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Description:	This section describes the soil resources present in the vicinity of the Darden Clean Energy Project site, as well as the potential impacts that may result from construction and operation of the Project related to soils.
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5.14 Soils

This section describes the soil resources present in the vicinity of the Darden Clean Energy Project (Project) site, as well as the potential impacts that may result from construction and operation of the Project related to soils. Section 5.14.1 describes the existing environmental setting, including significant soil characteristics. Section 5.14.2 provides an overview of the regulatory setting related to soil resources. Section 5.14.3 identifies potential environmental impacts that may result from Project construction and operation (including maintenance), as well as mitigation measures that should be considered during Project construction and operation. Section 5.14.4 discusses cumulative impacts. Section 5.14.5 presents laws, ordinances, regulations, and standards (LORS) applicable to soil resources. Section 5.14.6 identifies regulatory agency contacts and Section 5.14.7 describes permits required for the Project related to soil resources. Section 5.14.8 provides references for this section.

5.14.1 Environmental Setting

A description of the surficial soils within the Project site was developed using the Natural Resources Conservation Service (NRCS) online soil survey information (Web Soil Survey – http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm) and the Soil Survey of western Fresno County, in which the Project site is located (NRCS 2006). NRCS identifies soil map units for the Project site. The Project boundaries in relation to the soil map units are shown in Figure 5.14-1a through Figure 5.14-1h. Table 5.14-1 summarizes the depth, texture, drainage, permeability, run-off, land capability class, and other characteristics of the NRCS soil map units at the Project site.

5.14.1.1 NRCS Soil Map Units

As shown on Figure 5.14-1a through Figure 5.14-1h and described in Table 5.14-1, the Project site is associated with multiple NRCS soil map units. The solar facility overlies soil predominantly classified as Tranquility clay. The gen-tie line corridor overlies soils classified as Ciervo complex and/or Ciervo clay. Option 1 Project components overlie soils predominately classified as Tranquility clay and Ciervo complex. Option 2 Project components overlie soil predominately classified as Ciervo complex. The alternate green hydrogen site location overlies soil predominately classified as Panoche loam. The utility switchyard overlies soil predominantly classified as Panoche sandy loam.

5.14.1.2 Agricultural Use

Land cover types are predominantly retired agricultural lands that have been irregularly farmed over the last 10 years and seasonally or annually disked when not growing crops, and associated dirt roads, field and road shoulders, basins, ditches, and berms. Some active farming occurred in limited areas on the Project site during 2023. According to the Phase I Environmental Site Assessments (ESAs; Stantec 2022 and 2023), much of the Project site has been used for agricultural purposes (row crop and grain) since at least 1940. Most parcels are undeveloped land with some row cropping on parcels near the central portion of the Project site. The gen-tie line corridor spans privately-owned land on the western portion of the Project site with land-cover types including active and retired agricultural fields. Compacted soil and paved roads border and separate each land-cover type. Surrounding properties are primarily agricultural lands, including residences, agricultural storage yards, and agricultural and irrigation equipment.

