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Description:	This section describes cultural resources, inclusive of archaeological, built environment, and tribal cultural resources, in and near the Darden Clean Energy Project, and the potential effects the Project may have on these resources.
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5.1 Cultural Resources and Tribal Cultural Resources

This section describes cultural resources, inclusive of archaeological, built environment, and tribal cultural resources, in and near the Darden Clean Energy Project (Project), and the potential effects the Project may have on these resources. The details provided herein are based on the Darden Clean Energy Project Cultural Resources Technical Report prepared by Rincon Consultants, Inc. (Rincon; 2023). The cultural resources technical report is included as Confidential Appendix I. Section 5.1.1 describes the environmental setting, including an overview of the cultural chronology and ethnographic setting. Section 5.1.2 presents the results of the resources inventory including the results of archival research, pedestrian surveys, and Native American consultation conducted on behalf of the Project both in and near the Project site. Section 5.1.3 provides an overview of the regulatory setting related to cultural resources. Section 5.1.4 presents an environmental analysis of the Project, including standards of significance, potential impacts of Project construction and operation (including maintenance) on cultural resources, as well as mitigation measures that should be considered during Project construction and operation. Section 5.1.5 evaluates any potential cumulative impacts on cultural resources in the Project vicinity. Section 5.1.6 describes the laws, ordinances, regulations, and standards (LORS) that apply to the Project. Section 5.1.7 identifies regulatory agency contacts, and Section 5.1.8 describes permits required for the Project related to cultural resources. Finally, a full compilation of the references used to prepare this section is provided in Section 5.1.9.

5.1.1 Environmental Setting

The Project site is located in western Fresno County at an approximate elevation ranging from 175 to 600 feet (ft) (53 to 183 meters (m)) above mean sea level. Prior to the establishment of agricultural fields, vegetation communities in the Project site consisted of valley grassland communities. The surrounding area does not retain much of its natural setting, as the area has historically been used for agricultural purposes. Historically, Cantua Creek terminated west of the Project site, near the intersection of West Davis Avenue and South Amador Avenue (United States Geological Survey [USGS] 2022). Fresno Slough is approximately 1.7 miles (2.7 kilometers (km)) northeast of the Project site. These two watercourses, one intermittent (Cantua Creek) and one perennial (Fresno Slough), likely provided water resources to Native American tribes around the area, as well as historic-period settlers.

The Project site is in the Great Valley geomorphic province, one of the 11 geomorphic provinces of California (California Geological Survey 2002). The Great Valley is predominantly alluvial, flood, and delta plains formed by these two major riversystems. All sediments underlying the Project site are mapped as Holocene-aged alluvium (Chin et al. 1993) and date to the era of human occupation. However, the origin of these Holocene sediments differs depending on the proximity to alluvial waterways and higher-elevation areas. Due to the episodic nature of alluvial sedimentation, the sudden burial of artifacts is possible, and alluvial soils have an increased likelihood of containing buried archaeological deposits (Waters 1983).

5.1.1.1 Cultural Chronology

The Central Valley has been described as one of the largest intermontane basins in California, extending 404 miles (650 km) from the Siskiyou to the Tehachapi mountains (Rosenthal et al. 2007). No single chronological framework covers the entirety of the Central Valley, but California prehistory is generally divided into three broad time periods: the Paleoindian Period (ca. 11,550 to

8550 Before Common Era (BCE)), the Archaic Period (8550 BCE to Common Era (CE) 1100), and the Emergent Occupation (CE 1000 to European Contact) (Fredrickson 1973, 1974). The cultural chronology has been updated and adjusted by Rosenthal et al. (2007) to further separate the Archaic Period into Lower (8550 BCE to 5550 BCE), Middle (5550 BCE to 550 BCE), and Upper (550 BCE to CE 1100). The prehistoric chronological sequence for the Central Valley presented below is based on Rosenthal et al. (2007) and Moratto (1984).

Paleoindian Period (11,550 to 8550 BCE)

Little is currently known about the Paleoindian Period in the Central Valley. Geoarchaeological studies have demonstrated that erosion and deposition have buried or destroyed early archaeological deposits. Most claims of ancient human occupation have been dismissed by Moratto (1984) based on radiocarbon dating. This period is represented by isolated finds, and currently, the earliest accepted date of human occupation in the Central Valley ranges from 11,550 to 9550 BCE and comes from fluted projectile points similar to Clovis points found at sites near Tracy Lake and the Tulare Lake Basin. Along with fluted projectile points, concave base points have been discovered along the Tulare Lake shoreline which was occupied during the Late Pleistocene (Rosenthal et al. 2007).

Lower Archaic (8550 to 5550 BCE)

Climate change at the end of the Pleistocene caused significant periods of alluvial deposition beginning around 9050 BCE. These new alluvial deposits created a clear stratigraphic boundary between the Late Pleistocene and Holocene sediments. The Lower Archaic, like the Paleoindian Period, is represented only by limited isolated finds. Only one Lower Archaic site (KER-116) has been identified in the Central Valley proper and few in the foothills surrounding the valley (Rosenthal et al. 2007).

The relationship between foothill and valley floor adaptations is largely unknown during the Lower Archaic; however, it is suggested that the foothill sites may have been seasonally used during this time. More distinct adaptations are apparent in the Middle Archaic, and it is possible that these divergent traditions first emerged in the Lower Archaic (Rosenthal et al. 2007).

Middle Archaic (5550 to 550 BCE)

The Middle Archaic began with substantial climate change to much warmer, drier conditions. Tulare Lake shrank and eventually disappeared. With this came new wetlands that created new habitats, and rising sea levels led to the creation of the Sacramento-San Joaquin Delta, creating new deposits. Fans and floodplains stabilized after an initial period of deposition in 5550 BCE. Archaeological deposits dating to the Middle Archaic are rare in the Central Valley proper due to these geomorphic changes. The Middle Archaic record has revealed a pattern of organized subsistence strategies and increased residential stability. The archetypal pattern of the Middle Archaic has been identified as the Windmiller Pattern. This pattern is represented by extended burials oriented to the west and a sophisticated material culture (Rosenthal et al. 2007).

During this time, the mortar and pestle become more widespread, suggesting a shift toward more intensive subsistence practices and a higher reliance on acorn. Fishing technologies, such as bone gorges, hooks, and spears, also appear during the Middle Archaic, suggesting a new focus on fishing, especially in the Marsh Creek area. Several other technologies become apparent during this time. Baked-clay impressions of twined basketry, simple pottery, and other baked clay objects have been found at several sites. Personal adornment items also become more frequent. Exchange with

outside groups is evidenced by the presence of obsidian, shell beads, and ornaments (Rosenthal et al. 2007, Moratto 1984, Burns et al. 2012). Trade also seemed to be focused on utilitarian items such as obsidian or finished obsidian tools from at least five separate sources (Moratto 1984).

Upper Archaic (550 BCE to CE 1100)

The Upper Archaic began with the onset of the Late Holocene, marked by a cooler, wetter climate. The environmental conditions of the Upper Archaic were characterized by the return of lakes that had disappeared during the Middle Archaic and a renewed fan and floodplain deposition. The Upper Archaic is better represented in the archaeological record than earlier periods. Cultural diversity was more pronounced and is marked by contrasting material cultures throughout the valley (Rosenthal et al. 2007).

During this period, numerous specialized technologies were developed such as bone tools, and implements, manufactured goods such as Olivella and *Haliotis* beads and ornaments, well-made ceremonial blades, and ground-stone plummets. People living in the San Joaquin Valley region traded with neighboring groups for obsidian.

Upper Archaic Period economies varied by region throughout the Central Valley. Economies were primarily focused on seasonal resources such as acorns, salmon, shellfish, rabbits, and deer (Rosenthal et al. 2007).

Emergent Occupation (CE 1000 to Historic)

The stable climatic conditions of the Upper Archaic continued into the Emergent Period. There has been sporadic research in the San Joaquin Valley on this time period, and thus only the Pacheco Complex on the western edge of the valley has been formally defined. After CE 1000, many of the technologies witnessed during the Archaic disappeared to be replaced by cultural traditions witnessed at European contact. During the Emergent Period, the bow and arrow replaced the atlatl as the preferred hunting method sometime between CE 1000 and 1300.

Increased social complexity is evidenced by increased variation in burial types and offerings and larger residential communities. Grave offerings such as shell beads, ornaments, and ritually “killed” mortars and pestles are often found in burials. Pottery was frequently obtained through trade with groups living in the foothills to the east. The Panoche side-notched point became important in the western side of the San Joaquin Valley (Rosenthal et al. 2007). In addition to the side-notched point, the Panoche Complex featured large circular structures, flexed burials, marine shell beads, bone awls, milling stones, and mortars and pestles (Moratto 1984).

As with the Archaic Period, Emergent Period economies varied geographically, although throughout the Central Valley fishing and plant harvesting increased in importance. Most Emergent Period residential sites contain diverse assemblages of mammal and bird remains and large amounts of fish bone. After 1,000 years, the mortar and pestle become the dominant tool type and small seeds increase in archaeological deposits over time (Rosenthal et al. 2007).

