Agricultural Management Plan

Coyote Creek Agrivoltaic Ranch Project

AUGUST 2023

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Printed on 30% post-consumer recycled material.

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Executive Summary

Sacramento Valley Energy Center, LLC (Applicant, SVEC) is proposing construction and operation of the proposed Coyote Creek Agrivoltaic Ranch (Project, CCAR), an approximately 200-megawatt (MW) alternating current (AC) photovoltaic (PV) solar energy storage and generating facility located on approximately 2,704 acres (i.e., Project Study Area [PSA]) located in Sacramento County, California. The solar development area within the PSA is comprised of 1,412 acres. The proposed Project solar development area will include an on-site substation, inverters, fencing, roads, Supervisory Control and Data Acquisition (SCADA) system, a switchyard at the Point of Interconnection (POI) and an approximately 100 MW AC power and 400 MW hour capacity battery energy storage system.

The PSA is located on the Barton Ranch adjacent to 3830 Scott Road, Sacramento County, California, approximately 2.5 miles south of White Rock Road in the Cosumnes community.

The location of the proposed Project was selected because of its proximity to the existing Sacramento Municipal Utility District (SMUD) and Pacific Gas and Electric (PG&E) transmission corridors, the fact that the land is disturbed (I.e., actively graze by cattle, the site's nearby access to existing roads, and the site's excellent solar irradiance. Land uses in the area include grazing, mining, Aerojet's industrial lands, and the Prairie City State Vehicle Recreation Area (SVRA).

This Agriculture Management Plan (AMP) provides an overview of a strategic approach to the continued agriculture use of the PSA, and to avoid, minimize and mitigate the proposed Project's effects on agricultural resources. The proposed Project Applicant has developed this AMP to meet these six objectives:

1. Promote continued agricultural use of the PSA and integrate compatible agricultural activities such as grazing and conservation of pollinator habitat into solar operations to ensure that effects on current agricultural use and resources are less than significant throughout the proposed Project life and after decommissioning of the proposed Project.
2. Ensure the solar farm will not compromise the long-term productive agricultural capability of the site.
3. Promote native grassland vegetation and control invasive weeds.
4. Maintain soil characteristics and minimize agricultural water use.
5. Manage the fuel load of on-site vegetation.
6. Maintain existing wildlife habitat values on the site.

1.) Promote Continued Agricultural Use

The proposed Project is utilizing a portion of the existing Barton Ranch site, which currently includes active grazing activities via use of cattle operations. The proposed Project will not significantly displace or impair agricultural activities on the site as the proposed Project will implement sheep grazing within the fenced solar facility and utilize cattle grazing operations outside of the fenced solar facility.

The solar facilities will be decommissioned in accordance with the proposed Project Decommissioning Plan following the conclusion of the useful life of the proposed Project (approximately 35 years) to provide an opportunity for continuation of agricultural cattle grazing activities. The proposed Project includes a Decommissioning Plan that

requires financial assurance to ensure the energy generation and storage facilities are removed from the site and the site is restored to its pre-Project land uses in accordance with the County's decommissioning requirements.

The AMP includes a supplemental planting program to re-seed areas that were disturbed as part of construction to ensure the proposed Project doesn't compromise the ability for long-term agricultural productivity in areas used for the proposed Project. The proposed Project is not anticipated to have any impacts to neighboring agricultural activities, as nearby farmlands will continue to operate in their current manner.

The targeted grazing and pollinator habitat program habitat outlined in this AMP will allow for continued agricultural use (i.e., grazing and pollinator habitat) during operations. Under this AMP, the area within the fenced solar arrays would be managed to support dryland pasture grazed by sheep simultaneously with proposed Project operations and areas outside the solar fence line will be actively cattle grazed and integrated into solar operations consistent with current operations. Disturbed portions of the site would be seeded with native grassland species and non-invasive forbs (i.e., herbaceous flowering plants) that are especially attractive to sheep and cattle grazing operations and provide pollinator habitat opportunities. Perennial species will provide green forage for sheep and cattle grazing operations during typical grazing months (March thru April).

2) Ensure the Agrivoltaic Ranch Will Not Compromise the Long-Term Productive Agricultural Capability of the Property

The proposed Project includes a Decommissioning Plan, which requires financial assurance to ensure the proposed Project facilities are removed from the site and the site is restored to existing conditions (i.e., pre-solar development) in accordance with County decommissioning requirements. Part of this AMP includes a supplemental planting program to re-seed areas that are disturbed during construction to ensure the proposed Project to provide for long-term agricultural productivity of the PSA following its useful life, which is anticipated to be 35 years.

3) Promote Native Grassland Vegetation and Control Invasive Weeds

During operations, the PSA will be maintained as dryland pasture housing a combination of grassland species, non-invasive forbs and pollinator habitat. The PSA will be seeded prior to operations commencing with a mixture of these species (see Vegetation Plan, Section 3).

The spread of invasive weeds can threaten imperiled species and have economic costs (Wilcove et al. 1998; Pimentel et al. 2005; Aspen 2011). The implementation of this AMP will promote the re-establishment of grassland species, and targeted grazing will be used to control infestations by invasive weeds. Targeted grazing has been widely used to control the spread of invasive species (Rinehart 2006; Saskatchewan Ministry of Agriculture 2008; Contra Costa Water District 2005). The Grazing Plan (Section 4) addresses the use of grazing on the PSA to manage infestations of invasive weeds.

4) Maintain Soil Characteristics and Minimize Agricultural Water Use

The quality of the soils on the PSA are described in Section 2, Existing Site Conditions. The proposed Project will preserve soil quality through minimal coverage with foundations. The proposed Project lease agreements and the proposed Project solar development area design allow the site to be returned to agricultural use after the useful life (i.e.., approximately 35 years) of the proposed Project. After decommissioning, disassembly and removal of proposed Project equipment and restoration activities would adhere to the requirements of the Decommissioning Plan.

Water use by the proposed Project operations will be minimal. The only water required would be for livestock, periodic panel washing, landscaping, and dust control. See Section 4, Grazing Plan, for more details regarding agricultural water use.

5) Manage the Fuel Load Of On-Site Vegetation

Targeted grazing will reduce the height and density of vegetation to the to minimize the danger of grass fires. Targeted grazing will include use of sheep within the solar array areas to accomplish the vegetation management goals of this AMP including opportunities for pollinator habitat.

6) Maintain Wildlife Habitat Value

While the focus of the AMP is to maintain the site's long-term agricultural productivity, the proposed Project solar development area design and the AMP are designed to maintain the existing habitat value of the PSA. Under the right circumstances, grazing can enhance wildlife habitat (e.g., Bicak et al. 1982; Crawford et al. 2004; Dumont et al. 2009; Krausman et al. 2009; Leckenby et al. 1982; Mosley 1994; Neel 1980; Vandenberghe et al. 2009). Use of the grazing and conservation of pollinator habitat contemplated in this AMP is structured to conserve the existing wildlife habitat values on the PSA consistent with the current ranching operations.