Figure 5.14-1a NRCS Soils Overview Map

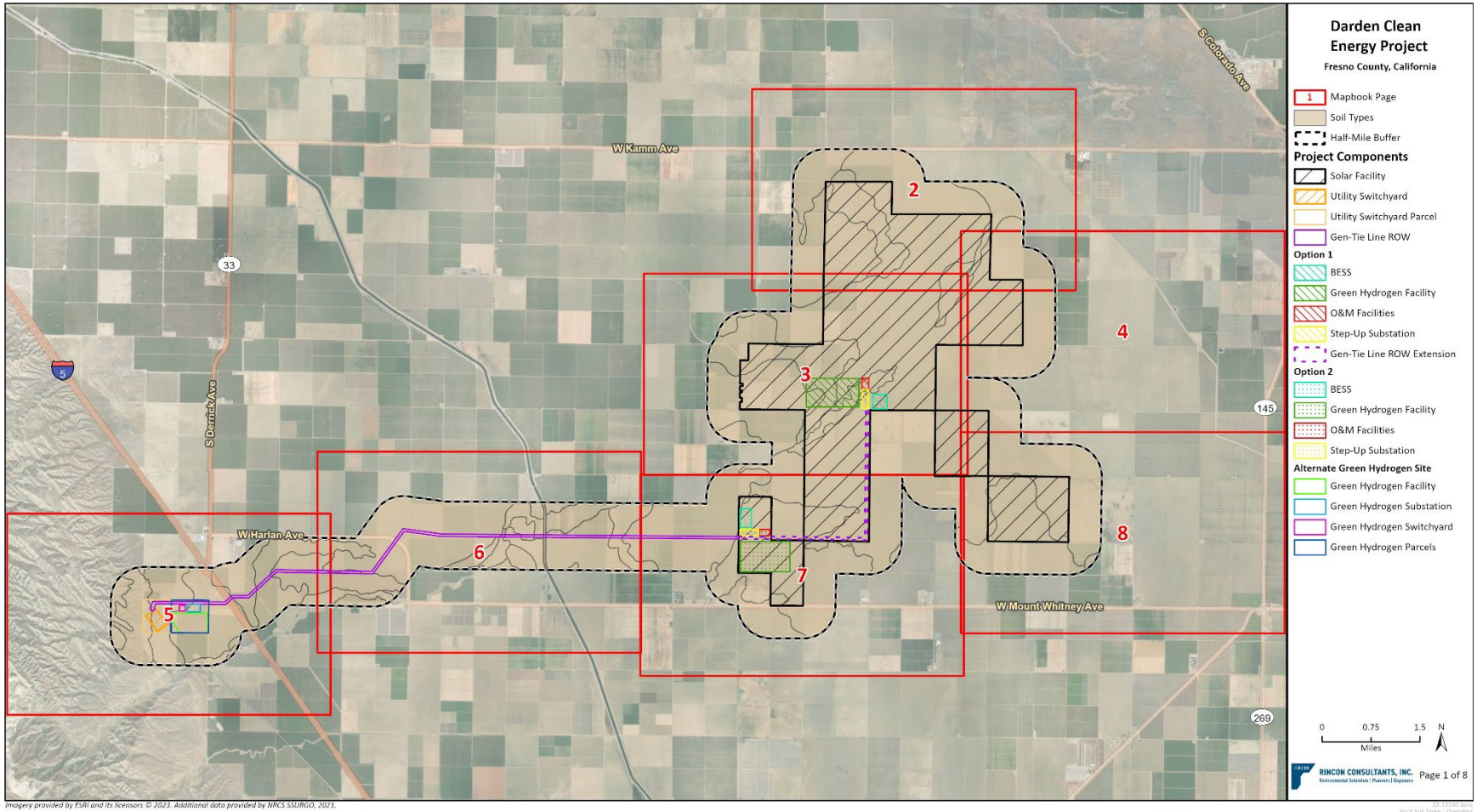

Figure 5.14-1b NRCS Soils Mapbook Page 2

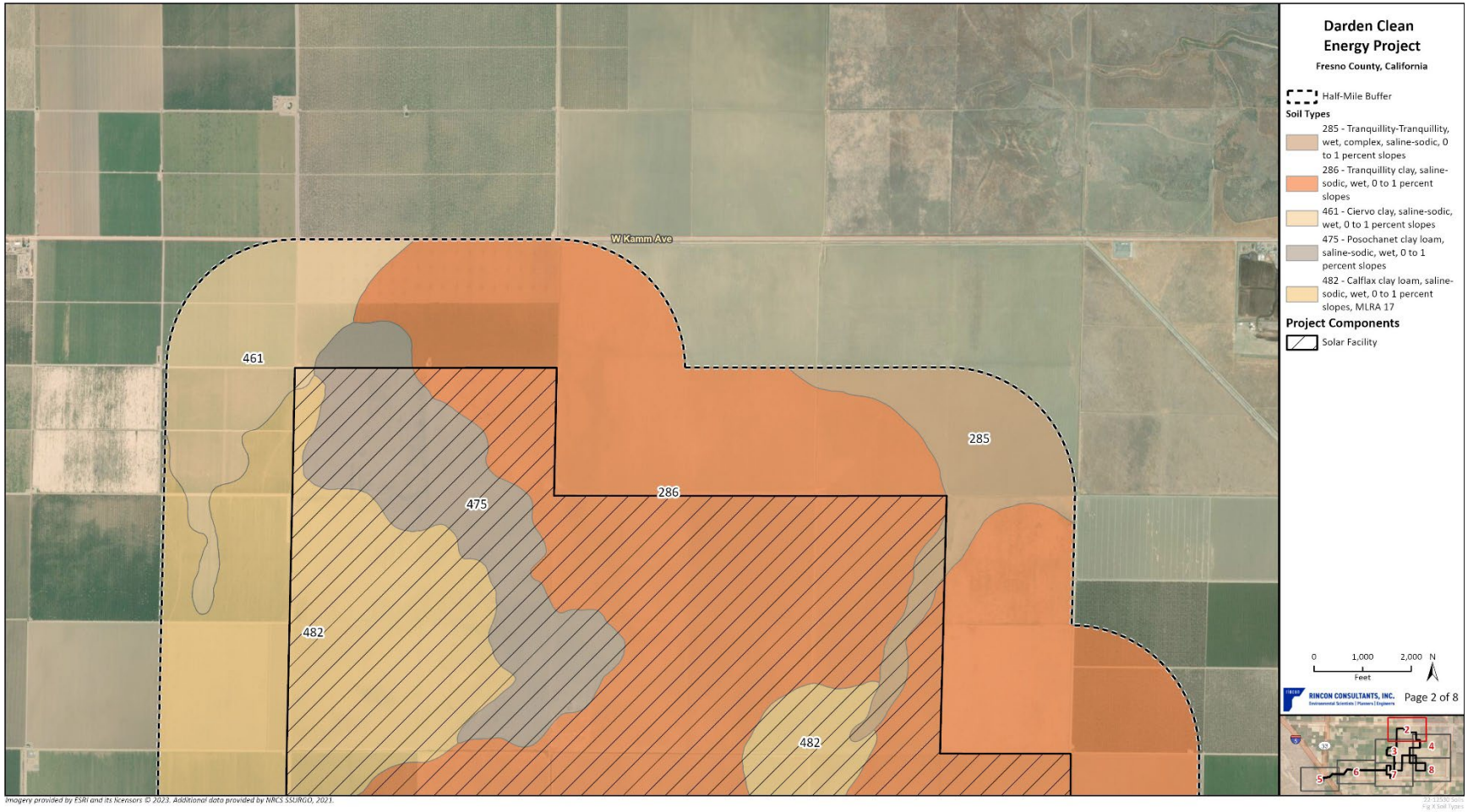

Figure 5.14-1c NRCS Soils Mapbook Page 3

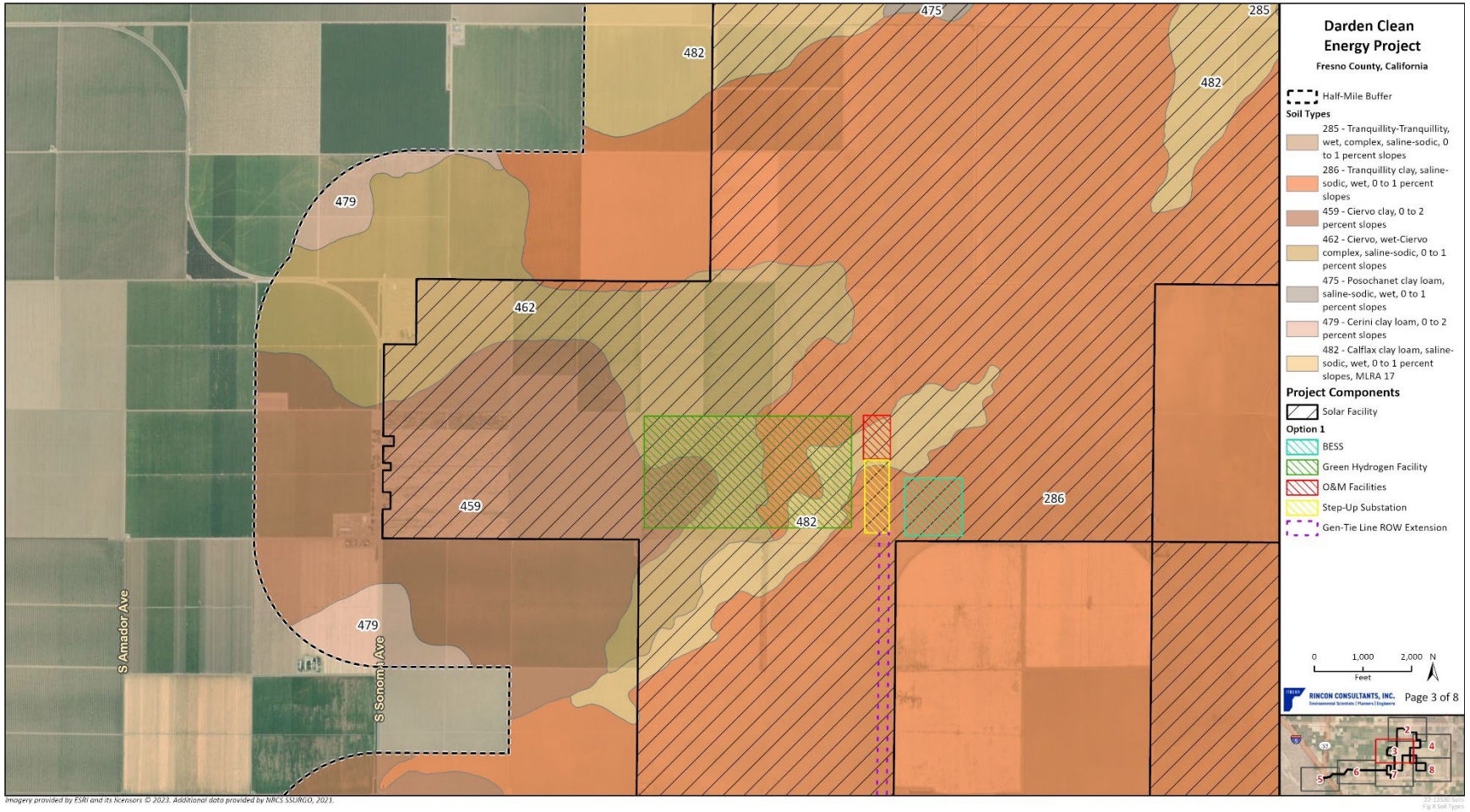

Figure 5.14-1d NRCS Soils Mapbook Page 4

Figure 5.14-1e NRCS Soils Mapbook Page 5

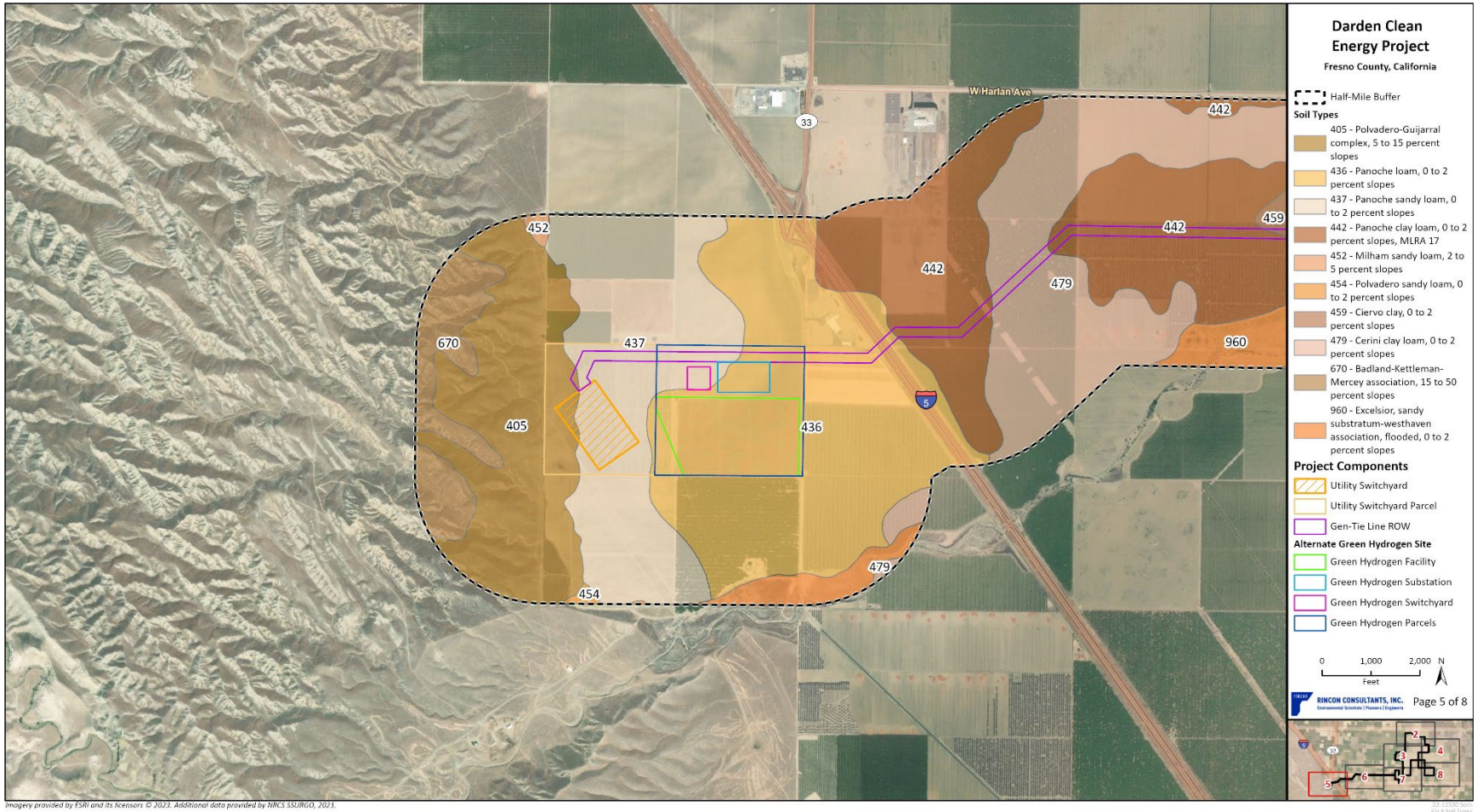

Figure 5.14-1f NRCS Soils Mapbook Page 6

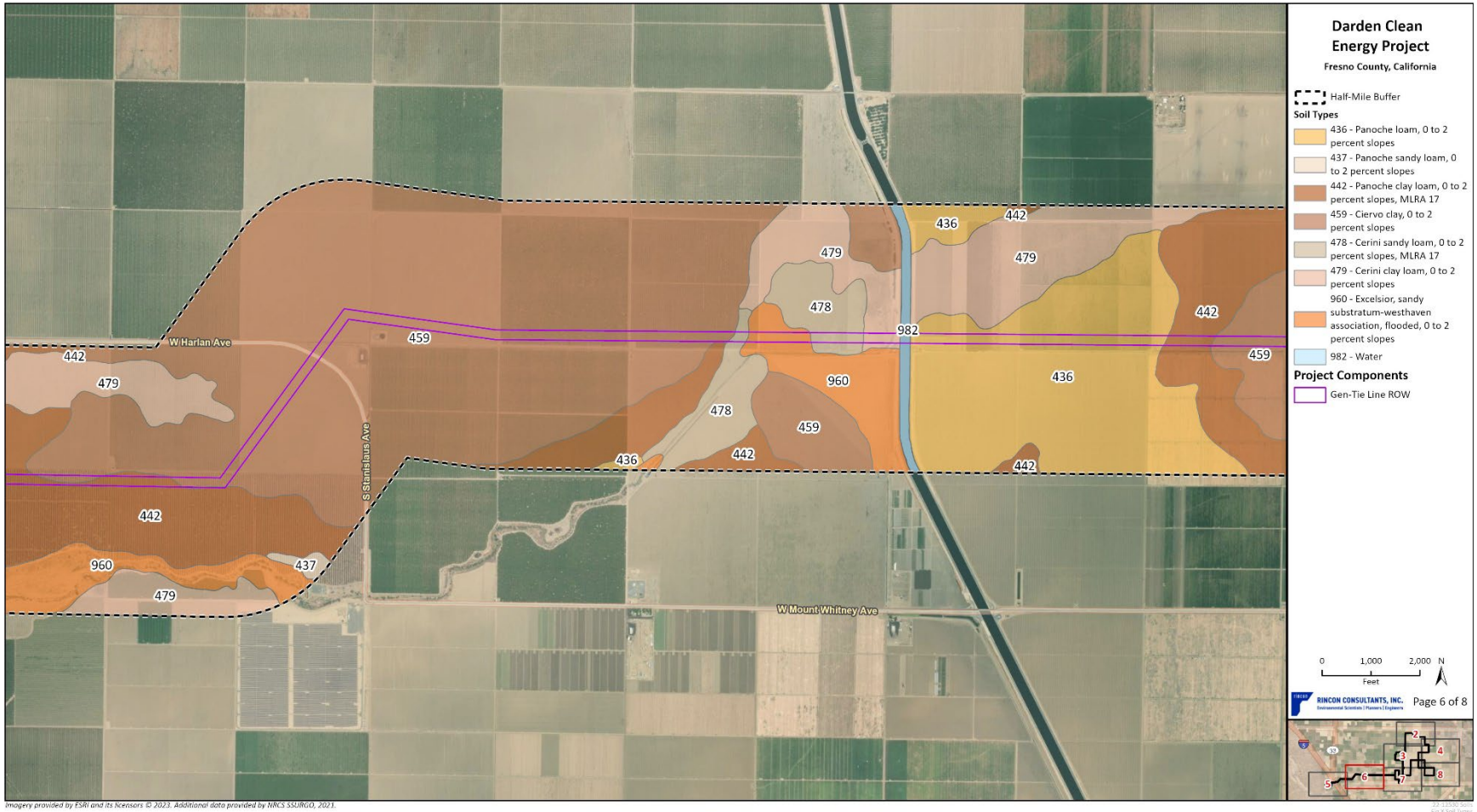

Figure 5.14-1g NRCS Soils Mapbook Page 7

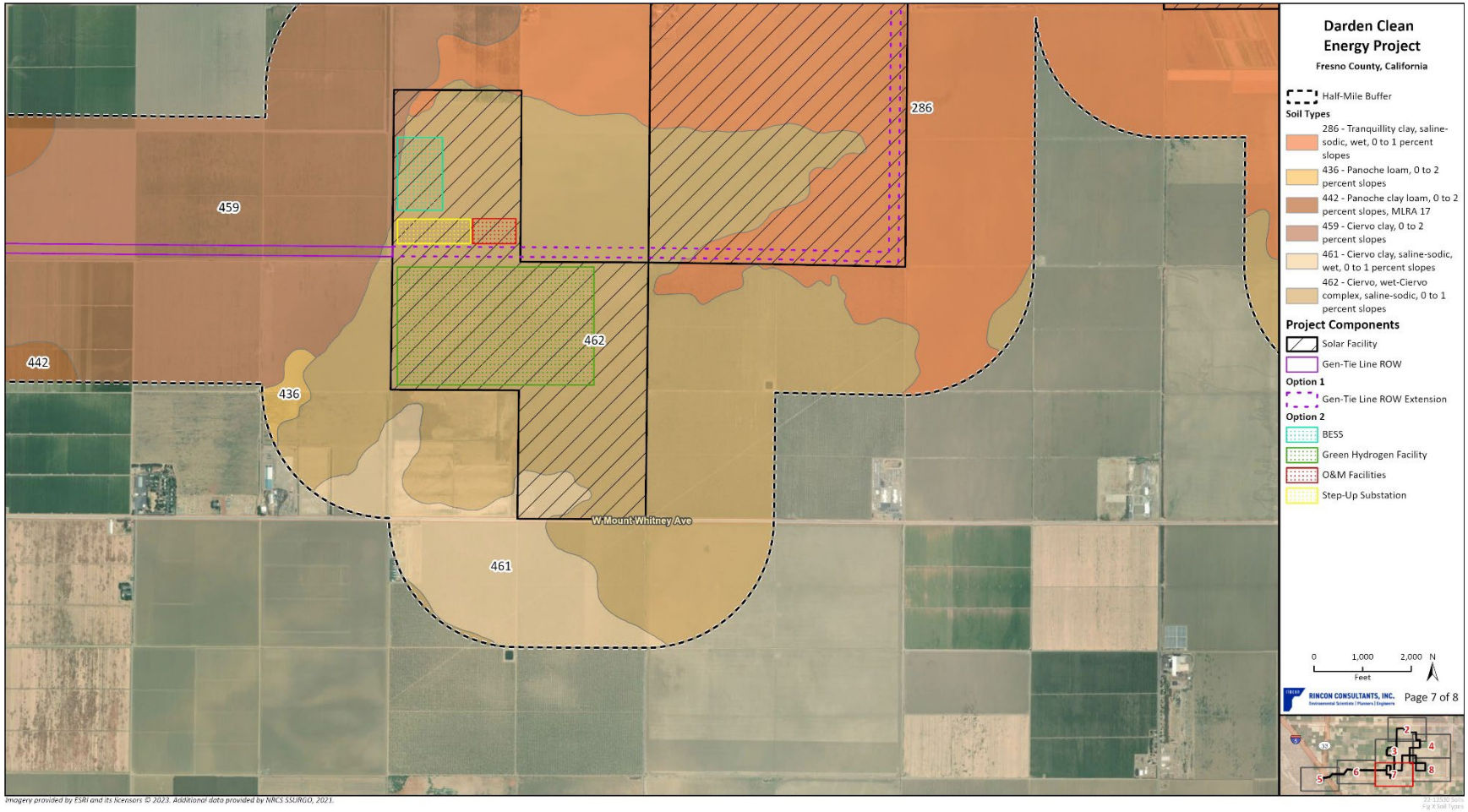

Figure 5.14-1h NRCS Soils Mapbook Page 8

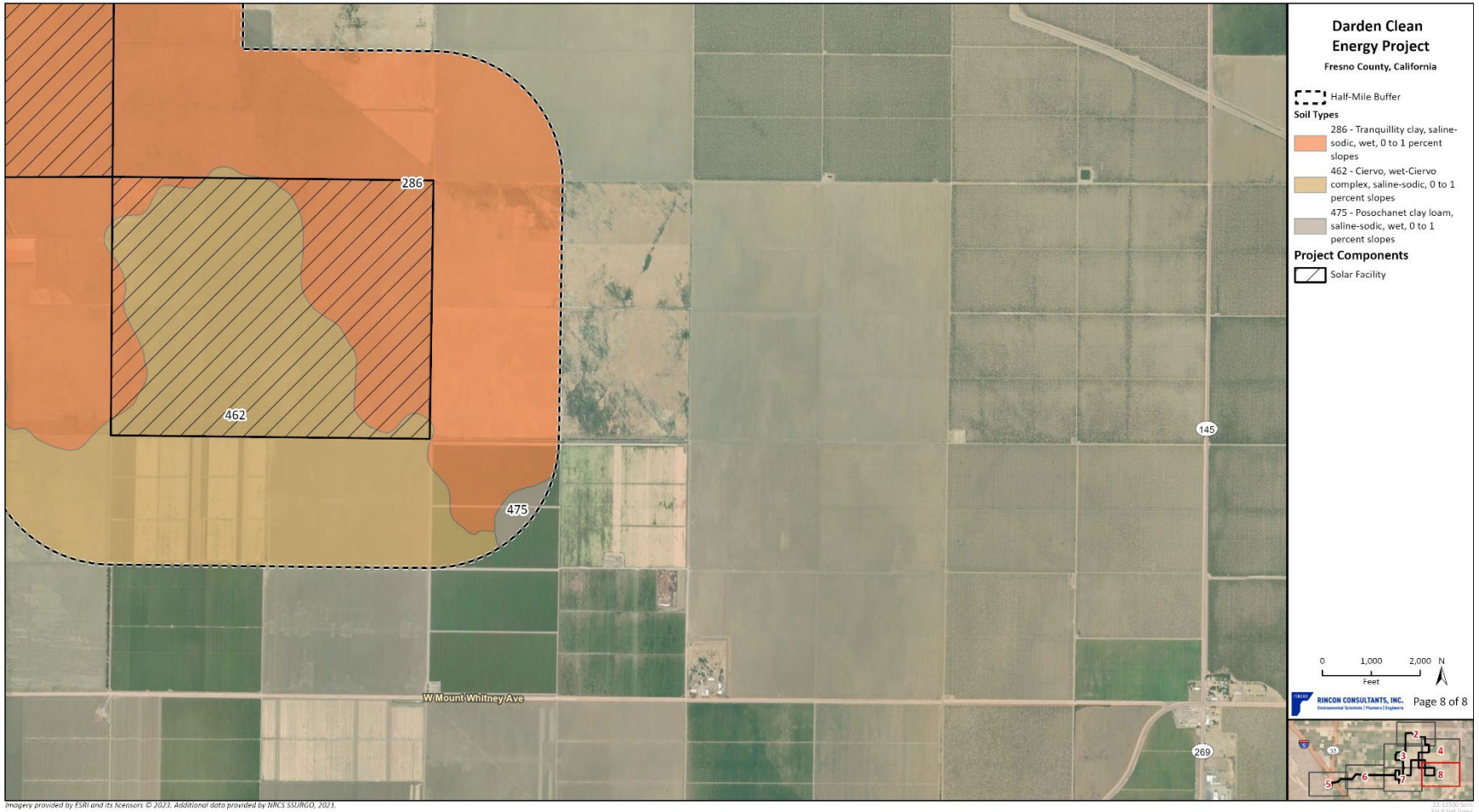

Table 5.14-1 NRCS Soil Map Unit Descriptions for Project Site

Map Unit	Description	
482	Calflax clay loam, saline-sodic, wet, 0 to 1 percent slopes, MLRA 17:	
	Landform:	Fan skirts
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Clay loam over loam over silt loam over loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Moderately well drained
	Permeability[1]:	Moderately high
	Runoff class:	Low
	Capability class:	3s (irrigated), 7s (nonirrigated)
	Taxonomic class:	Fine-loamy, mixed, superactive, thermic sodic haplocambids
	K-factor:	0.42
479	Cerini clay loam, 0 to 2 percent slopes:	
	Landform:	Alluvial fans
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Clay loam over stratified sandy loam to clay loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Well drained
	Permeability:	Moderately high
	Runoff class:	Low
	Capability class:	1 (irrigated), 7c (nonirrigated)
	Taxonomic class:	Fine-loamy, mixed, superactive, thermic fluventic haplocambids
	K-factor:	0.32
478	Cerini sandy loam, 0 to 2 percent slopes, MLRA 17:	
	Landform:	Alluvial fans
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Sandy loam over clay loam over stratified sandy loam to clay loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Well drained
	Permeability:	Moderately high
	Runoff class:	Low
	Capability class:	1 (irrigated), 7c (nonirrigated)
	Taxonomic class:	Fine-loamy, mixed, superactive, thermic fluventic haplocambids
	K-factor:	0.32

Map Unit	Description	
459	Ciervo clay, 0 to 2 percent slopes:	
	Landform:	Fan skirts
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Clay over silty clay over clay loam
	Shrink-swell Potential:	LEP > 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Moderately well drained
	Permeability:	Moderately low to moderately high
	Runoff class:	Medium
	Capability class:	2s (irrigated), 7s (nonirrigated)
	Taxonomic class:	Fine, smectitic, thermic vertic haplocambids
	K-factor:	0.29
461	Ciervo clay, saline-sodic, wet, 0 to 1 percent slopes:	
	Landform:	Fan skirts
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Clay over silty clay over clay loam