5.1.1.2 Ethnographic Setting

The Project site is located in the traditional territory of the Penutian-speaking Yokuts, which includes San Joaquin Valley and surrounding foothills (Kroeber 1925, Wallace 1978). Three geographical divisions of the Yokuts are the Northern Valley, Southern Valley, and Foothill Yokuts. The distinction between the three groups is primarily based on language dialect (Mithun 2001). The Project is located at the approximate boundary between the ethnographic territories of the

Northern and Southern Valley Yokuts, though is likely located within the ethnographic territory of the Southern Valley Yokuts, who occupied the southern San Joaquin Valley south of the San Joaquin River, to the foot of the Tehachapi Mountains. More specifically, the vicinity of the Project site was likely within the territory of the Tachi (Wallace 1978).

The Yokuts established large permanent village settlements, or closely associated smaller settlements. Residential structures were most often of two types: single-family dwellings and larger communal residences that housed 10 families or more. Villages frequently included mat-covered granaries and a sweathouse (Mithun 2001, Sutton et al. 2016). The closest known village sites to the Project site were “Golon”, near the present-day community of Huron (approximately 16 miles south of the Project site); and “Udjiu”, in a location later known as Posa de Chine or Poso Chane (approximately 18 miles south of the Project site) (Wallace 1978; Hoover et al. 2002). Most of the western San Joaquin Valley is regarded as too arid to have supported permanent village sites, though the area was likely used for hunting and utilized for travel (Gayton 1945). The western periphery of the San Joaquin Valley was spanned by a major Native American trail, known by the Spanish name El Camino Viejo (Hoover et al. 2002; Davis 1961). El Camino Viejo stretched from modern-day Los Angeles to Alameda County, and Cantua Creek served as a campsite along the route (Hoover et al. 2002). Prominent intersecting east-west trails were likely found along Panoche Creek (20 miles (32 km) north of Project site) and Los Gatos Creek (16 miles (26 km) south of Project site), connecting Yokuts communities to their western neighbors through the Coast Range (Heizer 1978; Arkush 1993). The Fresno Slough and other waterways also served as travel corridors by tule raft (Wallace 1978; Gayton 1945).

The basic economic unit among the Yokuts was the nuclear family. The nuclear family was linked to totemic lineages based on patrilineal descent. Totem symbols were passed from father to offspring. Families that shared the same totem formed an exogamous lineage. Totems were associated with one of two moieties. This moiety division played a role during ceremonies and other social events (Wallace 1978). Yokuts were split into self-governing local groups that included several villages. Each group had a chief who directed ceremonies, mediated disputes, handled punishment of those doing wrong, hosted visitors, and provided aid to the impoverished. In certain cases, settlements had two chiefs, one for each moiety. Other political positions included the chief’s messenger and the spokesman (Wallace 1978).

Shamans were an important part of Yokut village life. A Yokut Shaman gained power through a dream or vision. If, after this vision, the man accepted the role as shaman, he would pray, fast, and acquire talismans to aid him in his future work. Shamans had the ability to heal the sick and served a primary role in religious life (Wallace 1978).

Yokuts subsistence strategy was based on a mixed economy focused on fishing, collecting, and hunting small game. Fishermen employed tule rafts and caught fish with nets, spears, basket traps, and bow and arrow. They often gathered mussels and hunted turtles in lakes, rivers, and streams. Wild seeds and roots contributed a large portion to the Yokuts diet. Tule roots were gathered, dried, and pounded into a flour that was prepared as a mush. Tule seeds and grass and flowering herb seeds were prepared in the same way. Leaves and stems of certain plants, such as clover and fiddleneck, were also collected. Acorns, a staple of most California Native Americans, were not readily available in the ethnographic territory of the Yokuts. Some Yokuts tribes traded for acorns with neighboring groups, such as the Salinan and Chumash to the west, the Foothill Yokuts to the east, and the Kawaiisu and Kitanemuk to the southeast (Kroeber 1925). Waterfowl was frequently hunted with snares, nets, and bow and arrow. Land mammals and birds contributed a smaller part

of the Yokuts diet. Small game was occasionally taken in snares or traps or shot with bow and arrow (Wallace 1978, Sutton et al. 2016).

Yokuts technology depended primarily on tule. Stems of the plant served as the raw material for baskets, cradles, boats, housing, and many other items. *Manos* and *metate*s were used to process food and animal hides (Barton et al. 2010, Sutton et al. 2016). Tools such as knives, projectile points, and scraping tools were made from imported lithic materials, because stone was not readily available in the Central Valley. Some tools, such as bead drills, could be made from obsidian obtained from some distance or obtained through trade (Sutton et al. 2016). Marine shells secured through trade with coastal groups were used as shell money and personal adornment items, such as *Olivella* beads (Sutton et al. 2016, Wallace 1978).

5.1.1.3 Post-Contact and Historic Period Setting

Post-contact history for the state of California is generally divided into three periods: the Spanish Period (1769 to 1822), Mexican Period (1822 to 1848), and American Period (1848 to present). Although Spanish, Russian, and British explorers visited California for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between 1769 and 1823. Independence from Spain in 1821 marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican-American War, signals the beginning of the American Period when California became a territory of the United States.

Spanish Period (1769 to 1822)

Spanish explorers made sailing expeditions along the coast of California between the mid-1500s and mid-1700s. Juan Rodriguez Cabrillo in 1542 led the first European expedition to observe what was known by the Spanish as Alta (upper) California. For more than 200 years, Cabrillo and other Spanish, Portuguese, British, and Russian explorers sailed the Alta California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968, Rolle 2003). The Spanish crown laid claim to Alta California based on the surveys conducted by Cabrílllo and Vizcaíno (Bancroft 1885, Gumprecht 1999). The first documented interaction between Spaniards and Yokuts occurred in 1772, when Captain Pedro Fages traveled to the San Joaquin Valley by way of Tejon Pass (Arkush 1993).

By the eighteenth century, Spain developed a three-pronged approach to secure its hold on the territory and counter against other foreign explorers. The Spanish established military forts known as presidios, as well as missions and pueblos (towns) throughout Alta California. The 1769 overland expedition by Captain Gaspár de Portolá marks the beginning of California's Historic Period, occurring just after the King of Spain installed the Franciscan Order to direct religious and colonization matters in assigned territories of the Americas. Construction of missions and associated presidios was a major emphasis during the Spanish Period in California to integrate the Native American population into Christianity and communal enterprise. Incentives were also provided to bring settlers to pueblos or towns. Although the encroachment of Spanish settlements was generally focused along the coast, by the end of Spanish rule in California, a few Hispanic settlements were established in modern-day Fresno County: Poso Chane, a small agricultural community and waystation along the El Camino Viejo that was built in the former location of the Yokuts village of "Udjiu"; and Pueblo de las Juntas, a community near modern-day Mendota (19

miles north of Project site) (Hoover et al. 2002). The Spanish utilized El Camino Viejo for oxcart travel north to the Bay Area and south to the area of modern-day Los Angeles.

Although no missions are located near the Project site, baptismal records indicate that Yokuts speakers comprised a significant portion of the populations at multiple missions, including Mission Santa Clara (founded in 1777), Mission Nuestra Senora de la Soledad (founded in 1791), Mission Santa Cruz (founded in 1791), Mission San Juan Batista (founded in 1797), and Mission San José (founded in 1797) (Milliken et al. 2009). Having already destabilized coastal populations, the missions attempted to replenish their neophyte populations with Native groups living further inland (Sandos and Sandos 2014). Individuals from two Yokuts groups, the Eyulaluas of the Firebaugh vicinity and the Copchas from the vicinity of Mendota, were relocated to Mission San Juan Batista between 1817 and 1819 (Milliken et al. 2009). Baptismal records also indicate that small groups of Yokuts speakers linked to the Mendota-Tranquillity and Tulare Lake regions relocated to Mission Nuestra Senora de la Soledad between 1806 and 1817. Many fled the missions and sought shelter in California's interior regions, including the greater Central Valley (Arkush 1993). Concurrently, some Native American groups began raiding Spanish properties and seizing livestock, leading to the spread of ranching practices outside of the missions' control. By the time of Mexican independence, Native vaqueros were some of the main participants in the hide and tallow economy, and equestrian practices were well-known among the Yokuts (Zappia 2012). Despite efforts to push occupation inland, the Spanish never gained control of the Sacramento or San Joaquin Valleys (Arkush 1993).

Spain began making land grants in 1784, typically to retiring soldiers, although the grantees were only permitted to inhabit and work the land. The land titles technically remained property of the Spanish king (Livingston 1914).

Mexican Period (1822 to 1848)

Several factors kept growth within Alta California to a minimum, including the threat of foreign invasion, political dissatisfaction, and unrest among the indigenous population. After more than a decade of intermittent rebellion and warfare, New Spain won independence from Spain in 1821. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants (Dallas 1955).

Extensive land grants were established in the interior during the Mexican Period, in part to increase the population inland from the more settled coastal areas where the Spanish had first concentrated their colonization efforts. The secularization of the missions following Mexico's independence from Spain resulted in the subdivision of former mission lands and establishment of many additional ranchos. Commonly, former soldiers and well-connected Mexican families were the recipients of these land grants, which now included the title to the land. While no ranchos were established within the vicinity of the Project site, Mexican settlers lived in scattered homesteads in the Coast Range foothills adjacent to the San Joaquin Valley (Vandor 1919). Mexican settlements within the San Joaquin Valley included Pueblo de las Juntas, Poso Chine, and the community of La Libertad, located approximately 15 miles east of the Project site (Hoover et al. 2002).