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1 Introduction

1.1 Project Overview

The proposed Project is a proposed approximately 200-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy-generating and 400-megawatt hour storage facility located on the Barton Ranch adjacent to 3830 Scott Road, Sacramento County, California. The PSA is located approximately 4.5 miles south of U.S. Route 50, southeast of the Prairie City State Vehicle Recreation Area (PCSVRA) and is bisected by Scott Road. The geographic center of the proposed Project roughly corresponds with 38.576278° North and -121.132944° West, at an elevation of 196 feet above sea level. A gen-tie line would extend approximately 1.1 miles to reach the nearest SMUD 230 kV powerline which runs through PCSVRA. Figure 1, Project Study Area Overview, shows the location of the proposed PSA.

The PSA is designated general agricultural (GA-80) by the Sacramento County General Plan Land Use Element (County of Sacramento 2017), and the proposed PSA parcels are comprised of lands zoned as AG-80 (County of Sacramento 2020). The PSA will continue to utilize land for agricultural activities which may consist of apiary facilities and/or grazing activities and conservation of pollinator habitat. The PSA is currently used for cattle grazing and has historically been used for sheep grazing and apiary facilities. The land underlying the site is subject to Williamson Act contracts 70-AP-044, 69-AP-004, 69-AP-005, 69-AP-006, and 69-AP-008. The Williamson Act contracts in place are some of the oldest in the state and allow for "gas, electric, water and communication utility facilities." Additionally, the Williamson Act contracts allow for solar photovoltaic facilities and battery energy storage in conjunction with agricultural activities and thus an agrivoltaic solar generating and energy storage project is an allowable use under the contracts. The Williamson Act contracts cover more land area than the proposed Project as this site is part of the larger Barton Ranch. The proposed Project is consistent with the language in the Williamson Act contracts, the contracts cover a larger area that will remain in agricultural use, and the land within the fence of the proposed Project will continue to be used for agricultural purposes.

According to the California Important Farmland Finder (California Department of Conservation 2016), the parcels include grazing land and other land, shown in Figure 2, Agricultural and Farmland. The proposed Project facilities will be sited on grazing lands.

The proposed Project proposes to interconnect to SMUD's 230 kV power line. A new 230 kV switchyard will be constructed adjacent to the existing powerline.

1.2 Project Description

The proposed Project will use PV technology to convert sunlight directly into direct current (DC) electricity. The process starts with photovoltaic cells that make up photovoltaic modules (environmentally sealed collections of photovoltaic cells). PV modules are generally non-reflective. Groups of photovoltaic modules are wired together to form a PV array. The DC produced by the array is collected at inverters (power conversion devices) where the DC is converted to alternating current (AC). The voltage of the electricity is increased by a transformer at each power conversion station to a medium voltage level (typically 34.5 kilovolts (kV)). Medium voltage electric lines (underground and/or overhead) are used to collect the electricity from each medium voltage transformer and transmit it to the facility substation, where the voltage is further increased by a high voltage transformer to match the electric grid for export to the point of

interconnection to SMUD's 230 kV power line. Disconnect switches, fuses, circuit breakers, and other miscellaneous equipment will be installed throughout the system for electrical protection and operations and maintenance purposes.

1.3 Grading and Drainage

Site preparation will be planned and designed to minimize the amount of earth movement required for the proposed Project. The hydrology design provides priority to protect the proposed Project's facilities and adjacent properties from large storm events per Sacramento County regulations. The proposed Project will support the panels on driven piles. Additional compaction of the soil to support the building and traffic loads as well as the PV module supports may be required and is dependent on final proposed Project engineering design. The existing hydrology and soils of the site are identified in Figures 3 and 4 and described further in Section 2.3, Soils and Terrain.

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2 Existing Site Conditions

2.1 Project Setting and Land Use

The PSA is located within eastern Sacramento County at the eastern edge of the Sacramento Valley. The proposed Project site is approximately 4 miles north of State Route (SR) 16, and approximately 15 miles east of the City of Sacramento. The PSA is surrounded by rural residential and agricultural development, and open space generally composed of annual grassland and agricultural fields. The PSA is currently being used for cattle and sheep grazing.

2.2 Climate

The PSA is in a semi-arid climate where average annual temperatures range from approximately 53° to 92°F, and the average annual precipitation is 18.15 inches. On average, the months with the highest rainfall are January and February, and July has the least precipitation (WRCC 2023). According to data from the Sacramento Florin weather station, the total precipitation recorded from January 15, 2023 through May 15, 2023 was 26.47 inches. The Sacramento Florin weather station is approximately 16 miles southwest of the PSA at an elevation of approximately 26 feet above mean sea level (CDEC 2023).

2.3 Soils and Terrain

The PSA is in an area with varied topographic relief. The onsite drainage patterns will be maintained to the greatest extent possible. However, it may be necessary to remove, relocate and/or fill in portions of the land for the proposed Project. Specifically, the conceptual grading plan anticipates grading slopes to be less than 10% to reduce the steepness of some on-site slopes. However, the general elevations of the peaks and troughs of the gently rolling hills remain the same.

According to the Natural Resources Conservation Service, 22 soil units were mapped within the PSA (USDA 2020a). Each soil unit, its proportion of hydric soils, drainage class (i.e., frequency and duration of wet periods in conditions similar to those in which it was developed), and typical landform or geomorphic position within the landscape is detailed in Table 1, Summary of Soil Units within the PSA. Figure 4, Soil and Terrain Setting provides the geographic extent of each soil unit within the PSA (USDA 2020a).

Table 1. Summary of Soil Units Within the Project Study Area

Soil Map Unit Name	Landform	Drainage Class	Hydric	Total Area (acres)[1]
Amador-Gillender complex, 2-15% slopes	Shallow Loamy	Well Drained	No	29.47
Argonaut-Auburn complex, 3-8% slopes	Loamy	Well Drained	No	293.55
Auburn silt loam, 2-30% slopes	Shallow Loamy	Well Drained	No	344.33
Auburn-Argonaut-Rock outcrop complex, 8-30% slopes	Shallow Loamy	Well Drained	No	261.97
Creviscreek sandy loam, 0-3% slopes	Loam Stream Terrace	Moderately Well Drained	No	319.48