	Shrink-swell Potential:	LEP > 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Moderately well drained
	Permeability:	Low to moderately low
	Runoff class:	High
	Capability class:	3s (irrigated), 7s (nonirrigated)
	Taxonomic class:	Fine, smectitic, thermic vertic haplocambids
	K-factor:	0.29
462	Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes:	
	Landform:	Fan skirt
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Clay over silty clay over clay loam
	Shrink-swell Potential:	LEP > 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Moderately well drained
	Permeability:	Low to moderately low
	Runoff class:	High
	Capability class:	3s (irrigated), 7s (nonirrigated)
	Taxonomic class:	Fine, smectitic, thermic vertic haplocambids
	K-factor:	0.29

Map Unit	Description	
960	Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 percent slopes:	
	Landform:	Alluvial fans, flood plains
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Sandy loam over stratified loamy sand to silt loam over loamy sand
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Well drained
	Permeability:	Moderately high to high
	Runoff class:	Low
	Capability class:	2w (irrigated), 7w (nonirrigated)
	Taxonomic class:	Coarse-loamy, mixed, superactive, calcareous, thermic typic torrifluvents
	K-factor:	0.35
442	Panoche clay loam, 0 to 2 percent slopes, MLRA 17:	
	Landform:	Alluvial fans
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	clay loam over loam over sandy loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Well drained
	Permeability:	Moderately low
	Runoff class:	Low
	Capability class:	1 (irrigated), 7c (nonirrigated)
	Taxonomic class:	Fine-loamy, mixed, superactive, thermic typic haplocambids
	K-factor:	0.35
436	Panoche loam, 0 to 2 percent slopes:	
	Landform:	Alluvial fans
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Well drained
	Permeability:	Moderately low
	Runoff class:	Low
	Capability class:	1 (irrigated), 7c (nonirrigated)
	Taxonomic class:	Fine-loamy, mixed, superactive, thermic typic haplocambids
	K-factor:	0.35

Map Unit	Description	
437	Panoche sandy loam, 0 to 2 percent slopes:	
	Landform:	Alluvial fans
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Sandy loam over loam over sandy loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Well drained
	Permeability:	Moderately high to high
	Runoff class:	Negligible
	Capability class:	1 (irrigated), 7c (nonirrigated)
	Taxonomic class:	Fine-loamy, mixed, superactive, thermic typic haplocambids
	K-factor:	0.34
405	Polvadero-Guijarral complex, 5 to 15 percent slopes:	
	Landform:	Alluvial fans
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Sandy loam over sandy clay loam over sandy loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	10 to 20 inches to natric