During the supremacy of the ranchos (1834 to 1848), landowners largely focused on the cattle industry and devoted large tracts to grazing. Cattle hides became a primary Southern California export, providing a commodity to trade for goods from the east and other areas in the United States and Mexico. The number of nonnative inhabitants increased during this period because of the influx of explorers, trappers, and ranchers associated with the land grants. The rising California population contributed to the introduction and rise of diseases foreign to the Native American population, who

had no associated immunities. By 1833, an epidemic of malaria reached the San Joaquin Valley, with the disease potentially spread to the region by Hudson's Bay Company fur trappers entering the area in search of beaver and otter pelts (Hoover et al. 2002; Arkush 1993).

American Period (1848 to Present)

The United States went to war with Mexico in 1846. During the first year of the war, John C. Fremont traveled from Monterey to Los Angeles with reinforcements for Commodore, Stockton, and evaded Californian soldiers in Santa Barbara's Gaviota Pass by taking the route over the San Marcos grade instead (Kyle 2002). The war ended in 1848 with the Treaty of Guadalupe Hidalgo, ushering California into its American Period.

California officially became a state with the Compromise of 1850, which also designated Utah and New Mexico (with present-day Arizona) as United States territories (Waugh 2003). Horticulture and livestock, based primarily on cattle as the currency and staple of the rancho system, continued to dominate the Southern California economy through 1850s. The discovery of gold in the northern part of the state led to the Gold Rush beginning in 1848, and with the influx of people seeking gold, cattle were no longer desired mainly for their hides but also as a source of meat and other goods. During the 1850s cattle boom, rancho vaqueros drove large herds from Southern to Northern California to feed that region's burgeoning mining and commercial boom. In response to the growing economy of the San Joaquin Valley, the shipping community of Fresno City was established circa 1855, located at the head of navigation on the shallow Fresno Slough (approximately 9 miles (14 km) north of the Project site). At this time, the vicinity of the Project site was known for shepherding, with sheep camps located in the Coast Range foothills and canyon mouths. In 1875, a large shearing station was established at Poso Chine (Vandor 1919). At least one sheep camp was located near Cantua Creek, as depicted in the 1881 General Land Office Plat Map of Township 17 South, Range 14 East. In 1886, a sheep camp along Cantua Creek was owned by Matias Erro, a Basque immigrant who later became a prominent Fresno County rancher (Strentz 1962; Vandor 1919).

A severe drought in the 1860s decimated cattle herds and drastically affected rancheros' source of income. The San Joaquin Valley was also heavily affected by a great flood in 1862, impacting local communities of Poso Chine and Fresno City (Hoover et al. 2002). Arid conditions then kept the western side of the San Joaquin Valley sparsely populated and remote. Perhaps due to this remoteness, the western extent of the Project site gained a reputation for banditry, as the mythical figure of Joaquin Murrieta and the historical outlaw Tiburcio Vasquez both reportedly utilized the Cantua Creek foothills as a hideout between the 1850s to 1870s (Hoover et al. 2002; Vandor 1919). Prior to the completion of major irrigation projects, the western side of San Joaquin Valley was sparsely cultivated, with areas near Fresno Slough providing the most productive agricultural land. By the 1890s, the community of Wheatville (7 miles (11 km) west of the Project site) was established along the swamp line of Fresno Slough, irrigated by the Crescent Canal (*The Daily Morning Republican* 1891). A natural sandbar near Wheatville allowed product and travelers to cross the slough eastward, as depicted in the *Official Historical Atlas of Map of Fresno County* (1891). The community of Wheatville is no longer extant, with buildings from the former community relocated to Five Points (3 miles (4.8 km) from Project site) in the mid-twentieth century, after which the relocated buildings were apparently lost to fire (Nax 2008).

Over the course of the 1920s and into the 1940s, much of the land in the Western San Joaquin Valley was bought up by Russell Giffen, who purchased large swaths of land for cheap prices before irrigation infrastructure had caught up to demand (*The Fresno Bee* 1971). While Giffen's farm

holdings produced a variety of crops, including tomatoes, melons, alfalfa, safflower, sugar beets, and barley, Giffen's influence and success as a large-scale cotton farmer greatly contributed to the overall agricultural success of Fresno County. By the early twentieth century, cotton was Fresno County's most profitable crop, with the growth of the industry supported by fiber shortages during the first World War (Hattersley-Drayton 2013).

Cotton production continued into and following the post-World War II era. One of the larger operations in the vicinity was likely the Vista del Llano Farms, which was established in 1946 when Russell Giffen sold 54,000 acres of land to Anderson, Clayton & Company, another cotton firm located near Cantua and Mendota (*The Fresno Bee* 1946). The Anderson, Clayton & Company also contributed to the operation of Fresno County cotton oil mills, fertilizer plants, and cottons gins, primarily through its involvement with the San Joaquin Cotton Oil Company. Anderson, Clayton & Co. likely purchased Giffen's extensive lands out of concern that the cotton produced there would fall into their competitors' reach (*The Fresno Bee* 1971). The labor force for Vista del Llano Farms was often provided housing by the ranch, with seasonal workers and their families living on-site until the work was complete. The labor camps maintained by Vista del Llano Farms were not noted for their quality until the latter half of the 1950s, when updated housing, amenities, and hot meals were provided to retain workers and improve morale (*The San Francisco Examiner* 1957). In 1950, Vista del Llano Farms worked all 54,000 acres of its property in the San Joaquin Valley, with cotton listed as one its most prominent crops (*The Modesto Bee* 1950). Portions of the farm are located within and adjacent to the Project site and included a cotton gin, labor camps, and amenities for workers and their families, including a swimming pool.

Cotton continued to be the main crop for the region through the 1960s until cotton production was forcibly reduced by federal legislation aimed at preventing overproduction and stabilizing prices. In later years, cotton production was negatively affected by congressional moves to cut the agricultural subsidies that made American cotton competitive in the broader market (*The Los Angeles Times* 1970). In response, large growers spearheaded the diversification of crops. Vista del Llano Farms planted 1,500 acres of canning tomatoes and 200 acres of pimiento peppers in 1966 and sought further diversification with a move towards establishing a sesame crop in the 1970s (*The Fresno Bee* 1966, 1971). However, before the end of the 1970s, provisions to the United States Reclamation Act required the sale of all properties over 160 acres if federally controlled water was used for irrigation. This Act prompted Vista del Llano Farms to sell approximately 50,000 acres in 160-acre parcels, essentially dissolving the operation (*The Hanford Sentinel* 1976). However, after these sales, some landowners chose to lease their new properties to local farming efforts, allowing much of the same large-scale agricultural operations to continue (Mitchell 1984). Today, the land that was part of Vista del Llano Farms includes some single-family residences, but most of the former property has been continuously utilized as agricultural fields.

In addition to agriculture, oil and natural gas extraction were and are a main industry of Fresno County. The largest oil field in the county is located in Coalinga, approximately 10 miles (16 km) south of the Project site, where production began in the late nineteenth century. By the early twentieth century, the Coalinga field was yielding the majority of Fresno County's crude oil production (Andreano 1970). This boom in oil production attracted more workers to the area, with expansive work camps established by multiple enterprises in the Coalinga oil field. In addition to the larger work camps in Coalinga, bungalows and bunkhouses were built at pumping stations along pipelines to accommodate workforces in isolated locations (Hinton 2008). In the vicinity of the Project site, the nearest pumping station was the Towne Oil Station, depicted in historical USGS topographic maps in 1912, 1931, and 1950 as approximately 2 miles (3.2 km) southwest of the

proposed solar facility. This pumping station was located along a pipeline built by the Pacific Coast Oil Company, which was purchased by the Standard Oil Company in 1900, then forcibly separated after the Supreme Court ruled Standard to be an unlawful monopoly (Johnson 1970). Another nearby pumping station was the Half Way Pump Station, located approximately 2.5 miles (4 km) north of the Project site. The C. F. Weber & Co. *Map of Fresno County, California* (1914) depicts the Half Way Pump Station along an Associated Oil pipeline running north past Cantua Creek, as well as an additional Standard Oil Company pipeline crossing the Project site near the western terminus of Cantua Creek. In the early twentieth century, Standard and Associated had almost total control of crude oil transportation in the San Joaquin Valley, forming part of a pipeline monopoly (Johnson 1970). By 1956, the Towne Oil Station was abandoned, as depicted in the 1956 USGS topographic map for *Westside, California*. Today, oil production continues in Fresno County. Two oil and gas fields intersect the Project site: the Cantua Creek and Turk Anticline Fields (California Department of Conservation 2023).

California Aqueduct and the State Water Project

A major impetus to the agricultural development of the Project site and the surrounding area was the construction of the California Aqueduct through the State Water Project (SWP). In the 1940s to 1950s, the State of California and the Federal government of the United States led the Central Valley Project (CVP) which constructed reservoirs and canals in northern California creating a reliable source of water for northern Californians (Caltrans 2000). However, upon successful completion of the CVP, legislatures realized large portions of the San Joaquin Valley and Southern California did not benefit from the project and were in desperate need of water.

