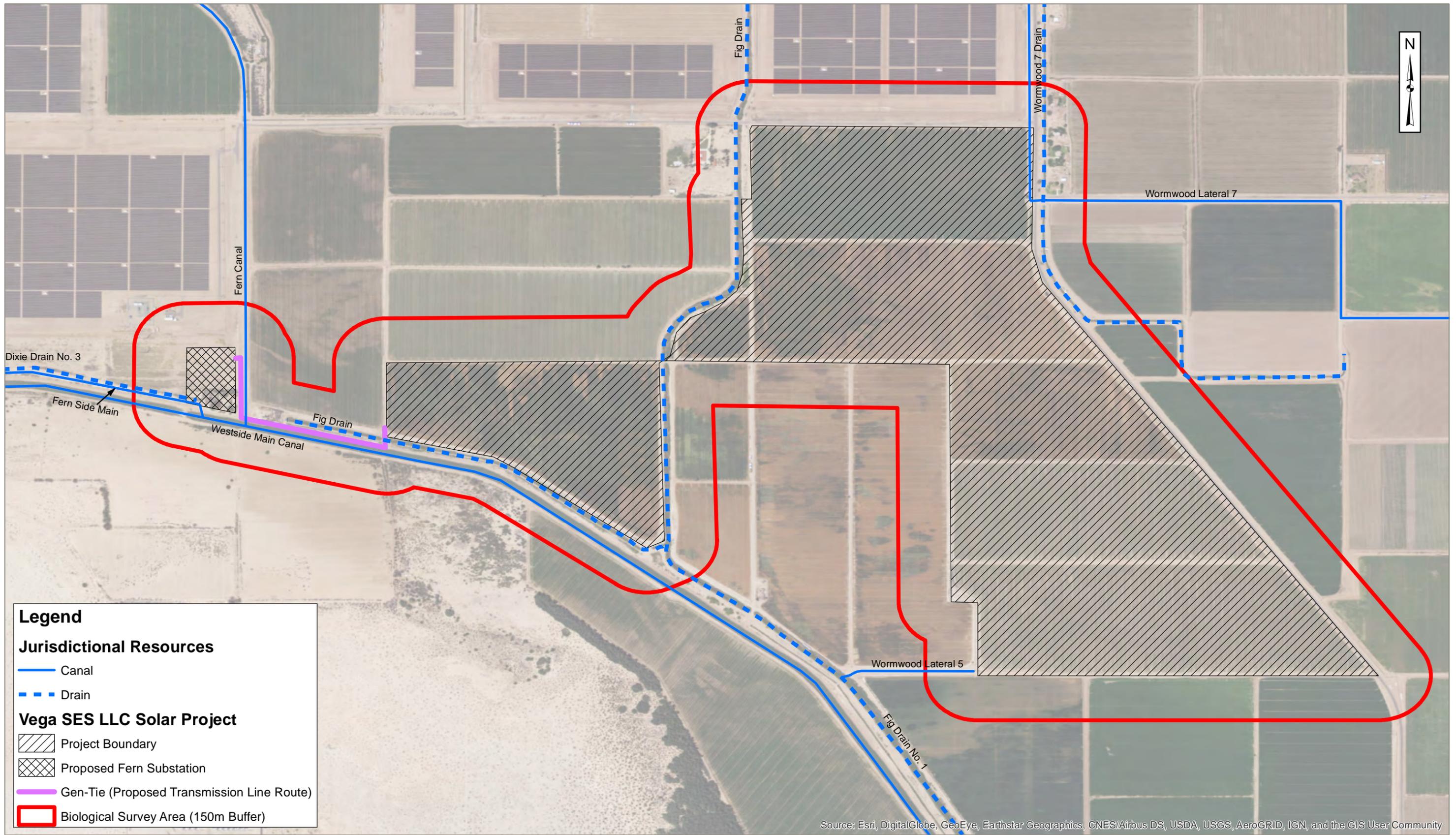
(a) Non-wetland waters of the U.S. and non-wetland waters of the state overlap; as such, jurisdictional acreages are not additive.

Federal Wetlands

Based on Stantec's professional opinion following an assessment of hydrology, vegetation, and soils, there are no federal wetlands within the BSA. IID irrigation canals and drains do, however, meet the requirements for jurisdictional waters (see below).