Table 1. Summary of Soil Units Within the Project Study Area

Soil Map Unit Name	Landform	Drainage Class	Hydric	Total Area (acres)[1]
Hadselville-Pentz complex, 2-30% slopes	Shallow Loamy	Moderately Well Drained	No	160.93
Hicksville sandy clay loam, 0-2% slopes, occasionally flooded	Loam Stream Terrace	Moderately Well Drained	Partially	74.26
Mokelumne gravelly loam, 2-15% slopes	Loamy (Live Oak/Annual Grass)	Well Drained	No	243.15
Mokelumne-Pits, mine complex, 15-50% slopes	Loamy	Well Drained	No	45.91
Mokelumne variant sandy clay loam, 2-8% slopes	Loamy (Blue Oak/Annual Grass)	Well Drained	No	3.71
Pardee-Rancho seco complex, 3-15% slopes	Gravelly Loamy	Well Drained	No	2.75
Pentz-Lithic Xerorthents complex, 30-50% slopes	Shallow Loamy	Well Drained	No	3.48
Peters clay, 1-8% slopes	Shallow Clayey	Well Drained	No	14.61
Pits	NA	NA	No	10.37
Red Bluff-Redding complex, 0-5% slopes	Loamy	Well Drained	Partially	25.82
Red Bluff-Xerorthents, dredge tailings, complex, 2-50% slopes	NA	Well Drained	Partially	122.88
Redding gravelly loam, 0-8% slopes	Gravelly Loamy	Moderately Well Drained	Partially	33.23
Vleck gravelly loam, 2-15% slopes	Loamy Claypan	Moderately Well Drained	No	187.68
Vleck-Amador-Pits, mine complex, 15-50% slopes	Loamy Claypan	Moderately Well Drained	No	84.44
Whiterock loam, 3-30% slopes	Very Shallow Loamy (Blue Oak/Annual Grass)	Somewhat Excessively Drained	No	419.18
Xerorthents, dredge tailings, 2-50% slopes	NA	Somewhat Excessively Drained	Partially	7.72
Water	NA	NA	No	13.65

Source: USDA 2020a.

[1] Acreage reflects completed ground-level surveys at the Project Study Area.

None of the 22 soil units identified within the PSA are listed as hydric soils, and five are listed as partially hydric. Hydric soils are defined by the National Technical Committee for Hydric Soils as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA 2020b). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. Soils encountered during the field surveys were generally classified as loamy soils.

2.4 Vegetation Communities and Land Cover Types

Vegetation communities and land cover types within the PSA consist of a combination of terrestrial non-vegetative land covers or natural vegetation communities. The vegetation communities and land covers have been adapted from the Manual of California Vegetation, Online Edition (CNPS 2020). The vegetation communities and land cover types described below were also documented within the PSA and mapped using the vegetation community and land cover data in the South Sacramento Habitat Conservation Plan (SSHCP) (Sacramento County 2018). These include blue oak savanna, blue oak woodland, mine tailings, mixed riparian scrub, valley grassland, and developed (see Table 2, Summary of Vegetation Communities and Land Cover within the PSA.

Table 2. Summary of Vegetation Communities and Land Cover within the Project Study Area

Vegetation Community / Land Cover Type	Total Acreage
Blue Oak Savanna	1,142.50
Blue Oak Woodland	322.60
Mine Tailings[1]	17.74
Mixed Riparian Scrub	0.48
Valley Grassland	1,045.90
Developed[2]	124.68
Total	**2,653.90**

Source: Sacramento County 2018.
Note: The total acreage of vegetation communities land cover types omits aquatic resources occurring in the Project Study Area. As such, the total acreage of vegetation communities and land cover types in the proposed Project site is less than the total Project Study Area.
1 Mine Tailings: combines Mine Tailing Riparian Woodland and Mine Tailings.
2 Developed: combines High and Low Density Development, Major Roads, and Recreation/Landscaped.

2.4.1 Vegetation Communities

2.4.1.1 Blue Oak Woodland and Blue Oak Savanna

Blue Oak Woodland is characterized by greater than 10% tree cover formed primarily by blue oak *(Quercus douglassii*) with other foothill tree species mixed in. Blue Oak Woodland generally has a sparse shrub layer and well-developed Valley Grassland layer, sometimes including vernal pools and other wetland features. Other tree species that may occur in Blue Oak Woodland include foothill pine (*Pinus sabiniana*), interior live oak (*Quercus wislizenii*), valley oak (*Quercus lobata*), and California buckeye (Aesculus californica). The shrub layer, where present, only includes scattered individuals of poison oak (*Toxicodendron diversilobum*), and coyote brush (*Baccharis pilularis*). Blue Oak Woodland often has a relatively open canopy, when compared to other riparian land covers (Sacramento County 2018).

Blue Oak Savanna land cover type is characterized by a sparse (less than 10%) tree canopy structure that ranges from scattered blue oak trees and small clusters of blue oaks, to small areas of blue oak stands. Like Blue Oak Woodland, it generally has little to no shrub layer, but has a well-developed Valley Grassland layer. Blue Oak Savanna is typically transitional between Valley Grassland and Blue Oak Woodland (Sacramento County 2018).

2.4.1.2 Mine Tailings and Mine Tailings Riparian Woodland

Mine Tailings land cover and vegetation community is defined by the large tailing piles that rise significantly above the surrounding landscape because of gold dredging occurring in the early 1900s through approximately 1960. The large tailing piles are composed almost entirely of rounded river rock that was excavated from ancient riverbeds. Most of the mine tailings are associated with historic gold mining. Smaller outcroppings of tailings are often the result of current and recent gravel mining activities. The mine tailings are unvegetated; any woody vegetation observed between tailings piles is mapped as the Mine Tailings Riparian Woodland land cover type (Sacramento County 2018).

The Mine Tailings Riparian Woodland land cover type is distributed among older mine tailings. This land cover type contains species commonly found in Riparian Woodlands and Riparian Scrub habitats, such as Fremont cottonwood (*Populus fremontii*), blue elderberry (*Sambucus mexicana*), willows (*Salix spp*.), and coyote brush (Sacramento County 2018).

2.4.1.3 Mixed Riparian Scrub

Mixed Riparian Scrub is interspersed with Mixed Riparian Woodland in the floodplains and waterways throughout Sacramento County. This vegetation community consists of an open to dense shrubby thicket dominated by a mixture of sandbar willow (*Salix exigua*), arroyo willow (*S. lasiolepis*), red willow (*S. laevigata*), and immature stands of mixed various other riparian woodland tree species. This plant community can also be a sub-canopy community in Mixed Riparian Woodland. Though dense stands of Riparian Scrub in the region typically lack an understory, some of the more open canopy mixed Riparian Scrub stands do support an understory of native and non-native species, including wild rose (*Rosa californica*), wild grape (*Vitis californica*), perennial pepperweed (*Lepidium latifolium*), Himalayan blackberry (*Rubus discolor*), curly dock (*Rumex crispus*), and various non-native grasses (Sacramento County 2018).

2.4.1.4 Valley Grassland

Valley Grassland is an annual herbaceous vegetation community characterized mostly by naturalized annual grasses. Its composition varies with geographic and land use factors, such as rainfall, temperature, elevation, slope, aspect, grazing and other herbivory, and fire frequency and duration. Valley Grassland is dominated by naturalized herbaceous annual forbs, and patches with relatively high proportions of native grasses and forbs. Valley Grassland is associated with several natural communities including vernal pools and occurs as an understory within Valley Oak Riparian Woodland, Blue Oak Woodland, and Blue Oak Savanna. Valley Grassland also may occur as a co-dominant with perennial grasses. For example, purple needlegrass (*Stipa pulchra*) can be found as the dominant grass (i.e., comprising greater than 20% cover) in small patches along ridgetops of low-lying hills in the eastern portion of Sacramento County (Sacramento County 2018).

2.4.2 Land Cover Types

2.4.2.1 Developed

This land cover type includes areas that have been completely altered by human activities and contain little to no vegetation. Specifically, such areas include buildings, paved and gravel roadways and trails, gravel lots, and other constructed environments. Developed land cover in the Project Study Area includes high- and low-density development, roads, and recreational or landscaped areas (Sacramento County 2018).