The SWP was authorized in 1951, and the first phase of the project, the Feather River Project (later renamed the State Water Project) was started in 1960 with construction of the Oroville Dam on the Feather River in Northern California (Caltrans 2000). The stored water from the dam was conveyed through the Feather and Sacramento Rivers to the Sacramento-San Joaquin Delta. The water was then conveyed through an aqueduct system, the California Aqueduct, approximately 450 miles long on the west side of the San Joaquin Valley, over the Tehachapis, terminating in Riverside County (Caltrans 2000). The SWP was constructed between 1961 and 1972, providing water to Alameda County by 1962, the San Joaquin Valley by 1968, and regions south of the Tehachapis by 1972 (Caltrans 2000). The California Aqueduct was constructed in a trapezoidal shape and lined with unreinforced concrete, similar to the canals of the CVP (Caltrans 2000). The SWP also included construction of 16 dams, 9 power plants, and 18 pumping plants to lift the water along the aqueduct's alignment (Caltrans 2000).

The current Project site and surrounding area including Cantua Creek, Coalinga, and Five Points first received water from the California Aqueduct circa 1971. In response, farmers and ranchers constructed smaller irrigation ditches and reservoirs from the California Aqueduct to their ranches and agricultural fields (Westlands Water District [WWD] 2023). Construction of the California Aqueduct in the Project area created a reliable source of water and increased agricultural production in the area in the 1970s to the present.

Quonset Hut Building Typology

The Project site contains two buildings that meet the Quonset Hut building typology. This context is provided to understand their potential significance. The Quonset Hut takes its name from its original design in 1941 by a team of engineers based at Quonset Point Naval Air Station in Rhode Island. The United States Navy originally collaborated with George A. Fuller Company to design a prefabricated

and portable structure that could be shipped and quickly assembled by even untrained personnel at military outposts. Quonsets were built in high numbers during World War II, typically in 20- and 40-foot lengths, and served over 80 uses. As noted by the Washington State Department of Archeology and Historic Preservation (DAHP):

> After World War II, a number of surplus Quonset huts found their way into civilian life for use in both residential, commercial and agricultural applications. […]
>
> Immediately after the war, many were being used as temporary spaces on college campuses, and a variety of federal agencies such as the Bureau of Reclamation, used the Quonset hut to meet postwar building demands. However, the Quonset hut quickly fell out of favor. Not only did they remind veterans too much of service life, but the Quonset 20, with just 960 square feet of floor space (a good part of it was unusable due to the sloping sides) was too small to serve as a family home, or commercial application. […]

Many Quonset hut's round shoulders are hidden behind false fronts. Their exteriors can have horizontal or vertical sheets of metal (depending on the model), and the ends can be clad in a variety of materials and configured with a variety of doors and windows ("Quonset Hut," DAHP).

5.1.2 Resources Inventory

Rincon completed background and archival research on behalf of the Project in December 2022 and August 2023. A variety of primary and secondary source materials were consulted. Sources included, but were not limited to, historical maps, aerial photographs, and written histories of the area. The following sources were utilized to develop an understanding of the Project site and its context:

- California Historical Resources Information System (CHRIS) Records Search at the Southern San Joaquin Valley Information Center (SSJVIC) including a review of Nation Register of Historic Places (NRHP), California Register of Historical Resources (CRHR) the California Historical Landmarks list, the Built Environment Resources Directory (BERD), as well as its predecessor the California State Historic Property Data File, and the Archaeological Determination of Eligibility list
- *Water Conveyance Systems in California Historic Context Development and Evaluation Procedures* prepared by Caltrans and JRP Historical Consulting Services, December 2000
- *A Historical context and Archaeological Research Design for Agricultural Properties in California. Sacramento, CA* prepared by Caltrans in 2007
- Fresno County Assessor's Office
- Historical aerial photographs accessed via Nationwide Educational Title Research (NETR Online)
- Historical aerial photographs accessed via University of California, Santa Barbara Library FrameFinder
- Historical USGS topographic maps
- Historical maps hosted online in the David Rumsey Map Collection (maintained by Cartography Associates)
- Historical newspaper clippings obtained from Newspapers.com, ProQuest Historical Newspapers.com, and the California Digital Newspaper Collection
- Bureau of Land Management General Land Office (GLO) Plat Map Records and Survey Records

5.1.2.1 CHRIS Research

Multiple record searches were completed through the CHRIS for the Project. The purpose of the records searches was to identify previously recorded cultural resources, as well as previously conducted cultural resources studies within the Project site and a 1-mile radius surrounding it. Rincon also reviewed the NRHP, the California Historical Landmarks list, the BERD, as well as its predecessor the California State Historic Property Data File, and the Archaeological Determination of Eligibility list. The CHRIS results are included in Appendix I-1 of Confidential Appendix I.

The CHRIS records search and background research identified 19 cultural resources studies within 1 mile of the Project site. Of these studies, seven include a portion of the Project site. Approximately 30 percent of the Project site has been studied and surveyed within the last 23 years. Cultural resources studies identified within 1 mile of the Project site are listed in Table 5.1-1.

Table 5.1-1 Previous Cultural Resource Studies in Study Area

Report Number	Author	Year	Title	Relationship to Project Site
FR-00266	Kus, James S.	1998	*Negative Archaeological Hoyt Survey Report*	**Within**
FR-00367	Dallas Jr., Herb	1985	*An Archaeological Reconnaissance of the Martin Ranch (Proposed Off Highway Vehicle Acquisition Project) in Fresno County, California*	Outside
FR-00609	Osborne, Richard H., Comeyne, Dominique, and Riley, Lynn M.	1995	*Negative Archaeological Survey Report for Bridge No. 42-0240 at the Route 5/Route 33 Separator*	Outside
FR-00925	Wren, Donald G.	1982	*Cantua Creek Gravel Survey*	Outside
FR-01640	Binning, Jeanne Day	1999	*Negative Archaeological Survey Report Installation of Traffic Surveillance Stations along Interstate 5, State Route 41, and State Route 99 in Madera and Fresno Counties*	Outside
FR-01859	Billat, Lorna Beth	2001	*Nextel Communications Wireless Telecommunications Service Facilities Located in Counties Covered by the Southern San Joaquin Valley Information Center*	Outside
FR-01955	Hector, Susan M., Hale, Micah and Wright, Catherine	2003	*Cultural Resource Inventory of the Path 15 Los Banos-Gates Transmission Line Construction Project, Merced and Fresno Counties, California*	Outside
FR-02015	Aspen Environmental Group, Inc.	2001	*Los Banos-Gates 500 kV Transmission Project Draft Supplemental Environmental Impact Report – Cultural Resources Section.*	**Within**
FR-02056	Maslonka & Associates	2003	*Cultural Resources Inventory and Evaluation Report for Fly Yard 7, Los Banos-Gates 500kV Transmission Line Project (Path 15), Fresno and Merced Counties*	Outside

Report Number	Author	Year	Title	Relationship to Project Site
FR-02414	Leach-Palm, Laura, Paul Brady, Jay King, Pat Mikkelsen, Libby Seil, Lindsay Hartman, Jill Bradeen, Bryan Larson, Joseph Freeman, Julia Costello, Jeffrey Rosenthal and Deborah Jones	2010	*Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties*	Outside
FR-02463	Kellawan, Rebecca	2011	*Cultural Resources Sensitivity Report – Cantua-Anu/Enlil Parcel – 250 MW Solar PV Program – Findings and Recommendations*	Outside
FR-02537	Bowen, Madeline	2012	*Historical Resources Evaluation Report 17 Bridges Seismic Retrofit Project*	Outside
FR-02573	Barnes, Amy J.	2013	*Cultural Resources Post Field Report for Additional Geotechnical Test Locations in WWD Reuse Areas G2 and H3 for San Luis Drainage Feature Re-evaluation Project*	**Within**
FR-02617	Ehringer, Candace, Anderson, Katherine, and Lockwood, Chris	2014	*California Department of Water Resources Cantua Creek Stream Group Improvements Project – Cultural Resources Inventory and Evaluation Report*	**Within**
FR-02686	Brunzell, David	2013	*Cultural Resources Assessment of the MK Operating, LLC MKCA #1 & #2 Oil and Gas Exploration Project, Fresno County, California*	Outside
FR-02769	Asselin, Katie, Baloian, Randy, Morlet, Aubrie, Mirro, Michael, Whiteman, Jennifer, Tibbet, Josh, and Baolian, Mary	2016	*Cultural Resources Inventory and Evaluation for the Central Valley Power Connect Project, Fresno, Kings, and Madera Counties, California*	**Within**
FR-02797	Lanner, David	2016	*Archaeological Survey Report Interstate 5, Derrick Pavement Preservation Project near Tranquility, Western Fresno County, California*	**Within**
FR-02804	Roper, C. Kristina and Craig D. Young	2017	*Historic Resources Compliance Report, Geoarchaeological Study, and Archaeological Survey Report for Interstate 5 Vehicle Detection Systems at 18 Locations, Kings and Fresno Counties, California*	Outside
FR-03076	Ehringer, Candace, Vader, Michael, and Clark, Fatima	2021	*California Department of Water Resources San Luis Canal Geotechnical Investigations Project, Kings and Fresno Counties, California Cultural Resources Assessment Report*	**Within**

Source: Southern San Joaquin Valley Information Center 2022 and 2023

The CHRIS records search and background research identified 11 cultural resources within a 1-mile radius of the Project site, which are listed in Table 5.1-2 below.