Federal Non-Wetland Waters

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Legend

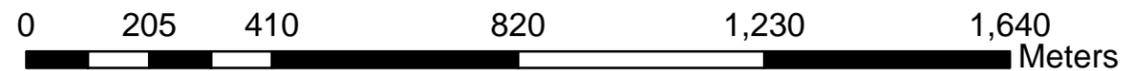
Jurisdictional Resources

- Canal
- - - Drain

Vega SES LLC Solar Project

- Project Boundary
- Proposed Fern Substation
- Gen-Tie (Proposed Transmission Line Route)
- Biological Survey Area (150m Buffer)

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Jurisdictional Resources

Figure:
5

Job Number: 185803957 Drawn By: Michael Bartosek Checked By: Michael Bartosek Approved By: Jennifer Alvarado Date: 09/14/2017

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Approximately 15 acres of the BSA meet the definition of “waters of the United States” as outlined in 33 CFR Part 328. This assessment is based on Stantec’s professional opinion following an assessment of hydrology and the limits of the OHWM. Because the potentially jurisdictional features in the BSA are man-made RPWs, the OHW zone was typically delineated using direct measure of OHWM indicators rather than the extent of the active floodplain because irrigation features with controlled flows do not support true active floodplains. Some of the key hydrology indicators (see Tables 1 and 2 in Appendix D for additional information) that were noted during the delineation included:

- D1 – Herbaceous marsh species
- D5 – Perennial herbs, hydromesic clonals
- F15/18 – Upland species

CDFW Waters

Based on Stantec’s professional opinion following an assessment of hydrology, presence of bed and bank, and extent of riparian vegetation, approximately 25 acres of the BSA meet the definition of CDFW jurisdictional waters as outlined in Sections 1600-1616 of the CDFW Code.

5.0 SUMMARY AND CONCLUSIONS

The BSA supports CDFW jurisdictional waters and USACE nonwetland waters. The IID irrigation drainages listed in Table 2 were actively flowing during the delineation and many supported riparian vegetation. These channels exhibited evidence of hydrology and a discernible OHWM and were mapped as jurisdictional non-wetland “waters of the United States” (15.07 acres). Using a combination of bed/bank delineation and field observations, 25.17 acres of CDFW jurisdictional waters were identified within the BSA.

The conclusions presented above represent Stantec’s professional opinion based on our knowledge and experience with the USACE and CDFW, including their regulatory guidance documents and manuals. However, the USACE and CDFW have final authority in determining the status and presence of jurisdictional wetlands/waters and the extent of their boundaries.

VEGA SES LLC SOLAR PROJECT PRELIMINARY JURISDICTIONAL WATERS/WETLANDS DELINEATION REPORT

References
January 30, 2018

6.0 REFERENCES

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APPENDICES

**VEGA SES LLC SOLAR PROJECT PRELIMINARY JURISDICTIONAL WATERS/WETLANDS DELINEATION
REPORT**

Appendix A OHWM Data Forms
January 30, 2018

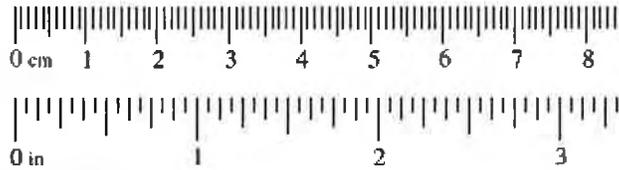
Appendix A OHWM DATA FORMS

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Vega Solar Project Number: Stream: Fern Side Main Investigator(s): RB, JA	Date: 6/28/17 Town: Photo begin file#:	Time: State: CA Photo end file#:				
Y <input type="checkbox"/> / N <input checked="" type="checkbox"/> Do normal circumstances exist on the site? Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Is the site significantly disturbed?	Location Details: Vega Solar BSA (see report)					
Potential anthropogenic influences on the channel system: Man-made canal; adjacent agricultural activities.						
Brief site description: OHWM = 2'						
Checklist of resources (if available):						
<input checked="" type="checkbox"/> Aerial photography Dates: <input type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input checked="" type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event					
Hydrogeomorphic Floodplain Units						
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:						
<ol style="list-style-type: none"> 1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. <ol style="list-style-type: none"> a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OHWM and record the indicators. Record the OHWM position via: <table style="width: 100%; margin-left: 20px;"> <tr> <td><input checked="" type="checkbox"/> Mapping on aerial photograph</td> <td><input checked="" type="checkbox"/> GPS</td> </tr> <tr> <td><input checked="" type="checkbox"/> Digitized on computer</td> <td><input type="checkbox"/> Other:</td> </tr> </table> 			<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS	<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS					
<input checked="" type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:					

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



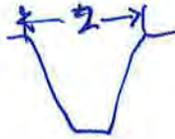
Project ID: Vega

Cross section ID:

Date: 6/28/17

Time:

Cross section drawing:



OHWM

GPS point: see report

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover

- Break in bank slope
- Other: _____
- Other: _____

Comments:

Ag. drain constructed in wet uplands

Floodplain unit:

- Low-Flow Channel
- Active Floodplain
- Low Terrace

GPS point: _____

No floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
 Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Project ID:

Cross section ID:

Date:

Time:

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

Other: _____

Other: _____

Comments:

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

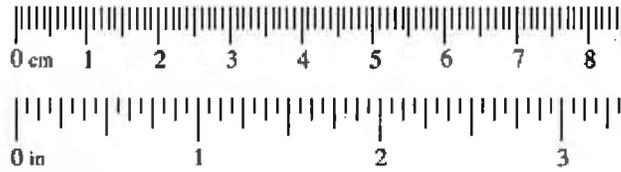
Other: _____

Other: _____

Comments:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
0.079	2.00	Granule
0.039	1.00	Very coarse sand
0.020	0.50	Coarse sand
1/2 0.0098	0.25	Medium sand
1/4 0.005	0.125	Fine sand
1/8 0.0025	0.0625	Very fine sand
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



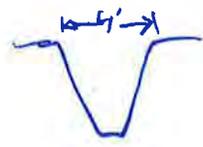
Project ID: Vega

Cross section ID:

Date: 6/28/17

Time:

Cross section drawing:



OHWM

GPS point: see report

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover
- Break in bank slope
- Other: _____
- Other: _____

Comments:

Ag. drain constructed in ~~the~~ uplands.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

No floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Project ID:

Cross section ID:

Date:

Time:

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

Other: _____

Other: _____

Comments:

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

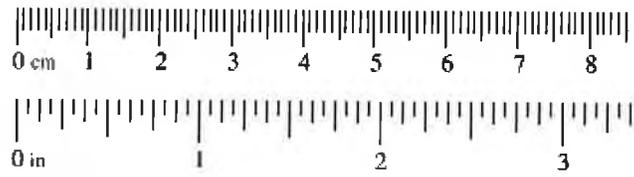
Other: _____

Other: _____

Comments:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
0.079	2.00	Granule
0.039	1.00	Very coarse sand
0.020	0.50	Coarse sand
1/2 0.0098	0.25	Medium sand
1/4 0.005	0.125	Fine sand
1/8 0.0025	0.0625	Very fine sand
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



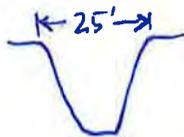
Project ID: Vega

Cross section ID:

Date: 6/28/17

Time:

Cross section drawing:



OHWM

GPS point: see report

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover
- Break in bank slope
- Other: _____
- Other: _____

Comments:

Ag. drain constructed in uplands

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

No floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Project ID: _____

Cross section ID: _____

Date: _____

Time: _____

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- | | |
|---|--|
| <input type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- | | |
|---|--|
| <input type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

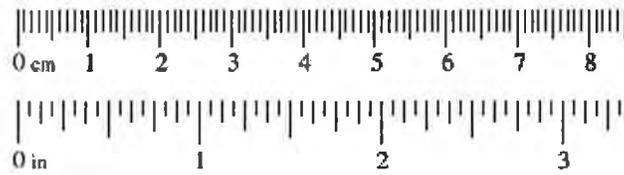
Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
0.079	2.00	Granule
0.039	1.00	Very coarse sand
0.020	0.50	Coarse sand
1/2 0.0098	0.25	Medium sand
1/4 0.005	0.125	Fine sand
1/8 0.0025	0.0625	Very fine sand
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



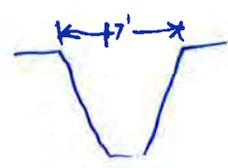
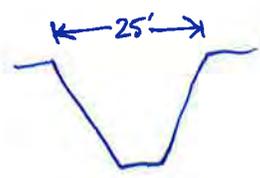
Project ID: Vega

Cross section ID:

Date: 6/28/17

Time:

Cross section drawing:



OHWM

GPS point: see report

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover

- Break in bank slope
- Other: _____
- Other: _____

Comments:

Ag. drain constructed in uplands

Floodplain unit:

- Low-Flow Channel
- Active Floodplain
- Low Terrace

GPS point: _____

No Floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
 Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches

- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Project ID:

Cross section ID:

Date:

Time:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

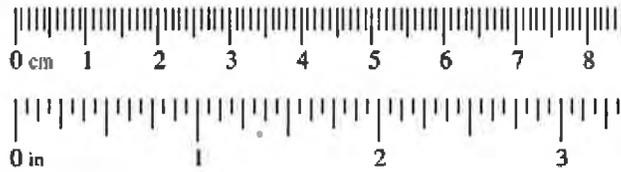
Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
		Granule
0.079	2.00	Very coarse sand
0.039	1.00	Coarse sand
0.020	0.50	Medium sand
1/2 0.0098	0.25	Fine sand
1/4 0.005	0.125	Very fine sand
1/8 0.0025	0.0625	Coarse silt
1/16 0.0012	0.031	Medium silt
1/32 0.00061	0.0156	Fine silt
1/64 0.00031	0.0078	Very fine silt
1/128 0.00015	0.0039	Clay