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3 Vegetation Plan

3.1 Soil Preparation

In preparation for seeding, the proposed areas that were disturbed during construction (excluding permanent access roads) will be de-compacted as necessary to promote seeding opportunities. The following additional guidelines would be followed for site preparation and soil amending:

Site Preparation/Soil Treatment

1. All construction materials, trash, and debris will be removed from areas of the Project Study Area that are to be seeded at the completion of construction.
2. Any eroded areas will be repaired uniformly without leaving pits, holes, or low areas.
3. Prior to any seeding or planting, exotic plants/weeds will be cleared from all areas to be revegetated to the extent feasible. All herbicide use would comply with applicable regulations.
4. Prior to seeding, any areas intended for revegetation that were compacted by construction activities will be decompacted to not more than 12 inches depth on not less than 18-inch centers, such that clods remain, and soil is not pulverized. Soil shall be left in a roughened condition if construction is completed in the spring or early summer and several months remain until seeding. Before seeding, ideally in fall before saturating rains, a disc and/or ring roller would be used to reduce the soil surface to a suitable planting medium with a firm but not compacted surface and clods reduced to less than 1 inch.

Soil Amendments

1. Erosion control materials will be free of noxious weeds. All mulches, compost, and seed material will be tested and labeled as free of noxious weeds before being used at the Project Study Area.
2. If organic soil amendments are used, compost will be obtained from a producer fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other state and local agencies that regulate Solid Waste Facilities. If exempt from state permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.
    a. The compost producer must be a participant in United States Composting Council's Seal of Testing Assurance program and must supply a copy of their certification and the compost technical data sheet. The compost technical data sheet must include: (1) Laboratory analytical test results; and (2) List of product ingredients. Compost must comply with Caltrans Standard Specifications.
    b. Compost must be composed of green waste source material consisting of chipped, shredded, or ground vegetation, or clean processed recycled wood products. Compost shall be medium coarse texture, with sieve size less than ½ inch.

c. Compost must not be derived from mixed municipal solid waste and will be reasonably free of visible contaminants. Compost will not contain paint, petroleum products, pesticides, or any other chemical residues harmful to animal life or plant growth. Other deleterious material, including plastic, glass, metal, or rock, shall not exceed 0.1 percent by weight or volume. Compost must not possess objectionable odors.

Timing

Soil preparation (i.e., decompaction, tillage, seeding) activities will be conducted when soil conditions are dry or only slightly moist. Soil preparation will not be undertaken if soils are so moist that traffic or tillage would lead to mold or smearing. Because it is not possible to predict the exact construction schedule, two different approaches may be used for soil preparation:

- **Dry Season Construction:** If construction activities are completed in fall, soil preparation activities will be implemented to provide the best opportunity for seeding to be completed by October 15. Soil preparation activities may be conducted later in fall provided dry or only slightly moist soil conditions persist.
- **Wet Season Construction:** If construction activities are completed in winter when soil conditions are too wet to allow for effective soil manipulation, soil preparation activities would be postponed until the following late summer or fall, as described above under Dry Season Construction. Under this scenario, it may be necessary to apply an herbicide treatment in late spring/early summer to minimize the spread of invasive species.

- **Project Operations:** Pending the effectiveness of the initial seeding and maintenance actions during operations, seeding may be required during proposed Project operations to meet the goals and objectives of this AMP. The recommendation for seeding to occur post-construction as part of ongoing operations and maintenance will be made by the habitat manager (see Section 5.0).

3.2 Ground Cover Seeding Plan

During proposed Project operations, the PSA would be maintained as dryland pasture housing a combination of grassland species and non-invasive forbs. Final site-specific seeding plans will be developed based on assessment of the following factors: (1) Soil conditions; (2) Appropriate grassland species; (3) Pollinator habitat and (3) Dietary preferences of sheep and cattle. It should be noted that cattle grazing would occur outside of the solar array security fence. These seeding plans would be designed to be self-perpetuating; that is, the vegetation is intended to re-seed naturally in accordance with the monitoring plan (see Section 5.0). Reseeding may be required in the event ground coverage is not meeting success criteria. The site will likely be seeded using seed drills or broadcast seeding followed by light raking to accommodate the tight proposed Project schedule and potentially moist soil conditions. Hydroseeding and hydro mulching may also be used depending on the timing and site-specific conditions.

Timing

To ensure optimal germination and pasture establishment, seeding would be completed prior to rainy season and associated rain events that are anticipated to occur on or around October 15th. Although the vegetation is intended to reestablish naturally following construction, additional seeding may be required if a groundcover fails to be established and meet the requirements of the AMP. Subsequent seeding would occur between the months of September and October. Refer to Section 5.0 below on how the applicant will ensure success criteria in this AMP is met.

Species Composition

Preliminary lists of native grass species are included in Table 3, Seed Mix for the PSA. Because sheep generally prefer to consume a mix between forbs (i.e., clovers and other broadleaf plants) and grasses, non-native, non-invasive forbs would supplement the native grasses in Table 3.

Some of the preferred forage plants for sheep and cattle grazing operations include: sub clover (multiple varieties), rose clover (*Trifolium hirtum*), medics (multiple varieties), soft chess (*Bromus hordeaceus*), berber orchard grass (*Dactylis glomerata*), and annual ryegrass (*Festuca perennis*). The seed mix listed below in Table 3 was selected due to its soil erosion protection and sustainable forage production qualities.

Table 3. Seed Mix for Project Study Area

Common name	Scientific name	Pure Live Seed (lbs./ac)	Project Study Area (lbs. of seed)
hybrid ryegrass	*Lolium hybridum*	2.50	2,312.50
annual ryegrass	*Festuca perennis*	6.75	6,243.75
soft chess	*Bromus hordeaceus*	5.00	4,625.00
rose clover	*Trifolium hirtum*	2.50	2,312.50
big flower clover	*Trifolium michelianum*	1.25	1,156.25
reversed clover	*Trifolium resupinatum*	1.25	1,156.25
subterranean clover	*Trifolium subterraneum*	2.00	1,850.00
vetch	*Vicia sp.*	3.75	3,468.75

Seeding after Solar Facility Decommissioning

The proposed Project footprint will be sited on grazing lands used for cattle and sheep grazing. Upon completion of the proposed Project, the Project would be decommissioned in accordance with Sacramento County's decommissioning requirements, disturbed areas will be reseeded in accordance with the Decommissioning Plan. Soils should be prepped as described in Section 3.1, Soil Preparation, and seed application should operate as described above.

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4 Grazing & Pollinator Habitat Plan

The Grazing Plan and Pollinator Habitat below includes quantifiable standards to ensure vegetation is maintained in a manner to ensure habitat function and value along with associated sheep grazing activities are maintained during varying windows of time, depending on annual rainfall and temperatures and site-specific conditions and pollinator habitat is established and maintained.