Table 5.1-2 Cultural Resources in Study Area

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Relationship to Project Site
P-10-000052	CA-FRE-52	Prehistoric site	Campsite	GWH-WCM 1939	Unevaluated	Outside
P-10-005286	CA-FRE-3273	Prehistoric site	One milling slab fragment, one mortar fragment, one battered cobble, one core, and one flake	Hale, M. (2003)	Unevaluated	Outside
P-10-005350	CA-FRE-3283	Prehistoric site	Two bowl mortar fragments, a cryptocrystalline silicate flake tool, gypsum core, two chert cores, and chert flake	Roark, G. (2003)	Unevaluated	Outside
P-10-005498	–	Prehistoric isolate	Sandstone milling slab	Roark, G. (2003)	Unevaluated	Outside
P-10-005500	–	Prehistoric isolate	Chert interior flake	Roark, G. and C. Fish (2003)	Unevaluated	Outside
P-10-006207	CA-FRE-3645H	Historic Structure	California Aqueduct/ San Luis Canal Division of the California Aqueduct (OTIS Resource Number 653828)	Murphy, P. and C. Pruett (2008); Freeman, J. and R. Flores (2009); Ambacher, P. (2011); Daly, P. (2012); Anderson, K. (2013)	Determined Eligible for listing in NRHP and CRHR	**Within** (gen-tie line corridor)
P-10-006610	CA-FRE-3769H	Historic Structure	Gates-Panoche 230 kV No. 1&2 (AE-3043-BE-002)	Baloian, R. (2015)	Recommended ineligible for NRHP and CRHR designation through survey evaluation	**Within** (gen-tie line corridor)
P-10-006612	CA-FRE-3770H	Historic Structure	Schindler-Panoche 115 kV Power Line (AE-3043-BE-004)	Baloian, R. (2015)	Recommended ineligible for NRHP and CRHR designation through survey evaluation	**Within** (gen-tie line corridor)

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Relationship to Project Site
P-10-006639	CA-FRE-3775H	Historic Structure	San Luis Drain (AE-3043-BE-006)	Asselin, K. (2016)	Recommended eligible for NRHP and CRHR as contributing elements of the historically significant Central Valley Project San Luis Unit	Outside
P-10-007205	--	Historic Structure	Interstate 5 (Montgomery Freeway, San Diego Freeway, Santa Ana Freeway, Golden State Freeway, West Side Freeway)	Urbana Preservation & Planning, LLC. (2019)	Recommended ineligible for NRHP and CRHR designation through survey evaluation	**Within** (gen-tie line corridor)
P-10-007343		Historic Structure	Cerini Avenue Bridge	Kellar, A. and C. Ehringer (2021)	Recommended eligible as a contributor to the California Aqueduct	Outside

Source: Southern San Joaquin Valley Information Center 2023; Fresno County BERD 2023
NRHP = National Register of Historic Places; CRHR = California Register of Historical Resources

5.1.2.2 Historical Maps and Aerial Imagery Research

Rincon completed a review of historical topographic maps and aerial imagery to ascertain the development history of the Project site. For clarity, the historical maps and imagery review will be discussed in three parts: the eastern extent of the Project site, primarily consisting of the solar facility location, Options 1 and 2 step-up substation, BESS, and green hydrogen component locations; the western extent of the Project site, including the proposed switchyard and alternate green hydrogen component locations, and the western extent of the gen-tie line corridor; and the central extent of the Project site, primarily consisting of the gen-tie line corridor.

The earliest historical map that depicts the entire Project site is the *Official Historical Atlas of Map of Fresno County (Atlas)*, produced by Thos. H. Thompson (1891). Although this map series was compiled and drawn by Thompson through personal surveys, its final iteration was submitted for inspection to the County of Fresno. This map provides the approximate location of trails and roads in the Project vicinity, and land ownership throughout the Project site. Within the proposed solar facility, the *Atlas* depicts one building, within the property of M. Wasgatt; this building is not depicted in later maps. Additionally, the *Atlas* depicts a road in the current location of West Cerini Avenue, appearing to stretch from the terminus of Cantua Creek to Fresno Slough. The earliest topographic map available, *Coalinga, California* 1912, also depicts a road in the current location of West Cerini Avenue, as well as one building or structure within the Project site, southwest of the intersection of West Harlan Avenue and South Napa Avenue. Later maps do not depict this building or structure. Historical topographic maps and images from 1933 to 1955 depict the solar facility site as largely undeveloped with minimal farms and one intermittent, unnamed drainage. Between 1955 to 1971, the solar facility site was further divided into large parcels and developed, with larger farms with dwellings and ancillary farming buildings and agricultural fields. Vista del Llano Farms is

depicted in the *Westside, California* 1956 topographic map within and adjacent to the western boundary of the proposed solar facility site. This property includes buildings, ancillary structures, a reservoir, and a swimming pool within the solar facility site. A cotton gin and landing strip are also depicted adjacent to the solar facility site. The photo-revised 1972 edition of the *Westside, California* 1956 topographic map indicates that the reservoir and swimming pool on the Vista del Llano Farms property were demolished between 1956 and 1972. Little development has occurred since the 1970s, and the area remains characterized by large agricultural fields and associated dwellings and farming buildings (USGS 2022, NETR Online 2022).

The western extent of the Project site, including the proposed utility switchyard and alternate green hydrogen component locations, are depicted in the historical topographic maps (*Coalinga, California* 1912; *Joaquin Rocks, California* 1943, 1956, 1962; and *Lillis Ranch, California* 1956) as undeveloped land at the base of the Coast Ranges foothills. Also of note is the depiction of a building on the southern side of the nearest drainage, approximately 0.25-mile west-northwest of the proposed utility switchyard; this depiction is only present in the *Coalinga, California* 1912 map. Considering the historic uses of the Fresno County foothills and valleys in the late nineteenth to early twentieth centuries, the depiction of a building in the immediate vicinity implies that the utility switchyard parcel may have been utilized for ranching. One historic-period trail was identified within or adjacent to the proposed utility switchyard parcel, approximately depicted in the *Official Historical Atlas of Map of Fresno County* as adjacent to the Project site. This same trail is depicted in the GLO Plat Map of Section 25, Township 17 South, Range 14 East of the Mount Diablo Base Meridian as the "Main Road from Panoche to Cantua" (1881). This trail may be the El Camino Viejo, which is known to have passed through the area trending north-south, parallel to the base of the foothills. One road is depicted within the utility switchyard parcel in the 1912 topographic map, approximately located along the current route of SR 33. By 1943, topographic maps depict SR 33 as established in its current route. A review of historical aerial imagery indicates multiple trails passed through the utility switchyard parcel prior to its development for agricultural use between 1957 and 1967. Imagery from 1929 and 1940 depicts multiple faint trails within the utility switchyard parcel stretching north to south, west of SR 33 (FrameFinder 2023). In addition, three trail segments, depicted on aerial imagery dated to 1940, appeared to converge into one trail connecting the foothills to the west and valley to the east. Another trail connecting the foothills and valley is depicted in the northern section of the proposed utility switchyard parcel in aerials dated to 1957. In the aerials dated to 1971, the trails within the utility switchyard parcel appear to be no longer extant, though segments west of the Project are still visible. Other than these trails, one historical structure is depicted within the proposed utility switchyard parcel: a powerline visible in the 1967 aerial imagery. This powerline is still present in the parcel today and has not been previously recorded per the CHRIS results described above. Lastly, the aerial imagery of the parcel starting from 1967 depicts a slight linear impression in the eastern portion, a disturbance to the surface soils that matches the course of a pipeline depicted on the *Lillis Ranch, California* topographic map.

The GLO Survey Plat Map for Township 17 South, Range 15 East (1855) is the earliest depiction of the proposed gen-tie line corridor location. This map depicts a historical trail north of Cantua Creek, crossing the gen-tie line corridor in Section 15. The trail is also shown in the GLO Survey Plat Map for Township 17 South, Range 16 East (1855), which shows it trending northeast into Section 5. The trail on the northern side of Cantua Creek is also depicted in the Edward Denny & Co. *Pocket Map of Fresno County, California* (1911) and the California Division of Highways map (1935) but is not depicted in the *Official Historical Atlas of Map of Fresno County*. As the Project site further developed for agricultural production, a grid layout for roads was established on the valley floor, indicating that the trail north of Cantua Creek likely fell into disuse. The earliest historical

topographic map depicting the proposed gen-tie line corridor is *Coalinga, California* 1912, which depicts the area as primarily undeveloped with a dirt road and a few buildings along Cantua Creek (USGS 2023). Aerial imagery from 1929 confirms that the proposed gen-tie line corridor was primarily undeveloped until imagery from 1940, when the Project vicinity begins to be sectioned into parcels for agriculture along Cantua Creek (FrameFinder 2023, NETR Online 2023). Topographic maps from 1912 to 1955 depict the gen-tie line corridor as undeveloped apart from a few additional dirt roads (USGS 2023). From 1956 to 2021, the proposed gen-tie line corridor remains largely undeveloped except for the appearance of the California Aqueduct in the *Santa Cruz, California* 1965 1x2-degree topographic map (USGS 2023). Multiple farms and agricultural processing facilities are depicted south of the gen-tie line corridor location on the *Joaquin Rocks, California* topographic map (USGS 2023). Historic topographic maps from 1965 depict I-5 and the California Aqueduct running north to south through the Project site (USGS 2023). In aerial imagery from 2005, one building appears in the western portion of the gen-tie line corridor (NETR Online 2023). Since 2005, the proposed gen-tie line corridor is characterized by agricultural fields with associated dwellings and farming buildings north and south of the gen-tie line corridor (NETR Online 2023).