	Drainage:	Well drained
	Permeability:	Moderately high
	Runoff class:	High
	Capability class:	3e (irrigated), 7e (nonirrigated)
	Taxonomic class:	Coarse-loamy, mixed, superactive, thermic typic haplocalcids (Guijarral) and fine-loamy, mixed, superactive, thermic typic natrargids (Polvadero)
	K-factor:	0.23
475	Posochanet clay loam, saline-sodic, wet, 0 to 1 percent slopes:	
	Landform:	Fan skirts
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	clay loam over stratified loam to silty clay loam
	Shrink-swell Potential:	LEP 3 – 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Moderately well drained
	Permeability:	Moderately low to moderately high
	Runoff class:	Medium
	Capability class:	3s (irrigated), 7s (nonirrigated)
	Taxonomic class:	Fine-silty, mixed, superactive, thermic sodic haplocambids
	K-factor:	0.45

Map Unit	Description	
286	Tranquility clay, saline-sodic, wet, 0 to 1 percent slopes:	
	Landform:	Fan skirts
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Clay
	Shrink-swell Potential:	LEP > 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Somewhat poorly drained
	Permeability:	Low to moderately low
	Runoff class:	High
	Capability class:	3w (irrigated), 7w (nonirrigated)
	Taxonomic class:	Fine, smectitic, thermic sodic haploxererts
	K-factor:	0.25
285	Tranquility-Tranquility, wet, complex, saline-sodic, 0 to 1 percent slopes:	
	Landform:	Fan skirts
	Parent Material:	Alluvium derived from calcareous sedimentary rock
	Typical Profile:	Clay
	Shrink-swell Potential:	LEP > 6
	Depth:	More than 80 inches to restrictive feature
	Drainage:	Somewhat poorly drained
	Permeability:	Moderately low to moderately high
	Runoff class:	High
	Capability class:	3w (irrigated), 7w (nonirrigated)
	Taxonomic class:	Fine, smectitic, thermic sodic haploxererts
	K-factor:	0.25

Source: Soil characteristics are based on soil descriptions available on the NRCS's Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm), the NRCS Official Soil Series Descriptions and the Soil Survey of western Fresno County (NRCS 2006). Soil descriptions provided above are limited to those soil units that are present within the Project site.

[1]Permeability reported for the capacity of the most limiting soil layer to transmit water.

MLRA - Major Land Resource Area
LEP - Linear Extensibility Percent

5.14.1.3 Wetlands

The solar facility contains one wetland feature along Davis Avenue that is classified under the National Wetland Inventory (NWI) as a palustrine freshwater pond. This feature is an excavated pond that seasonally floods. Wetlands are discussed in more detail in Section 5.12, *Biological Resources*.