4.1 Sheep Grazing

Operators that would establish contracts for targeted grazing on the PSA would likely come from Sacramento County or the counties contiguous to Sacramento County (i.e., Amador, El Dorado, Placer, San Joaquin, Solano, Sutter, and Yolo). Table 4, Sheep Inventory Data for Sacramento County and Surrounding Counties, provides the reported statistics from the 2017 Census of Agriculture.

Table 4. Sheep Inventory Data for Sacramento County and Surrounding Counties

County	Number of Sheep	Total Sheep Farms	Number of Farms with >100 Sheep
Sacramento County	5,776	143	7
Amador County	774	34	Data Not Available
El Dorado County	1,559	142	Data Not Available
Placer County	4,271	146	12
San Joaquin County	21,741	110	16
Solano County	42,991	91	29
Sutter County	4,880	41	1
Yolo County	23,149	58	13

Source: 2017 Census of Agriculture (USDA 2021c)

Sheep production in the region occurs on a combination of leased and owned land, as well as on federal land with public contract grazing leases (Aspen 2011). Seasonal grazing leases (and contract grazing – wherein producers are paid to graze open space land) are typical and sheep production is relatively mobile. Producers are generally equipped to move animals between properties.

The Applicant would work with local farm bureaus, local livestock associations and the California Wool Growers Association to market these grazing opportunities locally and regionally. The applicant will also work with other solar farms in the area to identify grazing strategies and grazing opportunities throughout the region. Since it is common for operators to move livestock across county lines, initially the sheep that would be utilized for targeted grazing on the PSA within the fenced solar facility may come from San Joaquin or Solano County, or other local environmental services (e.g., Capra Environmental Services Corp) that specializes in eco-friendly grazing services. However, the availability of this and other solar project sites for grazing may encourage additional Sacramento County operators to start or expand targeted sheep grazing based on the long-term dependable grazing supply provided by these projects (Aspen 2011).

4.1.1 Benefits of Targeted Grazing

Targeted grazing would be used to promote all six of the AMP objectives outlined in the Executive Summary. Numerous researchers and practitioners have described the potential benefits of grazing and the means through which these benefits can be achieved. These benefits include: (1) Nutrient cycling through deposition sheep waste; (2) Removal of plant material that encourages regrowth; (3) Root death through leaf removal that results in accumulation of underground organic matter and nutrient cycling; (4) Increased water-holding capacity through accumulation of soil organic matter; (5) Hoof action that breaks up and compacts soil, encouraging seed germination and regeneration of pasture (Reinhart 2006; Aspen 2011).

4.1.2 Targeted Grazing Approach

The light to moderate grazing intensities and low stock densities outlined in this Grazing Plan have been shown to create or maintain vegetation patchiness, increase forage palatability, and promote greater plant diversity (Mosley and Brewer 2006). Several factors have been taken into account in developing the proposed grazing units and intensity, schedule, and geography for this plan, including: (1) Palatability of vegetation; (2) Appropriate timing and degree of grazing; (3) Allowing forage to rest and regrow; and (4) Controlling livestock distribution and access to minimize selective grazing and prevent excessive regrazing. The relative palatability of vegetation should be addressed (WallisDevries et al. 1999; Valentine 2001; Aspen 2011), and as described in Section 3, Vegetation Plan, this AMP will utilize a combination of native grass species and non-invasive forbs. In order to make on-going adjustments, selectivity of grazing may be altered through changing stock densities, controlling hunger levels, or grazing sheep on more or less attractive vegetation before bringing them to a new site (Senock et al. 1993; Kothmann 1966; Senft et al. 1987; Aspen 2011).

The grazing will apply the above management factors to achieve the following objectives.

- Maintain grassland herbaceous height and heterogeneity of height to benefit native biological resources.
- Maintain or increase native grasslands by reducing non-native herbaceous competition in grasslands.
- Maintain or increase special-status wildlife populations by maintaining/enhancing habitat conditions that can be affected by grazing programs and operations.

The following features of the Grazing Management Plan make the PSA attractive to commercial sheep operators:

- Predator protection provided by proposed Project perimeter security fencing.
- Presence of forb species preferred by sheep.
- Presence of perennial plant species that may extend the grazing season even without ongoing irrigation.
- Potential for dependable medium-term contracts

4.1.3 Grazing Management Plan

To provide for the continued agricultural use of the PSA, the Applicant would enter into agreements with sheep producers and/or habitat management contractors to manage the forage resources. Grazing and forage utilization would be managed and designed to provide for sustainable forage production and to protect soil resources and water quality.

Stocking Rate and Forage Demand

There are a number of factors that contribute to how many animals pasture can support: (1) Forage production potential; (2) Livestock utilization patterns; (3) Nutrient content of forage and forage growth patterns; (4) Plant species that comprise the pasture; (5) Species diversion of the pasture plant community; and (6) Seasonal variations in temperature and moisture (Rinehart 2006). A typical formula would be: 'Number of animals' = 'pasture size X pasture yield per acre' ÷ 'daily intake X average animal weight X days of grazing'.

Forage demand varies by the stage of production. For example, pregnant and lactating ewes require more and higher quality forage than dry ewes. Some producers have spring lambing flocks (i.e., where lambing is timed to match rapid grass growth), while others have fall lambing flocks (i.e., where weaned lambs are finished during rapid grass growth). Some producers use both systems. The quality of the available forage will dictate when the PSA is most attractive to sheep producers. Sheep require forage that is eight to nine percent protein. Once it has dried, grass is generally in the two to four percent protein range. If summer grazing is required for maintenance of wildlife habitat or for fire control, sheep operators would likely need to provide supplemental protein for livestock. Mowing may be utilized in the event grazing is not effective at certain times of the year.

An animal unit month represents the amount of forage that five mature, lactating ewes (or six feeder lambs) will consume in a month. Grazing management for the PSA would be designed to provide contractors some flexibility regarding the timing and duration of grazing. On average, one animal unit requires 12 to 15 acres of annual rangeland per year. The estimated carrying capacity for the portion of the PSA on which facilities are proposed (i.e., approximately 1,412 acres of solar facilities which includes the grading limits, generation tie line, and switch yard areas) would be approximately 23 ewes.

Approximately 36 percent of the surface area of the entire 1,412-acre PSA would be shaded at some point of the day by the Applicant's solar equipment. Little or no loss in forage productivity due to shading from equipment is expected. The area under shade will fluctuate during the day based on sun angles.

Grazing Timing

While actual grazing timing may vary from year to year depending on weather and forage conditions, the Applicant expects that short-season (i.e., 60-day) grazing would likely be utilized between March 1 through April 30.

Predator Control

Predators can have a significant impact on sheep operations. Predators in the PSA include coyotes, domestic dogs, and the occasional mountain lion. The perimeter security fencing of 7 feet tall fence is significantly superior to traditional agricultural fencing of only barb wire, so the fencing should significantly decrease the amount of predation; however, while the exterior fencing installed around the PSA would reduce potential predation problems, it would not prevent predation entirely. Sheep operators would also likely employ guardian animals, such as cattle dogs or llamas, while the sheep are grazing. It is not anticipated that guardian animals would remain on site when sheep are not present.