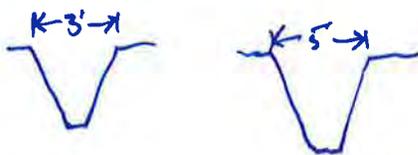
Project ID: Vega

Cross section ID: 6/28f

Date: 6/28/17

Time:

Cross section drawing:



OHW

GPS point: see report

Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Change in average sediment texture | <input checked="" type="checkbox"/> Break in bank slope |
| <input type="checkbox"/> Change in vegetation species | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Change in vegetation cover | <input type="checkbox"/> Other: _____ |

Comments:

Ag. canal constructed in uplands

Floodplain unit:

- Low-Flow Channel
 Active Floodplain
 Low Terrace

GPS point: _____

No Floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
 Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%
 Community successional stage:

- | | |
|---|--|
| <input type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Project ID: _____

Cross section ID: _____

Date: _____

Time: _____

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

Other: _____

Other: _____

Comments:

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

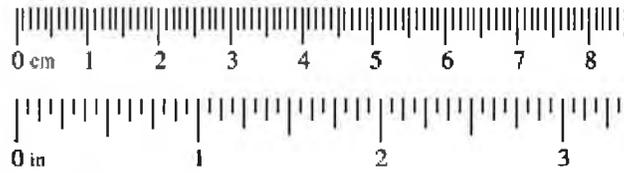
Other: _____

Other: _____

Comments:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
0.079	2.00	Granule
0.039	1.00	Very coarse sand
0.020	0.50	Coarse sand
1/2 0.0098	0.25	Medium sand
1/4 0.005	0.125	Fine sand
1/8 0.0025	0.0625	Very fine sand
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



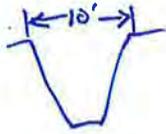
Project ID: Vega

Cross section ID:

Date: 6/24/17

Time:

Cross section drawing:



OHW

GPS point: see report

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover
- Break in bank slope
- Other: _____
- Other: _____

Comments:

Ag. drain constructed in uplands

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

No Floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
 Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%
 Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Project ID:

Cross section ID:

Date:

Time:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Wentworth Size Classes

Inches (in)		Millimeters (mm)		Wentworth size class	
	10.08	---	256	Boulder	Gravel
	2.56	---	64	Cobble	
	0.157	---	4	Pebble	
		---		Granule	
	0.079	---	2.00	Very coarse sand	Sand
	0.039	---	1.00	Coarse sand	
	0.020	---	0.50	Medium sand	
1/2	0.0098	---	0.25	Fine sand	
1/4	0.005	---	0.125	Very fine sand	
1/8	0.0025	---	0.0625	Coarse silt	Silt
1/16	0.0012	---	0.031	Medium silt	
1/32	0.00061	---	0.0156	Fine silt	
1/64	0.00031	---	0.0078	Very fine silt	
1/128	0.00015	---	0.0039	Clay	Mud



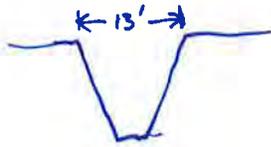
Project ID: Vega

Cross section ID:

Date: 6/29/17

Time:

Cross section drawing:



OHWM

GPS point: see report

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover
- Break in bank slope
- Other: _____
- Other: _____

Comments:

Ag. canal constructed in uplands

Floodplain unit:

- Low-Flow Channel
- Active Floodplain
- Low Terrace

GPS point: _____

No floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
 Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%
 Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Project ID:

Cross section ID:

Date:

Time:

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

Other: _____

Other: _____

Comments:

Floodplain unit:

Low-Flow Channel

Active Floodplain

Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

NA

Early (herbaceous & seedlings)

Mid (herbaceous, shrubs, saplings)

Late (herbaceous, shrubs, mature trees)

Indicators:

Mudcracks

Ripples

Drift and/or debris

Presence of bed and bank

Benches

Soil development

Surface relief

Other: _____

Other: _____

Other: _____

Comments:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
0.079	2.00	Granule
0.039	1.00	Very coarse sand
0.020	0.50	Coarse sand
1/2 0.0098	0.25	Medium sand
1/4 0.005	0.125	Fine sand
1/8 0.0025	0.0625	Very fine sand
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



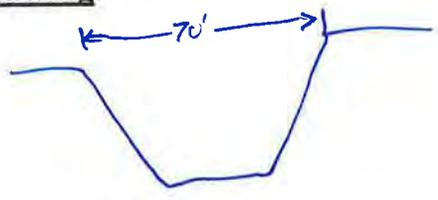
Project ID: Vegan

Cross section ID:

Date: 6/28/17

Time:

Cross section drawing:



OHWM

GPS point: see report

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover

- Break in bank slope
- Other: surface water present (perennial)
- Other: _____

Comments:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____ No floodplain

Characteristics of the floodplain unit:

Average sediment texture: _____
 Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

Project ID:

Cross section ID:

Date:

Time:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- | | |
|---|--|
| <input type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- | | |
|---|--|
| <input type="checkbox"/> NA | <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) |
| <input type="checkbox"/> Early (herbaceous & seedlings) | <input type="checkbox"/> Late (herbaceous, shrubs, mature trees) |

Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Mudcracks | <input type="checkbox"/> Soil development |
| <input type="checkbox"/> Ripples | <input type="checkbox"/> Surface relief |
| <input type="checkbox"/> Drift and/or debris | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Presence of bed and bank | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Benches | <input type="checkbox"/> Other: _____ |

Comments:

**VEGA SES LLC SOLAR PROJECT PRELIMINARY JURISDICTIONAL WATERS/WETLANDS DELINEATION
REPORT**

Appendix B Photographic Log
January 30, 2018

Appendix B PHOTOGRAPHIC LOG

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 1: June 27, 2017



Representative photo of non-jurisdictional irrigation infrastructure.

Photo 2: June 28, 2017



Representative photo of non-jurisdictional irrigation infrastructure.

STANTEC CONSULTING SERVICES INC.
PHOTOGRAPHIC RECORD

Client: Vega SES LLC

Job Number: 185803957

Site Name: Vega SES LLC Solar Project

Photographer: R. Brown

Photo 3: October 23, 2017



Wormwood Lateral canal – generally carries water year round and would be considered a jurisdictional resource.

Photo 4: June 28, 2017



Westside Main Canal – carries water near-year round and would be considered a jurisdictional feature.

**VEGA SES LLC SOLAR PROJECT PRELIMINARY JURISDICTIONAL WATERS/WETLANDS DELINEATION
REPORT**

Appendix C - Soil Report
January 30, 2018

Appendix C SOIL REPORT

Imperial County, California, Imperial Valley Area

110—Holtville silty clay, wet

Map Unit Setting

National map unit symbol: h8zj
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Holtville, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holtville, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

H1 - 0 to 17 inches: silty clay
H2 - 17 to 24 inches: clay
H3 - 24 to 35 inches: silt loam
H4 - 35 to 60 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Glenbar

Percent of map unit: 5 percent
Hydric soil rating: No

Imperial

Percent of map unit: 5 percent
Hydric soil rating: No

Indio

Percent of map unit: 3 percent
Hydric soil rating: No

Vint

Percent of map unit: 2 percent
Hydric soil rating: No

114—Imperial silty clay, wet

Map Unit Setting

National map unit symbol: h8zn
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Imperial, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Imperial, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from mixed and/or clayey lacustrine deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: silty clay
H2 - 12 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 20.0

Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Glenbar

Percent of map unit: 4 percent

Hydric soil rating: No

Meloland

Percent of map unit: 4 percent

Hydric soil rating: No

Holtville

Percent of map unit: 4 percent

Hydric soil rating: No

Niland

Percent of map unit: 3 percent

Hydric soil rating: No

115—Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: h8zp

Elevation: -230 to 200 feet

Mean annual precipitation: 0 to 3 inches

Mean annual air temperature: 72 to 75 degrees F

Frost-free period: 300 to 350 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Imperial, wet, and similar soils: 40 percent

Glenbar, wet, and similar soils: 40 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Imperial, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from mixed and/or clayey lacustrine deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: silty clay loam
H2 - 12 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 20.0
Available water storage in profile: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Glenbar, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Custom Soil Resource Report

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 15.0
Available water storage in profile: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Holtville

Percent of map unit: 10 percent
Hydric soil rating: No

Meloland

Percent of map unit: 10 percent
Hydric soil rating: No

122—Meloland very fine sandy loam, wet

Map Unit Setting

National map unit symbol: h8zx
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Meloland, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meloland, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Custom Soil Resource Report

Typical profile

H1 - 0 to 12 inches: very fine sandy loam
H2 - 12 to 26 inches: stratified loamy fine sand to silt loam
H3 - 26 to 71 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 13.0
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Imperial

Percent of map unit: 3 percent
Hydric soil rating: No

Indio

Percent of map unit: 3 percent
Hydric soil rating: No

Holtville

Percent of map unit: 3 percent
Hydric soil rating: No

Glenbar

Percent of map unit: 3 percent
Hydric soil rating: No

Vint

Percent of map unit: 3 percent
Hydric soil rating: No

123—Meloland and Holtville loams, wet

Map Unit Setting

National map unit symbol: h8zy

Elevation: -230 to 300 feet

Mean annual precipitation: 0 to 3 inches

Mean annual air temperature: 72 to 75 degrees F

Frost-free period: 300 to 350 days

Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Meloland, wet, and similar soils: 40 percent

Holtville, wet, and similar soils: 40 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meloland, Wet