5.14.1.4 Potential for Soil Loss and Erosion

Erosion is a natural process whereby soil and weathered rock particles are worn away and transported, most commonly by wind or water. This action presents hazards to structures because it removes soils, which can undermine foundational elements, and transports and deposits the eroded material at other locations, which could cover roads, fill in reservoirs, and cause other impairments to infrastructure.

The soil erodibility factor, or K-value, of the Universal Soil Loss Equation (USLE) and Revised Universal Soil Loss Equation (RUSLE), was used to assess the Project site's vulnerability to erosion by

surface water run-off (sheet and rill erosion). The K-value is a measure of the susceptibility of soil particles to detach and transport by rainfall and runoff. K-values range from 0.02 to 0.69, and other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by surface water flows (USDA 2023). Soil erodibility and the associated K-factor ranges are presented in Table 5.14-2 below.

Table 5.14-2 Soil Erodibility and K-Factor Ranges

K-Factor Range	Soil Erodibility
0.05 – 0.2	Low
0.25 – 0.4	Moderate
0.45 – 0.69	High
From: http://www.iwr.msu.edu/rusle/kfactor.htm	

In western Fresno County, most soils appear to be subject to moderate to severe sheet and gully erosion potential. Panoche soils are susceptible to erosion as a result of human activity (e.g., off-road vehicle use). These soils are located extensively throughout the western part of Fresno County and are prevalent in areas on recent alluvial fans in the central part of the region (Fresno County 2018). The predominant soils present across the Project site (Tranquility clay, Ciervo complex and clay, Panoche loam, and Panoche sandy loam) have K-factors of 0.24, 0.28, 0.37, and 0.28, respectively (NRCS 2000), which indicate moderate erosion potential.

5.14.1.5 Other Significant Soil Characteristics

Other significant soil characteristics that could affect the Project site include expansive soils, liquefaction risk, and the potential for shallow groundwater, organic soils, and soil contamination. A project-specific geotechnical investigation is currently being prepared to evaluate soil conditions and geologic hazards on the Project site.

Expansive Soils

Soils with relatively high clay content that contain specific clay minerals (such as smectite clays) are considered expansive, which indicates that they shrink and swell in response to changing water content. This action is characterized by a soil's "shrink-swell potential," and can damage building and structural foundations via the differential movement of soil.

The shrink-swell potential of a soil can be quantified as its linear extensibility percent (LEP), which is based on the change in length of a sample as moisture content is decreased. LEPs and the corresponding LEP are summarized in Table 5.14-3 below.

Table 5.14-3 Linear Extensibility Percent and Shrink-Swell Classes

Shrink-Swell Class	LEP (percent)
Low	< 3
Moderate	3 – 6
High	6 – 9
Very High	> 9

Soils falling into the moderate to very high shrink-swell class have the potential to damage buildings, roads, and other structures if not mitigated. Expansive soils are present in Fresno County, and while the Project site is not located within areas specifically known to contain expansive soils, it overlies soil classes that feature varying clay fractions that could indicate a shrink-swell risk (Fresno County 2018). The soils that predominately underlie the solar facility, Options 1 and 2 Project components, and gen-tie line corridor (Tranquility clay, Ciervo complex, and Ciervo clay) have a LEP of greater than 6, or high shrink-swell class (NRCS 2000). The soils that predominately underlie the utility switchyard and alternate green hydrogen site (Panoche loam and Panoche sandy loam) have a LEP of 3 to 6, or moderate shrink-swell class (NRCS 2000).

Liquefaction Risk

Please see the liquefaction discussion included in Section 5.16, *Geological Hazards and Resources*.

Potential for Shallow Groundwater

The California Department of Water Resources (DWR) monitors a broad network of observation, irrigation, and production wells installed throughout the Project site; however, due to the varying screened intervals and apparent perched saturated zones, groundwater elevations within these wells vary widely and depth to first groundwater could not be reliably determined based on publicly available information. Rincon identified five wells at the Project site with perforated intervals in the upper 50 feet and depth to groundwater measurements, although data was limited to 2008 and 2011. Depths to groundwater in these wells ranged from approximately 8 to 14.5 feet below ground surface (bgs) (DWR 2023), although these depths may represent perched saturated zones not indicative of broader conditions. Additionally, because the data are not recent, they may not represent current conditions. The Phase I ESAs (Stantec 2022; 2023) note that groundwater levels measured in wells on a property 4.5 miles to the northeast of the Project site were between 170 and 189 feet bgs.

Potential for Organic Soils

Based on the NRCS Web Soil Survey at the Project site, organic soils are not present within the Project Site (NRCS 2006).

Potential for Soil Contamination

The 2022 Phase I ESA (Stantec 2022) identified the potential presence of impacted soils associated with drilling mud pits/sumps associated with past oil drilling operations at the Project site as a Recognized Environmental Condition (REC). The 2023 Phase I ESA (Stantec 2023) also noted the following with respect to soil contamination:

- Significant oil staining was observed on two irrigation well pads. The first location was located approximately 0.5-mile west of the intersection of Harlan Avenue and Colusa Avenue. The second location was located at the northeast corner of the intersection of Harlan Avenue and Calaveras Avenue. If any of the Project components such as structures, towers, or belowground collector lines are planned in these areas, then soil sampling is recommended to determine if potential contaminates of concern are present above commercial use screening levels.
- A large poly above ground storage tank (AST) and numerous used 50-gallon poly drums were observed in a pile at a facility located within the proposed gen-tie line corridor (APN 045-080-49S). Soil sampling to evaluate whether contaminants of concern are present in soil above

commercial use screening levels is recommended in this area if the gen-tie line contains an underground component or if there will be any structures or towers within this area.

Based on the former agricultural use of the Project site, Stantec conducted limited shallow soil sampling (Stantec 2023). Soil samples were collected from 0.5 to 1.0 feet bgs. Soil samples were analyzed for organochlorine pesticides (OCPs), arsenic, and lead. In addition, selenium was analyzed in a subset (approximately 25 percent) of the soil samples. OCPs, lead, and selenium were not detected above applicable commercial environmental screening levels (ESLs) or California hazardous waste levels (Stantec 2023). Arsenic was detected above human health screening levels but within the range of concentrations considered to be naturally occurring in California (DTSC 2020).

A Soil Management Plan prepared for the Project (Appendix O) included a review of government records, aerial photographs, and a site visit. The Soil Management Plan found no evidence of oil well-related features or contaminated soils, with the exception of the Loescher well. The Loescher well consists of a concrete platform with a cellar and 4-inch diameter steel riser. During excavation at five test pits surrounding the Loescher well, during the Soil Management Plan's assessment, no evidence of impacted soils or non-native materials was encountered.

5.14.2 Regulatory Setting

Federal, state, and local LORS related to soils were reviewed for applicability to the Project. These are detailed in Section 5.14.5, *Laws, Ordinances, Regulations, and Standards*.

5.14.3 Impact Analysis

The following subsections discuss the potential direct and indirect impacts related to soil resources from construction and operation (including maintenance) of the Project.

5.14.3.1 Methodology

To identify and assess the potential for impacts to soil resources, Rincon Consultants, Inc. geologists reviewed publicly available information, including maps, online databases, articles, reports, and published research papers. The primary information sources used in this Report include the following:

- Natural Resources Conservation Services soils maps
- Safety Elements of the General Plan for the County of Fresno
- Natural Resource Elements of the General Plan for the County of Fresno
- Phase I Environmental Site Assessment for Forty-Two Parcels (9,116 Acres) Northwest of SR-145 and Mt Whitney Avenue, Fresno County, California (Stantec 2022)
- Phase I Environmental Site Assessment and Limited Soil Sampling for Generation Tie Line Easement and Support Facilities Northwest of SR-145 and Mt Whitney Avenue, Fresno County, California (Stantec 2023)

A project-specific geotechnical investigation is currently being prepared, which will include recommendations related to soil resources for Project construction and operation.

5.14.3.2 Impact Evaluation Criteria

The potential for impacts related soils were evaluated using the relevant criteria described in the California Environmental Quality Act (CEQA) Environmental Checklist (Appendix G of the CEQA Guidelines). Specific to geological hazards and resources, the CEQA Checklist asks, would the project:

- Result in substantial soil erosion or the loss of topsoil;
- Be located on expansive soil, as defined in Table 18-1-B of the UBC (International Code Council 1994), creating substantial direct or indirect risks to life or property;
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use;
- Have a substantial adverse effect on state or federally protected wetlands?

Impact SOI-1

Threshold:	Would the project result in substantial soil erosion or the loss of topsoil?

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Less than Significant Impact. Project construction may increase soil erosion from water (such as rainfall) and wind. Soil erosion may result in the loss of topsoil and may subsequently increase the amount of sediment received by downstream water bodies. The magnitude of construction impacts related to soil erosion and topsoil loss depends on the soil erodibility, construction methods, construction schedule, and proximity of construction activities to nearby sensitive receptors, such as downstream water bodies.

Construction of the solar facility, Options 1 and 2 step-up substation, and gen-tie line would require grading and excavation activities, as described in Chapter 2, *Project Description*. As described in Table 5.14-1, the predominant soils present across the Project site have a moderate erosion potential.