4.1.4 Grazing Management for Habitat Enhancement

To maximize habitat value for biological resources, the grassland will be managed by the grazing entity and/or a separate contractor that specializes in habitat management, so that cover is not reduced to the extent that regeneration would be compromised. Grass will be maintained at a height of approximately 6 inches in accordance with the County fire requirements. The Applicant is in the process of obtaining permits from the USACE, CDFW and RWQCB for impacts to state and federally regulated aquatic resources. Pending the conditions of the permits issued by USACE, CDFW and RWQCB, fencing may be required to minimize potential impacts from sheep grazing to the aquatic resources.The habitat manager and/or grazing entity will also complete regular inspections for invasive weed populations to maintain a native grassland within the fenced solar array.

4.1.5 Grazing Infrastructure and Water

Fencing

Planned exterior fencing (7-foot-high woven wire agricultural fence) for the PSA would be sufficient for containing sheep and would exclude most predators. The grazing contractor may provide water distribution equipment and water troughs to facilitate rotational grazing.

Water Requirements

Minimal equipment is required for rangeland-based sheep production. Water requirements vary by season. During winter (i.e., November through April) stock water demand is one gallon per head per day. The PSA would likely require approximately 170,000 gallons of water for short season grazing.

4.2 Pollinator Habitat

The seed mix proposed serves the dual use of providing grazing forage in addition to pollinator habitat. Installation methods of the pollinator habitat would match that of the preliminary seed mix and methods presented in Section 3.

The primary method for pollinator habitat establishment will include hydroseeding, drilling and/or broadcast seeding of uplands with the seed mix in Table 5. Plant species comprising each seed mix were chosen for their appropriateness in upland settings of the Sacramento Valley, habitat value, likely availability at seed nurseries, and ability to stabilize soil. Specifically, the plant species represent the more common and abundant species observed in the existing adjacent habitat, as well as species that are early colonizers in similar habitats. Seed shall be distributed evenly throughout the solar array area to ensure uniform coverage. If necessary, an inert material (i.e. clean sand) may be added to the seed mix to ensure even distribution. Prior to seeding, the surface of the topsoil may be pitted or imprinted to increase the surface area and increase the success of germination, as needed. It is recommended that seeding is done in the fall to early winter, after the first rains, usually during October or November. The seed mix presented below is being utilized at the Rancho Seco Solar site in Sacramento County.

Table 5. Native Upland Area Seed Mix

Scientific Name	Common Name	Pure Live Seed (Pounds Per Acre)
Acmispon americanus	American bird's foot trefoil	0.5
Bromus carinatus	California bromegrass	6.0
Elymus glaucus	blue wildrye	3.0
Eschscholzia californica	California poppy	2.0
Festuca microstachys	small fescue	4.0
Hordeum brachyantherum	meadow barley	2.0
Lupinus bicolor	bicolored lupine	2.0
Poa secunda	pine bluegrass	2.0
Trifolium willdenovii	Tomcat clover	2.0

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5 Monitoring Plan

5.1 Vegetation and Pollinator Habitat Monitoring

Quantitative monitoring will occur yearly for the first five years after proposed Project construction. A qualified biologist will collect data in a series of quadrants (one square meter each) to estimate cover and density of each plant species within the revegetated areas to maintain a native grassland habitat that is consistent with the grassland habitat located outside the solar facility. Based on monitoring results, target weed population densities will also be monitored to ensure they do not exceed baseline levels because of the proposed Project. Data would be used to measure native species growth performance, to estimate native and non-native species coverage, seed mix germination, native species recruitment and reproduction, and species diversity. The success of forb species intended to provide high-quality forage for sheep and pollinators would also be assessed. Based on these results, the biologist would make recommendations for maintenance or remedial work on the site and for adjustments to the approved seed mix to ensure the habitat function and value within the solar facility is consistent with the habitat function and value outside of the solar facility.

Reporting

For five years, Annual Vegetation and Grazing Monitoring Reports will be submitted to the Department of Planning and Environmental Review (PER) documenting the estimated species coverage and diversity, species health and overall vigor, the establishment of volunteer native species, topographical/soils conditions, problem weed species, whether there is significant drought stress, and remedial measures recommended to ensure the habitat function and value within the solar facility is consistent with the habitat function and value outside of the solar facility. Following the first five years, reports will be submitted every five years through the life of the proposed Project. Each report should include, at a minimum:

- The name, title, and company of all persons involved in restoration monitoring and report preparation.
- Maps or aerials showing restoration areas, transect locations, and photo documentation locations.
- An explanation of the methods used to perform the work, including the number of acres treated for removal of non-native plants, any revegetation or weed control efforts undertaken.
- An assessment of the achievement of the relevant performance for vegetation success and how the vegetation management compares to non-managed areas located outside of the fenced solar facility.

5.2 Grazing Monitoring

For five years after beginning of proposed Project operations, Annual Vegetation and Grazing Monitoring Reports will be submitted to PER regarding the level of grazing use at the PSA. These reports would also be submitted to the Agricultural Commissioner, County of Sacramento, and County Assessor's Office. Following the first five years, reports will be submitted every five years through the life of the proposed Project. These reports would include at a minimum:

- The name, title, and company of all persons involved in grazing contracts and report preparation.
- Documentation of grazing timing and locations, equipment, and water use.

- Maps or aerials showing clipping and photo documentation locations.
- An assessment of native grassland ground cover that is utilized by biological resources native to the PSA.