Setting

Landform: Basin floors

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from mixed sources and/or eolian deposits
derived from mixed sources

Typical profile

H1 - 0 to 12 inches: loam

H2 - 12 to 26 inches: stratified loamy fine sand to silt loam

H3 - 26 to 38 inches: clay

H4 - 38 to 60 inches: stratified silt loam to loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately
low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0
mmhos/cm)

Sodium adsorption ratio, maximum in profile: 13.0

Available water storage in profile: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Custom Soil Resource Report

Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Holtville, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or lacustrine deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 24 inches: clay
H3 - 24 to 36 inches: silt loam
H4 - 36 to 60 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Glenbar

Percent of map unit: 4 percent
Hydric soil rating: No

Imperial

Percent of map unit: 4 percent
Hydric soil rating: No

Indio

Percent of map unit: 4 percent
Hydric soil rating: No

Rositas

Percent of map unit: 4 percent
Hydric soil rating: No

Vint

Percent of map unit: 4 percent
Hydric soil rating: No

132—Rositas fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: h907
Elevation: -230 to 350 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 70 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Rositas and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rositas

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 9 inches: fine sand
H2 - 9 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Niland

Percent of map unit: 4 percent
Hydric soil rating: No

Rositas

Percent of map unit: 4 percent
Hydric soil rating: No

Vint

Percent of map unit: 4 percent
Hydric soil rating: No

Antho

Percent of map unit: 1 percent
Hydric soil rating: No

Holtville

Percent of map unit: 1 percent
Hydric soil rating: No

Superstition

Percent of map unit: 1 percent
Hydric soil rating: No

135—Rositas fine sand, wet, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: h90b
Elevation: -230 to 350 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 70 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Rositas, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rositas, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf

Custom Soil Resource Report

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 9 inches: fine sand

H2 - 9 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Vint

Percent of map unit: 4 percent

Hydric soil rating: No

Superstition

Percent of map unit: 4 percent

Hydric soil rating: No

Carsitas

Percent of map unit: 4 percent

Hydric soil rating: No

Antho

Percent of map unit: 3 percent

Hydric soil rating: No

142—Vint loamy very fine sand, wet

Map Unit Setting

National map unit symbol: h90k

Custom Soil Resource Report

Elevation: -230 to 150 feet

Mean annual precipitation: 0 to 3 inches

Mean annual air temperature: 72 to 75 degrees F

Frost-free period: 300 to 350 days

Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Vint, wet, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vint, Wet

Setting

Landform: Basin floors

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 10 inches: loamy very fine sand

H2 - 10 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): 2w

Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Indio

Percent of map unit: 5 percent

Hydric soil rating: No

Meloland

Percent of map unit: 5 percent

Hydric soil rating: No

144—Vint and Indio very fine sandy loams, wet

Map Unit Setting

National map unit symbol: h90m

Elevation: -230 to 300 feet

Mean annual precipitation: 0 to 3 inches

Mean annual air temperature: 72 to 75 degrees F

Frost-free period: 300 to 350 days

Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Vint, wet, and similar soils: 50 percent

Indio, wet, and similar soils: 40 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vint, Wet

Setting

Landform: Basin floors

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from mixed sources and/or eolian deposits
derived from mixed sources

Typical profile

H1 - 0 to 10 inches: very fine sandy loam

H2 - 10 to 40 inches: loamy fine sand

H3 - 40 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to
moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0
mmhos/cm)

Sodium adsorption ratio, maximum in profile: 10.0

Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w

Land capability classification (nonirrigated): 7w

Custom Soil Resource Report

Hydrologic Soil Group: B
Hydric soil rating: No

Description of Indio, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: very fine sandy loam
H2 - 12 to 40 inches: stratified loamy very fine sand to silt loam
H3 - 40 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Rositas

Percent of map unit: 5 percent
Hydric soil rating: No

Meloland

Percent of map unit: 5 percent
Hydric soil rating: No

145—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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Appendix D Arid West Indicator Tables
January 30, 2018

Appendix D ARID WEST INDICATOR TABLES

Table 1. Potential Geomorphic Indicators of Ordinary High Water Marks for the Arid West

(A) Below OHW	(B) At OHW	(C) Above OHW
1. In-stream dunes	1. Valley flat	1. Desert pavement
2. Crested ripples	2. Active floodplain	2. Rock varnish
3. Flaser bedding	3. Benches: low, mid, most prominent	3. Clast weathering
4. Harrow marks	4. Highest surface of channel bars	4. Salt splitting
5. Gravel sheets to rippled sands	5. Top of point bars	5. Carbonate etching
6. Meander bars	6. Break in bank slope	6. Depositional topography
7. Sand tongues	7. Upper limit of sand-sized particles	7. Caliche rubble
8. Muddy point bars	8. Change in particle size distribution	8. Soil development
9. Long gravel bars	9. Staining of rocks	9. Surface color/tone
10. Cobble bars behind obstructions	10. Exposed root hairs below intact soil layer	10. Drainage development
11. Scour holes downstream of obstructions	11. Silt deposits	11. Surface relief
12. Obstacle marks	12. Litter (organic debris, small twigs and leaves)	12. Surface rounding
13. Stepped-bed morphology in gravel	13. Drift (organic debris, larger than twigs)	
14. Narrow berms and levees		
15. Streaming lineations		
16. Desiccation/mud cracks		
17. Armored mud balls		
18. Knick Points		