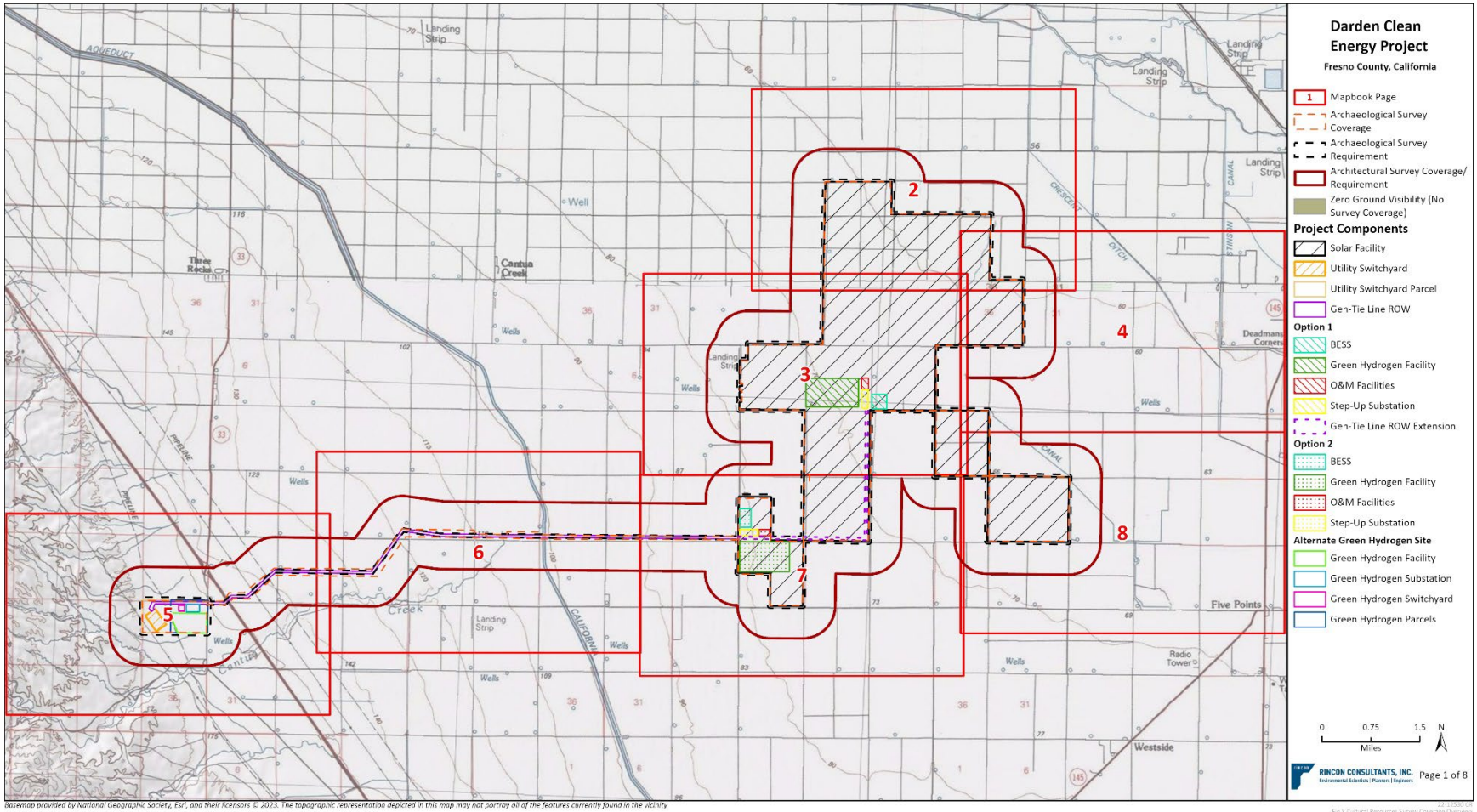
5.1.2.3 Archeological Field Survey and Results

Rincon Archaeologists conducted a cultural resources pedestrian survey of the Project site (excluding gen-tie line corridor) between September 12, 2022, through October 24, 2022, December 9, 2022, and between March 27, 2023, and April 6, 2023.

The cultural resources pedestrian survey was completed using transect intervals spaced 15 meters, with transects oriented generally from north to south throughout the Project site, except for the gen-tie line corridor, which included transects oriented generally from east to west. The pedestrian survey was limited to the direct Project site. Maps displaying the survey area are included in Figure 5.1-1a through Figure 5.1-1h. Surfaces were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historical debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows and drainages were also visually inspected. Areas with dense vegetation (i.e., active agricultural land) were not surveyed due to the lack of surface visibility. Survey accuracy was maintained using a handheld Global Positioning System (GPS)unit and a digital field map of the Project site. Site characteristics and survey conditions were documented using field records and a digital camera. Copies of the survey notes and digital photographs are maintained by staff at the Rincon San Diego office.

During the pedestrian survey, cultural resources that have the potential to be impacted by the Project were recorded and evaluated for inclusion in the NRHP and CRHR, utilizing the research design presented in Appendix I-3 in Confidential Appendix I. The research design was completed early in the development of the project description, so figures and background research included are reflective of an earlier iteration of the current Project site but the research design remains relevant to the Project.

Figure 5.1-1a Archaeological and Architectural History Survey Coverage Overview (Mapbook Page 1)



Basemap provided by National Geographic Society, Esri, and their licensors © 2023. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

Figure 5.1-1b Archaeological and Architectural History Survey Coverage (Mapbook Page 2)

Figure 5.1-1c Archaeological and Architectural History Survey Coverage (Mapbook Page 3)

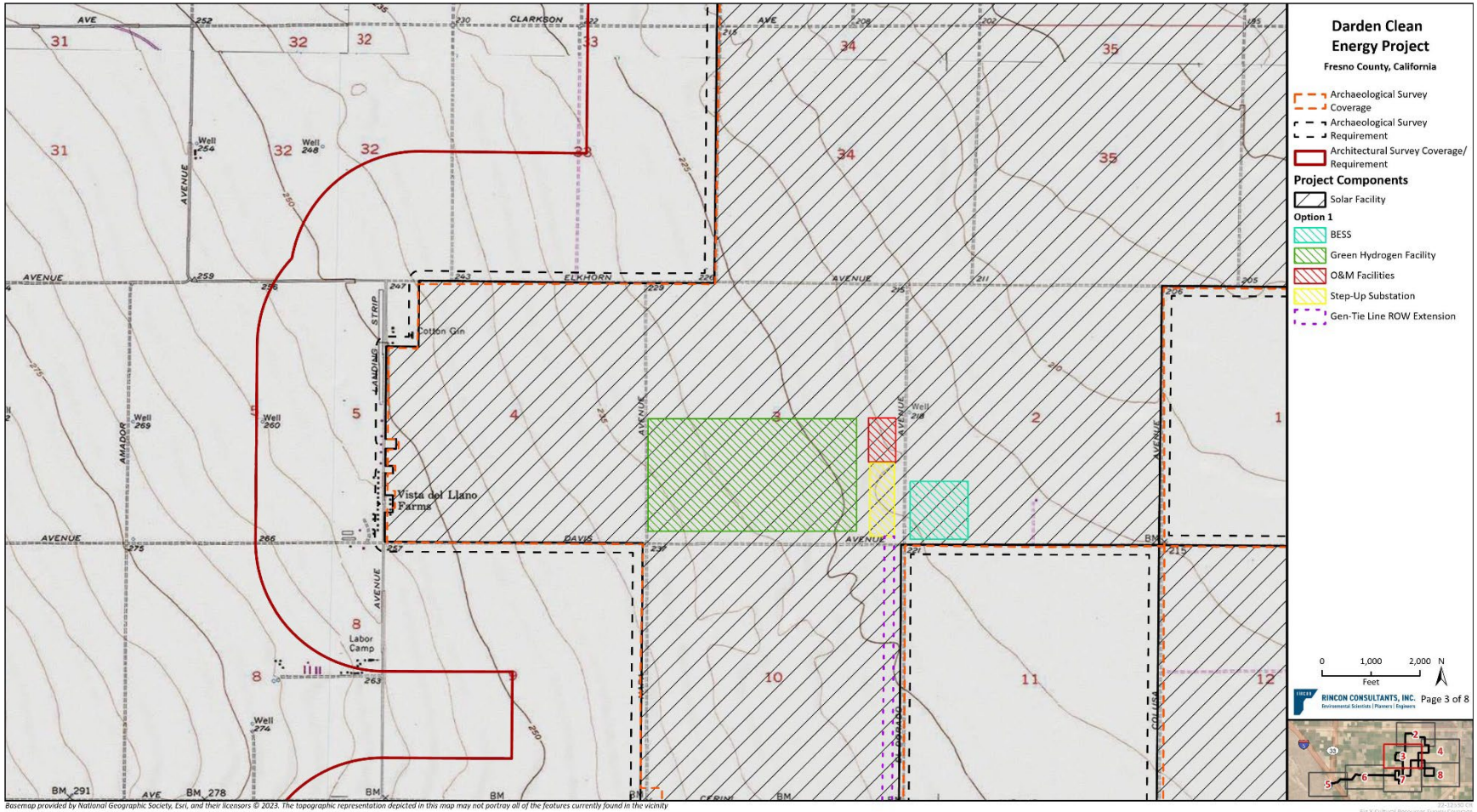


Figure 5.1-1d Archaeological and Architectural History Survey Coverage (Mapbook Page 4)