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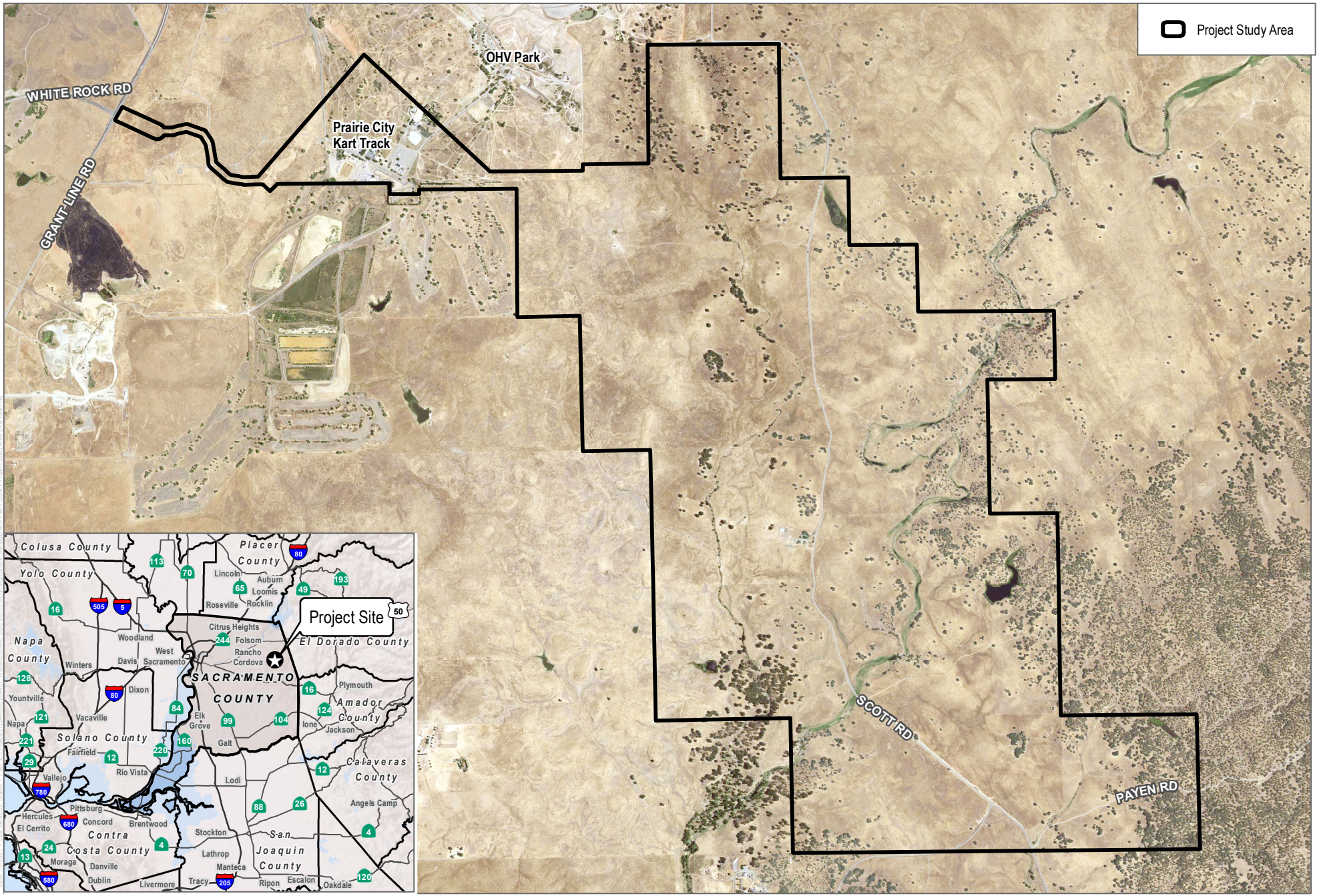

SOURCE: DigitalGlobe 2017

DUDEK

0 1,250 2,500 Feet

FIGURE 1

Project Study Area Overview

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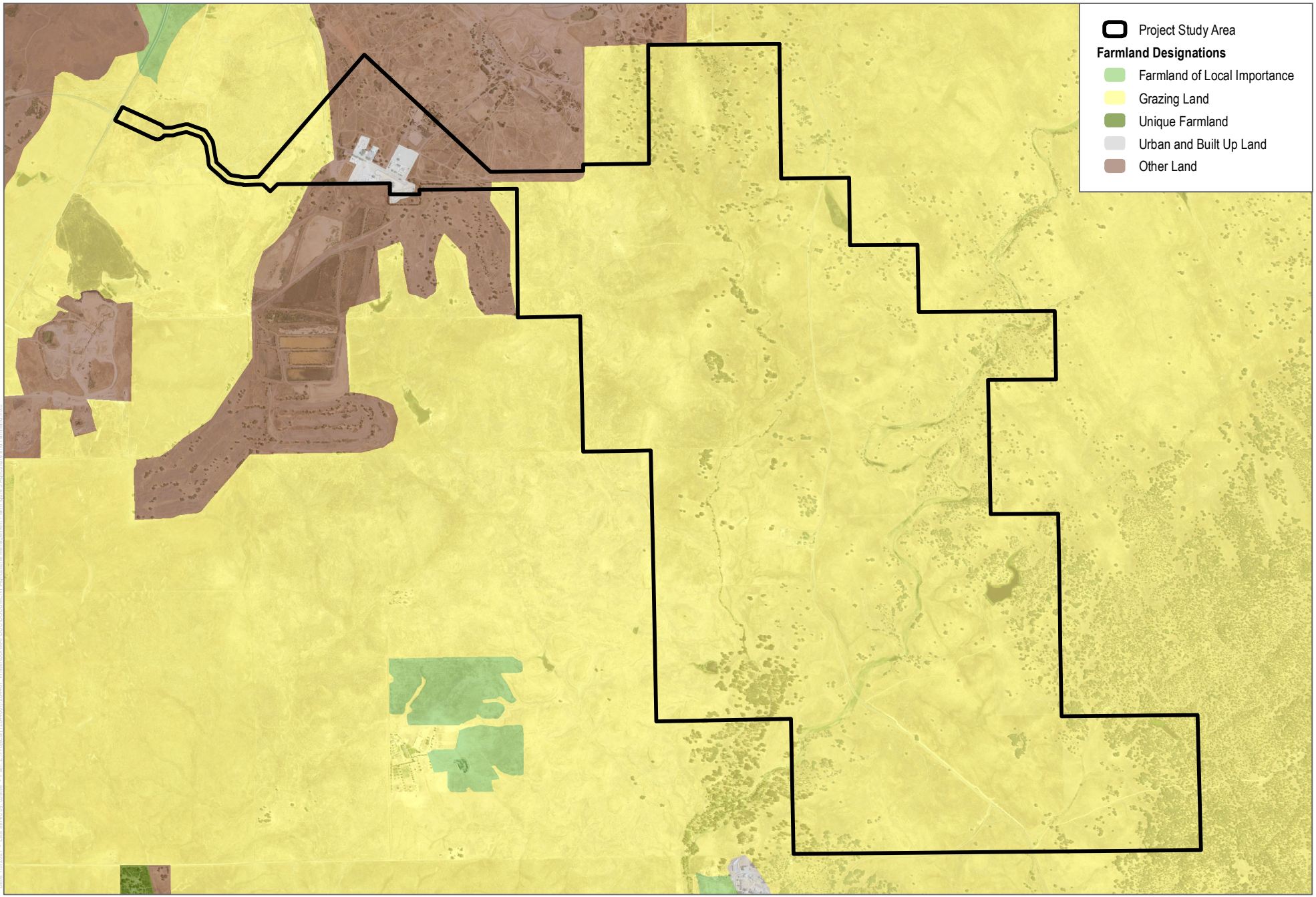