Table 2. Potential Vegetation Indicators of Ordinary High Water Marks for the Arid West

	(D) Below OHW	(E) At OHW	(F) Above OHW
Hydroriparian indicators	1. Herbaceous marsh species 2. Pioneer tree seedlings 3. Sparse, low vegetation 4. Annual herbs, hydromesic ruderals 5. Perennial herbs, hydromesic clonals	1. Annual herbs, hydromesic ruderals 2. Perennial herbs, hydromesic clonals 3. Pioneer tree seedlings 4. Pioneer tree saplings	1. Annual herbs, xeric ruderals 2. Perennial herbs, non-clonal 3. Perennial herbs, clonal and non-clonal co-dominant 4. Mature pioneer trees, no young trees 5. Mature pioneer trees w/upland species 6. Late-successional species
Mesoriparian Indicators	6. Pioneer tree seedlings 7. Sparse, low vegetation 8. Pioneer tree saplings 9. Xeroriparian species	5. Sparse, low vegetation annual herbs, hydromesic 6. ruderals 7. Perennial herbs, hydromesic clonals 8. Pioneer tree seedlings 9. Pioneer tree saplings 10. Xeroriparian species 11. Annual herbs, xeric ruderals	7. Xeroriparian species 8. Annual herbs, xeric ruderals 9. Perennial herbs, non-clonal 10. Perennial herbs, clonal and non-clonal codominant 11. Mature pioneer trees, no young trees 12. Mature pioneer trees, xeric understory 13. Mature pioneer trees w/upland species 14. Late-successional species 15. Upland species
Xeroriparian indicators	10. Sparse, low vegetation 11. Xeroriparian species 12. Annual herbs, xeric ruderals	12. Sparse, low vegetation 13. Xeroriparian species 14. Annual herbs, xeric ruderals	16. Annual herbs, xeric ruderals 17. Mature pioneer trees w/upland species 18. Upland species

Table 3. Summary of Wetland Indicator Status

Category	Probability	
Obligate Wetland	OBL	Almost always occur in wetlands (estimated probability >99%)
Facultative Wetland	FACW	Usually occur in wetlands (estimated probability of 67–99%)
Facultative	FAC	Equally likely to occur in wetlands/non-wetlands (estimated probability of 34–66%)
Facultative Upland	FACU	Usually occur in non-wetlands (estimated probability 67–99%)
Obligate Upland	UPL	Almost always occur in non-wetlands (estimated probability >99%)
Non-Indicator	NI	No indicator status has been assigned

Source: Reed, 1988; USFWS, 1997; USACE, 2012.

Table 4. Wetland Hydrology Indicators*

Primary Indicators	Secondary Indicators
Watermarks	Oxidized Rhizospheres Associated with Living Roots
Water-Borne Sediment Deposits	FAC-Neutral Test
Drift Lines	Water-Stained Leaves
Drainage Patterns Within Wetlands	Local Soil Survey Data

*Table adapted from 1987 USACE Manual and Related Guidance Documents.

Table 5. Wetland Hydrology Indicators for the Arid West*

	Primary Indicator (any one indicator is sufficient to make a determination that wetland hydrology is present)	Secondary Indicator (two or more indicators are required to make a determination that wetland hydrology is present)
Group A – Observation of Surface Water or Saturated Soils		
A1 – Surface Water	X	
A2 – High Water Table	X	
A3 – Saturation	X	
Group B – Evidence of Recent Inundation		
B1 – Water Marks	X (Non-riverine)	X (Riverine)
B2 – Sediment Deposits	X (Non-riverine)	X (Riverine)
B3 – Drift Deposits	X (Non-riverine)	X (Riverine)
B6 – Surface Soil Cracks	X	
B7 – Inundation Visible on Aerial Imagery	X	
B9 – Water-Stained Leaves	X	
B10 – Drainage	X	X
B11 – Salt Crust	X	
B12 – Biotic Crust	X	
B13 – Aquatic Invertebrates	X	

Table 5. Wetland Hydrology Indicators for the Arid West*

	Primary Indicator (any one indicator is sufficient to make a determination that wetland hydrology is present)	Secondary Indicator (two or more indicators are required to make a determination that wetland hydrology is present)
Group C – Evidence of Current or Recent Soil Saturation		
C1 – Hydrogen Sulfide Odor	X	
C2 – Dry-Season Water Table		X
C3 – Oxidized Rhizospheres along Living Roots	X	

*Table adapted from Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0.