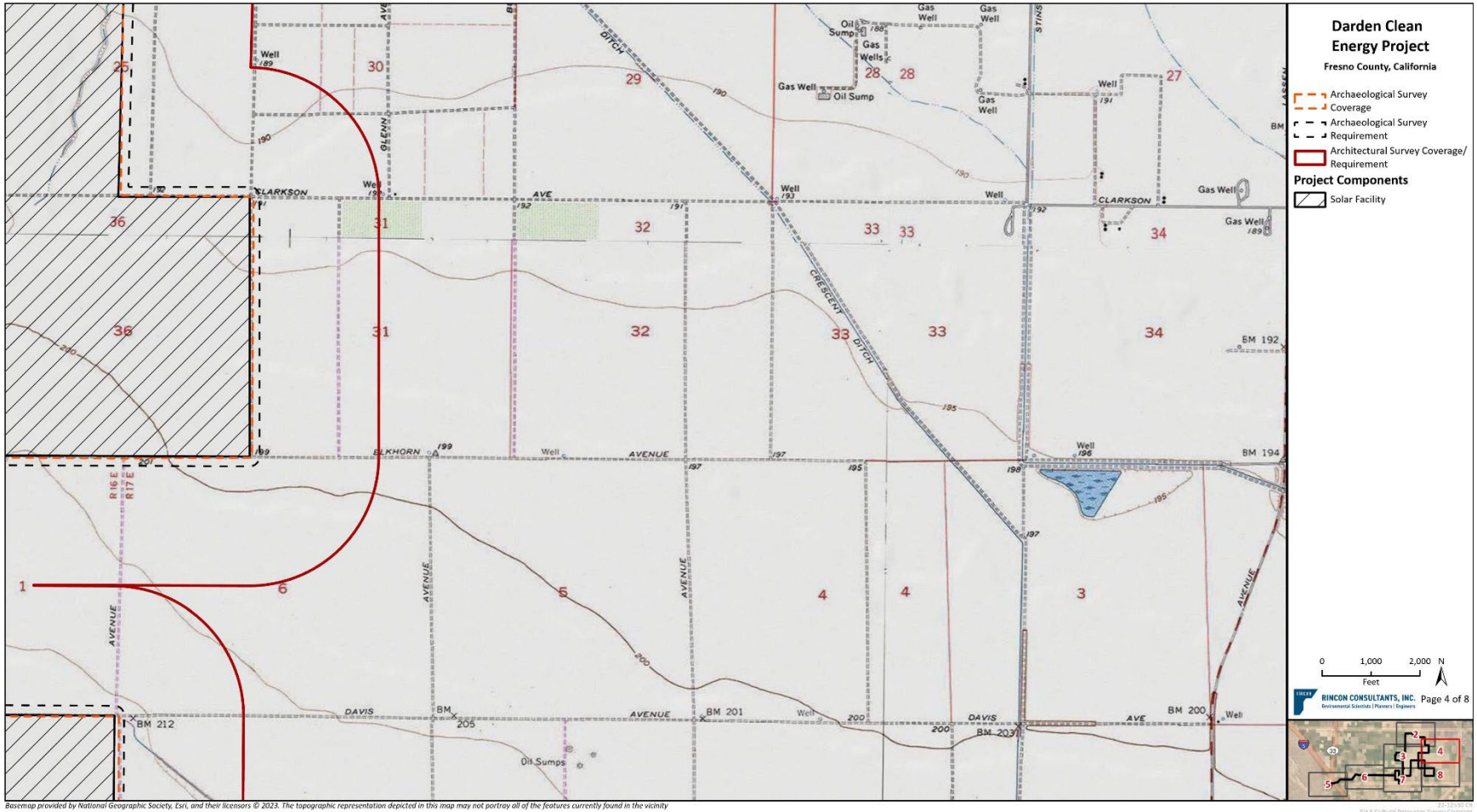


Figure 5.1-1e Archaeological and Architectural History Survey Coverage (Mapbook Page 5)

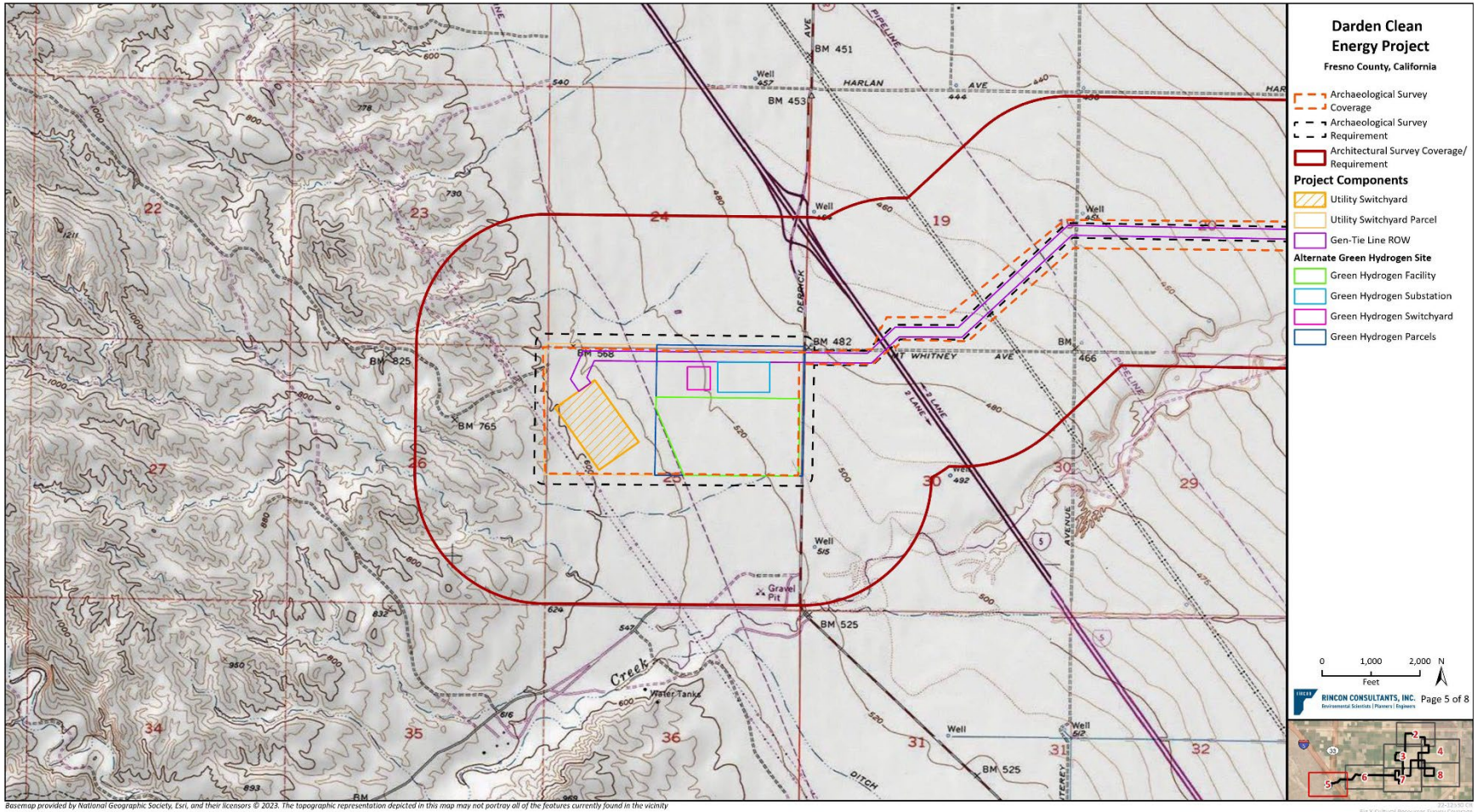


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Figure 5.1-1f Archaeological and Architectural History Survey Coverage (Mapbook Page 6)