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FIGURE 2

Agriculture and Farmland

CCAR Agricultural Management Plan

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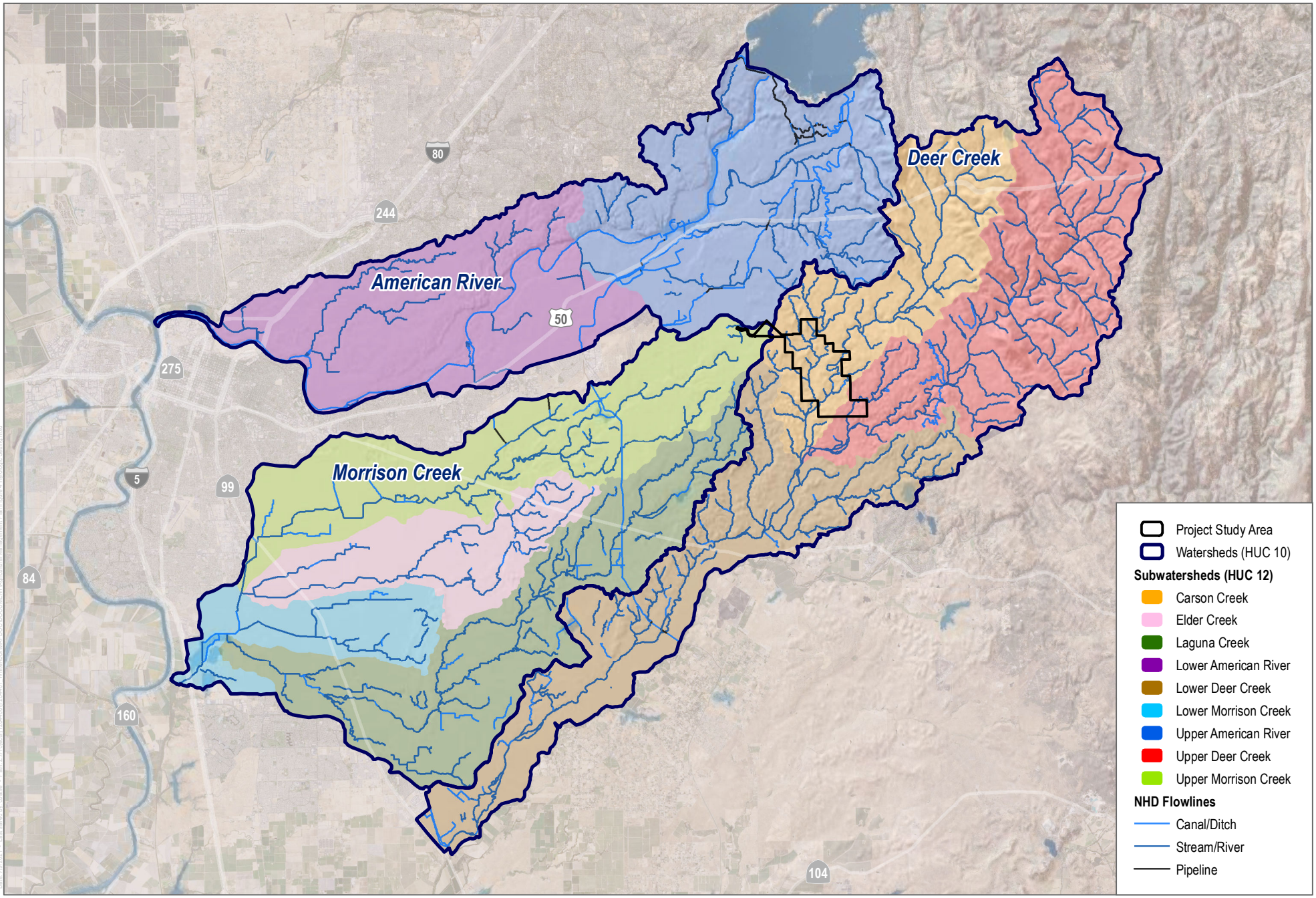

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FIGURE 3

Hydrologic Setting

CCAR Agricultural Management Plan

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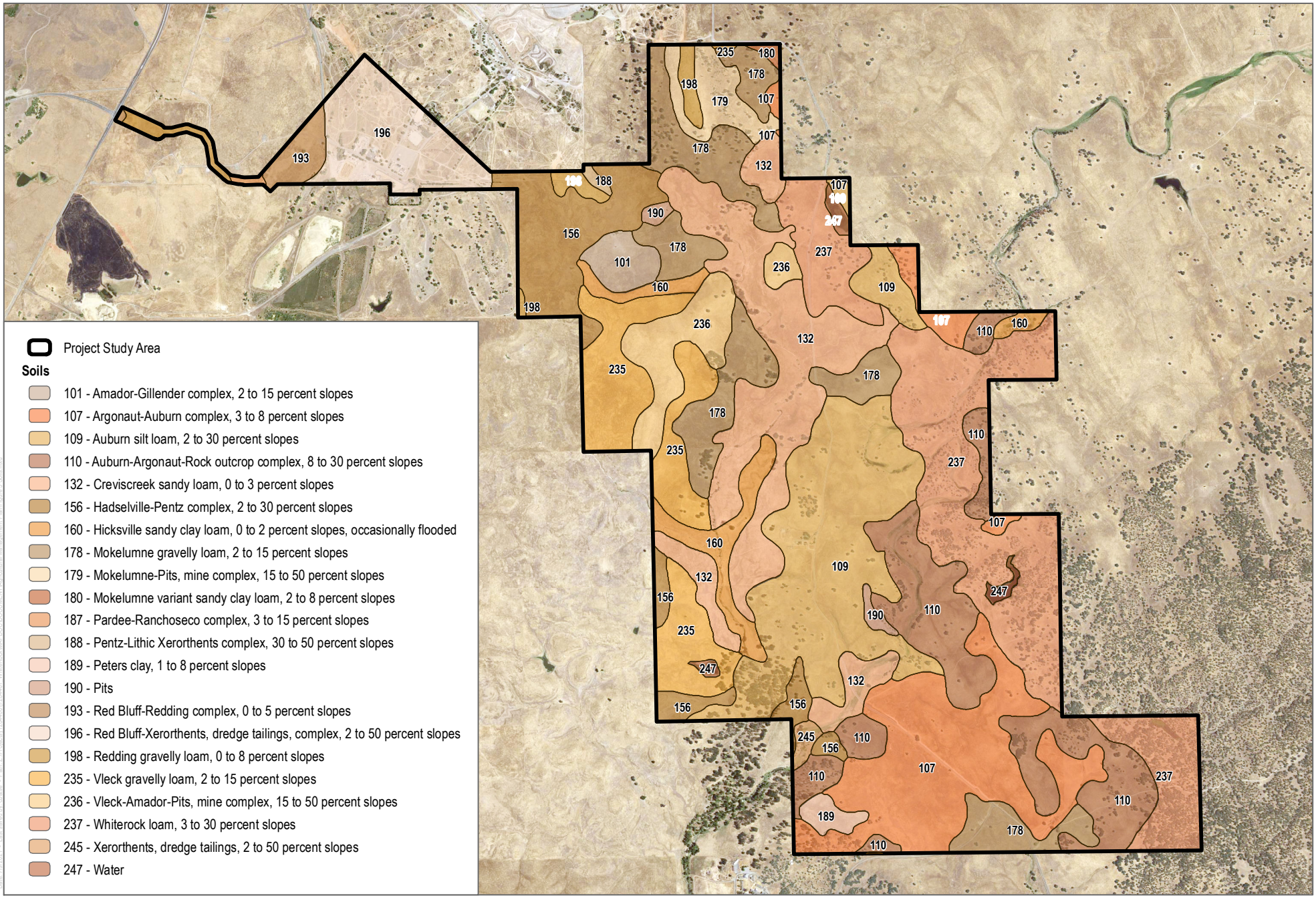

SOURCE: USDA 2018

DUDEK

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FIGURE 4

Soils

CCAR Agricultural Management Plan

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