Construction of these Project components would include ground-disturbing activities that could increase the risk of water and wind erosion or sediment transport, such as soil excavation, grading, trenching, and soil stockpiling. The use of heavy equipment during construction of the Project would potentially result in soil compaction. Compacting the soil would result in increased density and would reduce the soil's ability to absorb precipitation. Therefore, soil compaction may result in increased surface water run-off, erosion, and sedimentation.

The Applicant would be required to apply for coverage under a National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order 2009-0009-DWQ, as amended by Order 2010-0014-DWQ (Construction General Permit) and any following versions applicable at the time of construction. This requirement was developed to ensure that stormwater is managed and erosion is controlled on construction sites. The Construction General Permit requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which requires implementation of best management practices (BMPs) to control stormwater run-on and runoff from construction work sites. BMPs may include, but would not be limited to, physical barriers to

prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of infiltration swales, protection of stockpiled materials, and a variety of other measures to be identified by a qualified SWPPP developer that would substantially reduce or prevent erosion from occurring during construction.

The California Energy Commission (CEC) would also require the Applicant to implement a drainage, erosion, and sediment control plan (DESCP) to reduce the impact of run-off during construction, operation, and maintenance. Site monitoring would involve inspections to ensure that the BMPs required by the Project-specific SWPPP and DESCP are properly maintained and reducing the risk of run-off to an adequate level. Implementation of the Project-specific SWPPP and DESCP would ensure that downstream water bodies are not affected by sediment transport.

Fine grained soils have the potential for wind erosion. Wind erosion is greatest when dry, fine sandy material is exposed at the ground surface. However, as discussed in Section 5.7, *Air Quality*, the Project would be required to comply with San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII and Rule 8021, which include rules that limit fugitive dust from wind erosion during Project construction and operation, such as the development and implementation of a Dust Control Plan. Therefore, with adherence to existing regulations and implementation of the project-specific Dust Control Plan, SWPPP and DESCP, impacts related to water and wind erosion, and soil compaction would be less than significant.

Operation

Less than Significant Impact. As described above, soils associated with the solar facility, Options 1 and 2 step-up substation, and gen-tie line ROW have a moderate erosion potential. However, operation and maintenance activities are not anticipated to involve substantial amounts of grading or soil movement that would cause a substantial loss of topsoil. As described above, the Applicant would be required to comply with measures included in the DESCP to minimize soil erosion during operation and maintenance activities, such that impacts related to soil erosion and loss of topsoil are reduced. Additionally, a large portion of the solar facility would be revegetated in accordance with the Project's Vegetation Management Plan (provided in the Biological Resources Assessment, Appendix Q). Establishment of vegetative cover across the site would reduce erosion during operations and maintenance. With revegetation of the site and implementation of the DESCP, which would include BMPs to control erosion and prevent off-site sedimentation, impacts during operation of these Project components would be less than significant.

BESS

Construction

Less than Significant Impact. Construction of the Options 1 and 2 BESS component would require grading and excavation activities, as described in Chapter 2, *Project Description*. As described in Table 5.14-1, the predominant soils present within the Options 1 and 2 BESS component location have a moderate erosion potential.

Construction of this Project component would include ground-disturbing activities that could increase the risk of water and wind erosion or sediment transport, such as soil excavation, grading, trenching, and soil stockpiling. The use of heavy equipment during construction of the Project would potentially result in soil compaction. Compacting the soil would result in increased density and would reduce the soil's ability to absorb precipitation. Therefore, soil compaction may result in increased surface water run-off, erosion, and sedimentation.

As described above, the Project would be required to obtain coverage under a Construction General Permit at the time of construction and develop a project-specific SWPPP, DESCP and Dust Control Plan which would include BMPs to control erosion and prevent off-site sedimentation, in accordance with existing CEC requirements and SJVAPCD regulations. Therefore, with adherence to existing regulations and implementation of the Project-specific Dust Control Plan, SWPPP and DESCP, impacts related to water and wind erosion, and soil compaction would be less than significant.

Operation

Less than Significant Impact. As described above, soil associated with the Options 1 and 2 BESS component location have a moderate erosion potential. However, operation and maintenance activities are not anticipated to involve substantial amounts of grading or soil movement that would cause a substantial loss of topsoil. As described above, the Applicant would be required to comply with measures included in the DESCP to minimize soil erosion during operation and maintenance activities, such that impacts related to soil erosion and loss of topsoil are reduced. With implementation of the DESCP, which would include BMPs to control erosion and prevent off-site sedimentation, impacts during operation of this Project component would be less than significant.

Green Hydrogen

Construction

Less than Significant Impact. Construction of the Options 1 and 2, and alternate green hydrogen component would require grading and excavation activities, as described in Chapter 2, *Project Description*. The predominant soils present within the Options 1 and 2 green hydrogen component and alternate component site location have a moderate erosion potential (Table 5.14-1).

Construction of this Project component would include ground-disturbing activities that could increase the risk of water and wind erosion or sediment transport, such as soil excavation, grading, trenching, and soil stockpiling. The use of heavy equipment during construction of the Project would potentially result in soil compaction. Compacting the soil would result in increased density and would reduce the soil's ability to absorb precipitation. Therefore, soil compaction may result in increased surface water run-off, erosion, and sedimentation.

As described above, the Project would be required to obtain coverage under a Construction General Permit at the time of construction and develop a project-specific SWPPP, DESCP and Dust Control Plan which would include BMPs to control erosion and prevent off-site sedimentation, in accordance with existing CEC requirements and SJVAPCD regulations. Therefore, with adherence to existing regulations and implementation of the Project-specific Dust Control Plan, SWPPP and DESCP, impacts related to water and wind erosion, and soil compaction would be less than significant.

Operation

Less than Significant Impact. As described above, soil associated with the Options 1 and 2 green hydrogen component and alternate component site location have a moderate erosion potential. However, operation and maintenance activities are not anticipated to involve substantial amounts of grading or soil movement that would cause a substantial loss of topsoil. As described above, the Applicant would be required to comply with measures included in the DESCP to minimize soil erosion during operation and maintenance activities, such that impacts related to soil erosion and

loss of topsoil are reduced. With implementation of the DESCP, which would include BMPs to control erosion and prevent off-site sedimentation, impacts during operation of this Project component would be less than significant.

Utility Switchyard

Construction

Less than Significant Impact. Construction of the utility switchyard would require grading and excavation activities, as described in Chapter 2, *Project Description*. As described in Table 5.14-1, the predominant soil present within the utility switchyard location has a moderate erosion potential.

Construction of this Project component would include ground-disturbing activities that could increase the risk of water and wind erosion or sediment transport, such as soil excavation, grading, trenching, and soil stockpiling. The use of heavy equipment during construction of the Project would potentially result in soil compaction. Compacting the soil would result in increased density and would reduce the soil's ability to absorb precipitation. Therefore, soil compaction may result in increased surface water run-off, erosion, and sedimentation.

As described above, the Project would be required to obtain coverage under a Construction General Permit at the time of construction and develop a project-specific SWPPP, DESCP and Dust Control Plan which would include BMPs to control erosion and prevent off-site sedimentation, in accordance with existing CEC requirements and SJVAPCD regulations. Therefore, with adherence to existing regulations and implementation of the Project-specific Dust Control Plan, SWPPP and DESCP, impacts related to water and wind erosion, and soil compaction would be less than significant.

Operation

Less than Significant Impact. As described above, soil associated with the utility switchyard location has a moderate erosion potential. However, operation and maintenance activities are not anticipated to involve substantial amounts of grading or soil movement that would cause a substantial loss of topsoil. As described above, operators of the utility switchyard would be required to comply with measures included in the DESCP to minimize soil erosion during operation and maintenance activities, such that impacts related to soil erosion and loss of topsoil are reduced. With implementation of the DESCP, which would include BMPs to control erosion and prevent off-site sedimentation, impacts during operation of this Project component would be less than significant.

Overall Project

Less than Significant Impact. Soils associated with the Project site have a moderate erosion potential. The primary source of erosion would be during initial site ground disturbance and construction and from storm water runoff. However, all Project components are sited in areas with relatively flat topography. As described above, the Project would be required to obtain coverage under a Construction General Permit at the time of construction and develop a project-specific SWPPP, DESCP and Dust Control Plan which would include BMPs to control erosion and prevent off-site sedimentation, in accordance with existing CEC requirements and SJVAPCD regulations. Therefore, with adherence to existing regulations and implementation of the Project-specific Dust Control Plan, SWPPP and DESCP, impacts from construction and operation related to water and wind erosion, and soil compaction would be less than significant.

Impact SOI-2

Threshold:	Would the project be located on expansive soil, as defined in Table 18-1-B of the UBC (International Code Council 1994), creating substantial direct or indirect risks to life or property?