Table 6. Field Indicators of Hydric Soil Conditions*

1. Indicators of Historical Hydric Soil Conditions	2. Indicators of Current Hydric Soil Conditions
<ul style="list-style-type: none"> a. Histosols b. Histic epipedons; c. Soil colors (e.g., gleyed or low-chroma colors, soils with bright mottles (Redoximorphic features) and/or depleted soil matrix d. High organic content in surface of sandy soils e. Organic streaking in sandy soils f. Iron and manganese concretions g. Soil listed on county hydric soils list 	<ul style="list-style-type: none"> a. Aquic or peraquic moisture regime (inundation and/or soil saturation for *7 continuous days) b. Reducing soil conditions (inundation and/or soil saturation for *7 continuous days) c. Sulfidic material (rotten egg smell)

*Table adapted from 1987 USACE Manual and Related Guidance Documents.

Table 7. Hydric Soil Indicators for the Arid West*

Hydric Soil Indicators	Hydric Soil Indicators	Hydric Soil Indicators	Hydric Soil Indicators
A1 – Histosol	S1 – Sandy Mucky Mineral	F1 – Loamy Mucky Mineral	A9 – 1 cm Muck
A2 – Histic Epipedon	S4 – Sandy Gleyed Matrix	F2 – Loamy Gleyed Matrix	A10 – 2 cm Muck
A3 – Black Histic	S5 – Sandy Redox	F3 – Depleted Matrix	F18 – Reduced Verti
A4 – Hydrogen Sulfide	S6 – Stripped Matrix	F6 – Redox Dark Surface	TF2 – Red Parent Material
A5 – Stratified Layers	—	F7 – Depleted Dark Surface	Other (See Section 5 of Regional Supplement, Version 2.0)
A9 – 1 cm Muck	—	F8 – Redox Depressions	—
A11 – Depleted Below Dark Surface	—	F9 – Vernal Pools	—
A12 – Thick Dark Surface	—	—	—

* Table adapted from Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0. ** Indicators of hydrophytic vegetation and wetland hydrology must be present

**VEGA SES LLC SOLAR PROJECT PRELIMINARY JURISDICTIONAL WATERS/WETLANDS DELINEATION
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Appendix E Regulatory Background Information
January 30, 2018

Appendix E REGULATORY BACKGROUND INFORMATION

Regulatory Background Information

Section 404 of the Clean Water Act (CWA)

Section 404 of the CWA regulates the discharge of dredged material, placement of fill material, or certain types of excavation within “waters of the U.S.” (resulting in more than incidental fallback of material) and authorizes the Secretary of the Army, through the Chief of Engineers, to issue permits for such actions. Permits can be issued for individual projects (individual permits) or for general categories of projects (general permits). “Waters of the U.S.” are defined by the CWA as “rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands.” Wetlands are defined by the CWA as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.” The USACE has adopted several revisions to their regulations in order to more clearly define “waters of the U.S.” Until the beginning of 2001, “waters of the U.S.” included, among other things, isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not part of a tributary system to interstate waters or to navigable “waters of the U.S.”

The jurisdictional extent of USACE regulation changed with the 2001 SWANCC (Solid Waste Agency of Northern Cook County) ruling. The U.S. Supreme Court held that the USACE could not apply Section 404 of the CWA to extend their jurisdiction over an isolated quarry pit. The Court ruled that the CWA does not extend Federal regulatory jurisdiction over non-navigable, isolated, intra-state waters. However, the Court made it clear that non-navigable wetlands adjacent to navigable waters are still subject to USACE jurisdiction.

Section 401 of the CWA

Section 401 of the CWA requires that any applicant for a Federal permit for activities that involve a discharge to ‘waters of the State,’ shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act. Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification from the RWQCB. Applications to the RWQCB must include a complete CEQA document (e.g., Initial Study/Mitigated Negative Declaration).

Section 1602 of the California Fish and Game Code

Section 1602 of the California Fish and Game Code requires any person, State or local governmental agency, or public utility which proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, or use materials from a streambed, or result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake, to first notify the CDFW of the proposed project. Notification is generally required for any project that will take place in or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life and watercourses having a surface or subsurface flow that support or have supported riparian vegetation. Based on the notification materials

submitted, the CDFW will determine if the proposed project may impact fish or wildlife resources. If the CDFW determines that a proposed project may substantially adversely affect existing fish or wildlife resources, a Lake or Streambed Alteration Agreement (SAA) will be required. A completed CEQA document must be submitted to CDFW before a SAA will be issued.