Solar Facility, Step-Up Substation, and Gen-Tie

Construction

Less Than Significant Impact. The soils that predominately underlie the solar facility, Options 1 and 2 step-up substation, and gen-tie line corridor (Tranquility clay, Ciervo complex, and Ciervo clay) have a LEP of greater than 6, indicating a high shrink-swell class (NRCS 2000). Therefore, there is a risk of expansive soil associated with construction of these Project components. In accordance with California Building Code (CBC) requirements, a project-specific geotechnical investigation is currently being prepared to evaluate soil conditions and geologic hazards on the Project site, including expansive soils. Compliance with CBC requirements, as well as implementation of the recommendations included in the geotechnical report, would ensure construction of these Project components does not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

Operation

Less Than Significant Impact. As discussed above, potentially expansive soils present at the Project site would be addressed during Project design and construction in compliance with CBC requirements such that the solar facility, Options 1 and 2 step-up substation, and gen-tie line components would not operate on expansive soils. Therefore, operation of these Project components would not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

BESS

Construction

Less Than Significant Impact. The soils that predominately underlie the Options 1 and 2 BESS component (Tranquility clay and Ciervo complex) have a LEP of greater than 6, indicating a high shrink-swell class (NRCS 2000). Therefore, there is a risk of expansive soil associated with construction of this Project component. In accordance with CBC requirements, a project-specific geotechnical investigation is currently being prepared to evaluate soil conditions and geologic hazards on the Project site, including expansive soils. Compliance with CBC requirements, as well as implementation of the recommendations included in the geotechnical report, would ensure construction of this Project component does not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

Operation

Less Than Significant Impact. As discussed above, potentially expansive soils present at the Project site would be addressed during Project design and construction in compliance with CBC requirements such that the Options 1 and 2 BESS component would not operate on expansive soils.

Therefore, operation of this Project component would not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

Green Hydrogen

Construction

Less Than Significant Impact. The soils that predominately underlie the Options 1 and 2 green hydrogen component (Tranquility clay and Ciervo complex) have a LEP of greater than 6, indicating a high shrink-swell class (NRCS 2000). The soils that predominately underlie the alternate green hydrogen site (Panoche loam and Panoche sandy loam) have a LEP of 3 to 6, indicating a moderate shrink-swell class (NRCS 2000). Therefore, there is a risk of expansive soil associated with construction of this Project component. In accordance with CBC requirements, a project-specific geotechnical investigation is currently being prepared to evaluate soil conditions and geologic hazards on the Project site, including expansive soils. Compliance with CBC requirements, as well as implementation of the recommendations included in the geotechnical report, would ensure construction of this Project component does not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

Operation

Less Than Significant Impact. As discussed above, potentially expansive soils present at the Project site would be addressed during Project design and construction in compliance with CBC requirements such that the green hydrogen component would not operate on expansive soils within the Options 1 and 2, or alternate component site locations. Therefore, operation of this Project component would not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

Utility Switchyard

Construction

Less Than Significant Impact. The utility switchyard overlies soil predominantly classified as Panoche sandy loam, which has an LEP of 3 – 6 (NRCS 2000), indicating a moderate shrink-swell class. Therefore, there is a risk of expansive soil associated with construction of this Project component. In accordance with CBC requirements, a project-specific geotechnical investigation is currently being prepared to evaluate soil conditions and geologic hazards on the Project site, including expansive soils. Compliance with CBC requirements, as well as implementation of the recommendations included in the geotechnical report, would ensure construction of this Project component does not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

Operation

Less Than Significant Impact. As discussed above, potentially expansive soils present at the Project site would be addressed during Project design and construction in compliance with CBC requirements such that the utility switchyard would not operate on expansive soils. Therefore, operation of this Project component would not directly or indirectly create substantial risk to life or property due to expansive soils, and impacts would be less than significant.

Overall Project

Less Than Significant Impact. The soils that predominately underlie the Project site have moderate to high shrink-swell classes. As detailed above, overall Project construction would adhere to the specifications, procedures, and site conditions contained in the geotechnical report and final design plans, which would be fully compliant with the seismic recommendations provided by the California-registered professional engineer in accordance with CBC requirements. Potentially expansive soils present at the Project site would be addressed during Project construction in compliance with CBC requirements such that Project components would not operate on expansive soils. Therefore, construction and operation of the overall Project would not create substantial direct or indirect risks to life or property due to expansive soils, and impacts would be less than significant.

Impact SOI-3

Threshold:	Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use;

Please see Section 5.2, *Land Use*, for a discussion of potential impacts related to this impact evaluation criterion.

Impact SOI-4

Threshold:	Would the project have a substantial adverse effect on state or federally protected wetlands?

Please see Section 5.12, *Biological Resources*, for a discussion of potential impacts related to this impact evaluation criterion.

5.14.4 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable projects to become significant.

Overall Project

The geographic scope for cumulative soils impacts is limited to development sites in close proximity to the Project site. This geographic scope is appropriate for soils because soils impacts, such as erosion and loss of topsoil, can affect adjacent sites but do not typically impact regional areas in a cumulative manner. Soil risks, such as expansive soils, are generally site-specific and depend on localized soil conditions. Development of other projects in the area would increase ground disturbance in the vicinity of the Project site, which would have the potential to result in erosion and loss of topsoil in the area. However, similar to this Project, other projects would be required to adhere to the NPDES Program and prepare a site-specific SWPPP that includes BMPs to minimize erosion and runoff. The SWPPP would be reviewed and approved by the RWQCB. Adherence to all federal, State, and local programs, requirements, and policies pertaining to soil erosion and soil hazards would limit cumulative impacts related to soils to a less than significant level.

Utility Switchyard

Construction and operation of the utility switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, cumulative impacts related to soils would be less than significant.

5.14.5 Laws, Ordinances, Regulations, and Standards

The LORS that may apply to the Project related to soils are summarized in Table 5.14-4. The local LORS discussed in this section are ordinances, plans, or policies of Fresno County.

Table 5.14-4 LORS Applicable to Soils

Jurisdiction	LORS	Applicability	Opt-In Application Reference	Project Conformity
Federal	Clean Water Act, 1972, including amendments	Regulates stormwater and non-stormwater discharges from construction and industrial activities	Impact SOI-1	The Project would comply with the requirements of the Clean Water Act, including amendments, through NPDES compliance.
State	California Environmental Quality Act (CEQA)	Requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of the Project and to reduce environmental impacts to the extent feasible.	Throughout this Opt-In Application	The Project's approval by the CEC would comply with CEQA, as required by the CEC's Opt-In Application process.
State	Porter-Cologne Water Quality Control Act	Regulates discharges of waste to state waters and land	Impact SOI-1	The Project would comply with the requirements set forth in the Porter-Cologne Water Quality Control Act through NPDES compliance.
State	Department of Water Quality, Construction General Permit, SWPPP	Requirements for Application for General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order 2009-0009-DWQ as amended by Order 2010-0014-DWQ	Impact SOI-1	The Project would comply with Order 2009-0009-DWQ as amended by Order 2010-0014-DWQ, and the Applicant would prepare a SWPPP.
State	Central Valley Region Basin Plan	Regulates discharges of waste to Central Valley waters and land	Impact SOI-1	The Project would comply with requirements set forth in the Central Valley Region Basin Plan through NPDES compliance.
State	Table 18-1-B of the Uniform Building Code (ICC 1994)	Regulations for soils and foundations, including standards for defining expansive soils	Impact SOI-2	Project construction would comply with soil and foundation recommendations in accordance with Uniform Building Code requirements.

Jurisdiction	LORS	Applicability	Opt-In Application Reference	Project Conformity
State	California Building Standards Code (CCR Title 24, Part 2, Chapters 18 and 18A) (2022)	Sets the requirements for general building design and construction	Impact SOI-2	Project construction would comply with building and design recommendations in accordance with CBC requirements.
Local	Fresno County Code of Ordinances: Title 15 and Title 17	Standards for permits, grading, excavation, and water quality	5.14.5	The Project would adhere to the standards within Title 15 and Title 17 and obtain all necessary permits prior to construction.
Local	Fresno County General Plan: Policy HS-A Policy HS-D.3 Policy HS-D.4 Policy HS-D.8 Policy HS-D.9 Policy HS-D.12	Requirements for Site Plan Reviews, Environmental Assessments, and for building on native soils	5.14.5	The Project would conform with applicable Policies in the Fresno County General Plan through compliance with recommendations in the geotechnical report and Phase I ESAs, as well as CBC requirements.
Local	Fresno County Multi-Jurisdictional Hazard Mitigation Plan: Policy HS-D.1, HS-D.3, HS-D.4, HS-D.7, HS-D.8, HS-D.10, HS-D.11	These policies ensure that utility facilities are sited to minimize susceptibility to the effects of soil erosion, expansive soils, and land subsidence.	Impact SOI-1 Impact SOI-2	Project components would be sited in a relatively flat area and would not be substantially susceptible to soil-related hazards. The Project would conform with applicable Policies through compliance with recommendations in the geotechnical report and Phase I ESAs, as well as CBC requirements.

Sources: California Code of Regulations, Fresno County Code of Ordinances, Fresno County 2000, Fresno County 2023

5.14.5.1 Federal LORS

Clean Water Act

The Clean Water Act establishes requirements for discharges of stormwater or wastewater from any point source that would affect the beneficial uses of waters of the United States. Section 402 of the CWA effectively prohibits discharges of stormwater from construction sites unless the discharge is in compliance with an NPDES permit. The State Water Resources Control Board (SWRCB) is the permitting authority in California and has adopted a statewide general permit for stormwater discharges associated with construction activity (SWRCB 2012) that applies to projects resulting in 1 or more acres of soil disturbance. The Project would result in disturbance of more than 1 acre of soil. Therefore, the project would need to be covered under the General Construction Permit (SWRCB 2012) and develop and implement a site-specific SWPPP to meet permit requirements. Requirements are described in greater detail in Section 5.13, *Water Resources*.

5.14.5.2 State LORS

California Environmental Quality Act

CEQA requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of the Project and to reduce environmental impacts to the extent feasible. Appendix G of the CEQA Guidelines includes criteria for evaluating potential impacts related to soils.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code, Division 7) is the State law governing water quality of all state waters, including both surface waters and groundwater. Under the Porter-Cologne Water Quality Control Act, SWRCB has the ultimate authority over water quality policy on a state-wide level, and nine RWQCBs establish and implement water quality standards specific for each respective region. The Central Valley RWQCB regulates water quality in the Project area, and the Project would need to meet water quality standards that are identified in the Water Quality Control Plan for this region.

Department of Water Quality, Stormwater General Construction Permit

The five-member SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine RWQCBs in the major watersheds of the state. The joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California's waters.

In 1999, the state adopted the Construction Activities General Permit (SWRCB Order No. 2012-0006-DWQ, NPDES No. CAS000002). The General Construction Permit generally requires that construction sites with 1 acre or greater of soil disturbance, or less than 1 acre but part of a greater common plan of development, apply for coverage for discharges under the General Construction Permit by submitting a Notice of Intent for coverage, developing a SWPPP, and implementing BMPs to address construction site pollutants if the Project is deemed to discharge into a water of the U.S. For the duration of the construction of the Project, BMPs will be implemented in accordance with the Project-specific SWPPP.

Central Valley Region Basin Plan

The Basin Plan (Water Quality Control Plan) for the Central Valley Region establishes water quality standards for the ground and surface waters of the region. The Basin Plan includes an implementation plan describing the actions by RWQCB and others that are necessary to achieve and maintain the water quality standards. The Central Valley RWQCB regulates waste discharges to minimize and control effects of the quality of the region's water, and it is the permitting agency for discharge.

Uniform Building Code

Chapter 18 of the International Building Code and Table 18-1-B of the Uniform Building Code (ICC 2000 and ICC 1997) describe the allowable soil bearing capacity of different types of soils, including expansive soils. Project construction would comply with soil and foundation recommendations in accordance with Uniform Building Code requirements.

California Building Standards Code

The Project is subject to the applicable sections of Title 24, Part 2 of the CBC, which is administered by the California Building Standards Commission. Under state law, all building standards must be centralized in Title 24 to be enforceable. The CBC sets the requirements for general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. CBC provisions provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures and certain equipment (ICC 2023). The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure—or any appurtenances connected or attached to such buildings or structures—throughout California.

5.14.5.3 Local LORS

Fresno County Code of Ordinances

The Fresno County Code of Ordinances largely adopts the CBC with specific edits. Title 15 – Building and Construction and Title 17 – Divisions of Land of the Fresno County Code of Ordinances includes building and construction requirements to reduce hazard potential that are applicable to all new constructions, including the Project. These requirements include, but are not limited to:

- **Grading and Excavation – Chapter 15.28.** Adopts Chapter 18, Chapter 33, and Appendix J of the 2019 CBC and Section R300 of the California Residential Code except as noted in Chapter 15.28.020 of the COO. Requires the construction of new non-residential development projects to obtain a building or grading permit, explains grading permit requirements, and provides additional details on grading, slopes, and drainage/erosion control.
- **Preliminary Soils Report – Chapter 17.32.030**. Requires a Preliminary Soils Report to be prepared by a registered civil engineer.

Due to the authority of the CEC through the Opt-in application process, the Project would not be subject to receiving a building or grading permit from the County of Fresno and would not be required to fulfill that requirement of Chapter 15.28 of the Fresno County Code of Ordinances.

Fresno County General Plan

California Senate Bill 271 Assembly Bill 2038 required that counties and cities adopt General Plan policies regarding natural hazards. The County of Fresno's General Plan provides direction and resources intended to mitigate death, injuries, and environmental and economic damage. The Fresno County General Plan contains several policies that are applicable to the Project, including, but not limited to:

- **Goal HS-A**: To protect public health and safety by preparing for, responding to, and recovering from the effects of natural or technological disasters.
- **Policy HS-D.3:** The County shall require that a soils engineering and geologic-seismic analysis be prepared by a California-registered engineer or engineering geologist prior to permitting development, including public infrastructure projects, in areas prone to geologic or seismic hazards (i.e., fault rupture, groundshaking, lateral spreading, lurchcracking, fault creep, liquefaction, subsidence, settlement, landslides, mudslides, unstable slopes, or avalanche).

- **Policy HS-D.4:** The County shall require all proposed structures, additions to structures, utilities, or public facilities situated within areas subject to geologic-seismic hazards as identified in the soils engineering and geologic-seismic analysis to be sited, designed, and constructed in accordance with applicable provisions of the Uniform Building Code (Title 24 of the California Code of Regulations) and other relevant professional standards to minimize or prevent damage or loss and to minimize the risk to public safety.
- **Policy HS-D.8:** The County shall require a soils report by a California-registered engineer or engineering geologist for any proposed development, including public infrastructure projects, that requires a County permit and is located in an area containing soils with high "expansive" or "shrink-swell" properties. Development in such areas shall be prohibited unless suitable design and construction measures are incorporated to reduce the potential risks associated with these conditions.
- **Policy HS-D.9:** The County shall seek to minimize soil erosion by maintaining compatible land uses, suitable building designs, and appropriate construction techniques. Contour grading, where feasible, and revegetation shall be required to mitigate the appearance of engineered slopes and to control erosion.
- **Policy HS-D.12**: In known or potential landslide hazard areas, the County shall prohibit avoidable alteration of land in a manner that could increase the hazard, including concentration of water through drainage, irrigation, or septic systems, undercutting the bases of slopes, removal of vegetative cover, and steepening of slopes.

Fresno County Multi-Jurisdictional Hazard Mitigation Plan

The Fresno County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) is intended to improve the resiliency in the community by identifying natural hazards present in Fresno County (including soil hazards), determining the community's vulnerability to each hazard, and identifying development mitigation strategies to reduce vulnerability before emergency situations develop. Fresno County's MJHMP was adopted in 2009 and most recently updated in 2018. Soil hazards included in the MJMHP are erosion, expansive soils, and land subsidence (County of Fresno 2018). The MJHMP contains several policies that are applicable to the Project, including, but not limited to:

- **Policy HS-D.1:** The County shall continue to support scientific geologic investigations that refine, enlarge, and improve the body of knowledge on active fault zones, unstable areas, severe groundshaking, avalanche potential, and other hazardous geologic conditions in Fresno County.
- **Policy HS-D.3**: The County shall require that a soils engineering and geologic-seismic analysis be prepared by a California-registered engineer or engineering geologist prior to permitting development, including public infrastructure projects, in areas prone to geologic or seismic hazards (i.e., fault rupture, ground shaking, lateral spreading, lurchcracking, fault creep, liquefaction, subsidence, settlement, landslides, mudslides, unstable slopes, or avalanche).
- **Policy HS-D.4**: The County shall require all proposed structures, additions to structures, utilities, or public facilities situated within areas subject to geologic-seismic hazards as identified in the soils engineering and geologic-seismic analysis to be sited, designed, and constructed in accordance with applicable provisions of the Uniform Building Code (Title 24 of the California Code of Regulations) and other relevant professional standards to minimize or prevent damage or loss and to minimize the risk to public safety.
- **Policy HS-D.7**: The County shall require a soils report by a California-registered engineer or engineering geologist for any proposed development, including public infrastructure projects,

that requires a County permit and is located in an area containing soils with high "expansive" or "shrink-swell" properties. Development in such areas shall be prohibited unless suitable design and construction measures are incorporated to reduce the potential risks associated with these conditions.

- **Policy HS-D.8**: The County shall seek to minimize soil erosion by maintaining compatible land uses, suitable building designs, and appropriate construction techniques. Contour grading, where feasible, and revegetation shall be required to mitigate the appearance of engineered slopes and to control erosion.
- **Policy HS-D.10**: The County shall not approve a County permit for new development, including public infrastructure projects where slopes are over 30 percent unless it can be demonstrated by a California-registered civil engineer or engineering geologist that hazards to public safety will be reduced to acceptable levels.
- **Policy HS-D.11**: In known or potential landslide hazard areas, the County shall prohibit avoidable alteration of land in a manner that could increase the hazard, including concentration of water through drainage, irrigation, or septic systems, undercutting the bases of slopes, removal of vegetative cover, and steepening of slopes.

5.14.6 Agencies and Agency Contact

Applicable agency contacts for soils-related permits and approvals are shown in Table 5.14-6.

Table 5.14-5 Agency Contacts for Soils

Issue	Agency	Contact
General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (i.e., National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit)	Central Valley RWQCB (Region 5)	Kari Holmes (916) 464-4848 Kari.Holmes@waterboards.ca.gov

5.14.7 Permits and Permit Schedule

The NPDES permit is discussed in Section 5.13, *Water Resources*. Applicable permits and permit schedule related to soils are shown in Table 5.14-6. The Project would not require building and grading permits from the County of Fresno due to certification through the CEC Opt-In application process.

Table 5.14-6 Permits and Permit Schedule for Soils

Permit	Schedule	Status
NPDES	After Project approval	Discussed in Section 5.13, *Water Resources*

Source: Fresno County

5.14.8 References

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