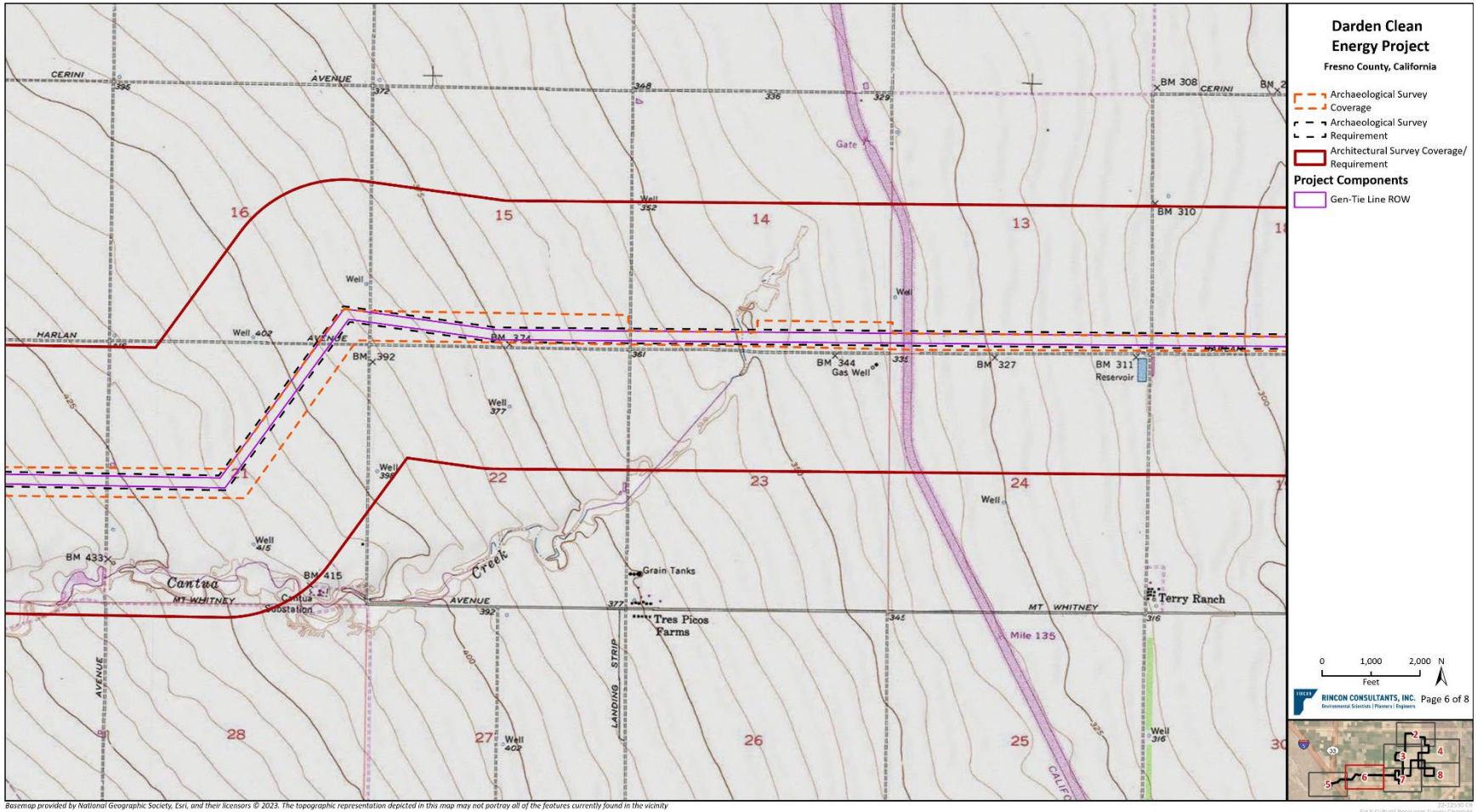

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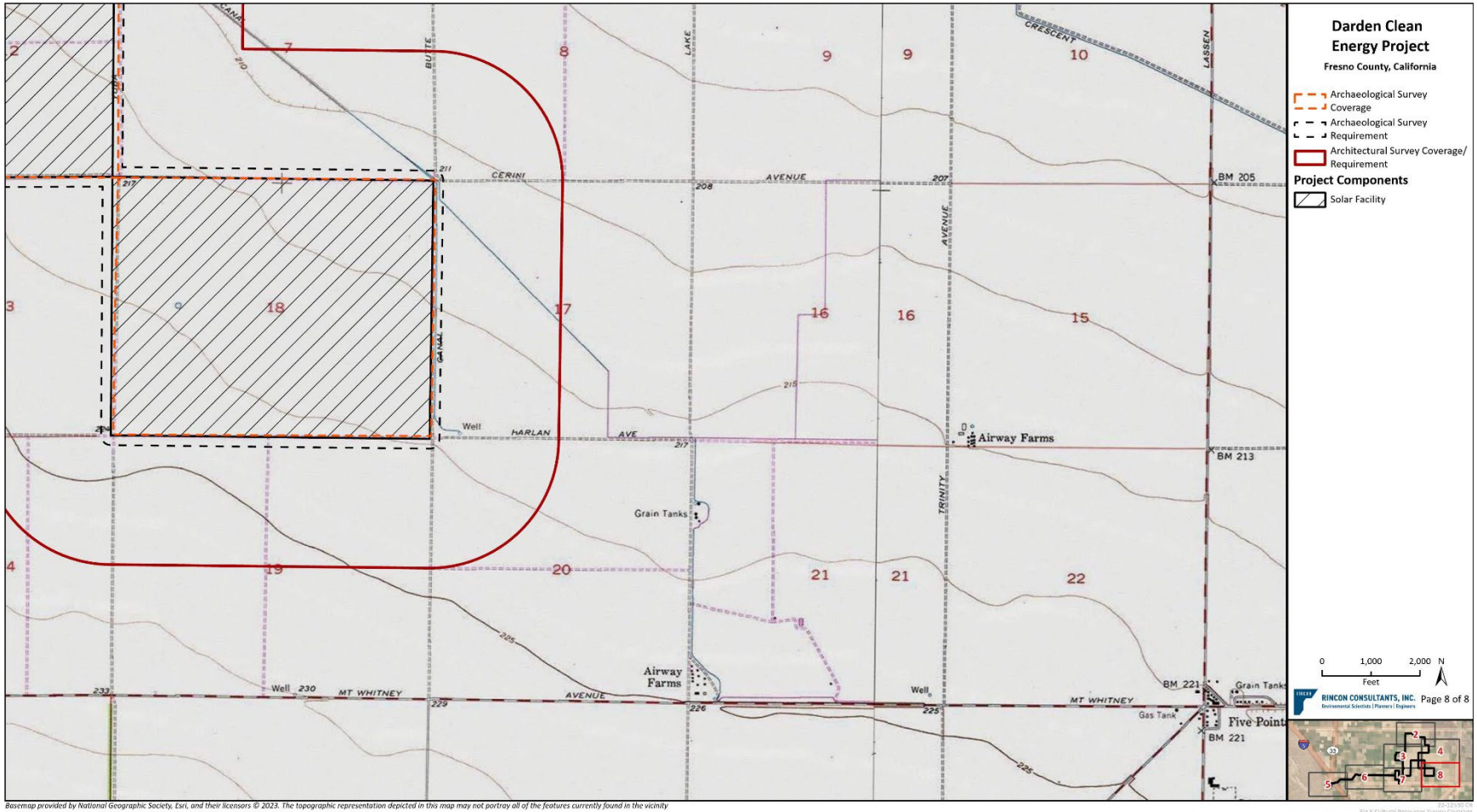
Figure 5.1-1g Archaeological and Architectural History Survey Coverage (Mapbook Page 7)

Basemap provided by National Geographic Society, Esri, and their licensors © 2023. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

Figure 5.1-1h Archaeological and Architectural History Survey Coverage (Mapbook Page 8)



Basemap provided by National Geographic Society, Esri, and their licensors © 2023. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

Ground visibility ranged from excellent, 91 to 100 percent, in non-active agricultural field parcels to poor, 0 to 35 percent, in parcels with active crop production, weeds, and modern refuse. Vegetation in the Project site consists of various crops, grasses, and shrubs and has been heavily disturbed from agricultural activity. The Project site was surveyed for archaeological resources except for one location within Assessor Parcel Number (APN) 050-060-38S, an active agricultural field totaling 16.3 acres. Crops within this area were dense and high enough that surveyors had zero visibility and did not attempt survey due to safety concerns.

Thirteen archaeological resources were encountered (Table 5.1-3). These include four historic-period resources and nine prehistoric isolates. No indication of the historic-period trails depicted in the 1855 Survey Plat Map, the 1881 Survey Plat Map, or Thos. H. Thompson *Official Historical Atlas of Map of Fresno County* (1891) were observed within the Project site, indicating that these trails are either located outside the Project site, or have been obliterated by agricultural activity. For greater detail and evaluations of eligibility for all archaeological resources, refer to the DPR 523 Forms in Appendix I-4 of Confidential Appendix I.

All prehistoric isolates were observed at the surface in highly disturbed agricultural contexts. All materials consisted of chert and obsidian, with the exception of the portable mortar (Darden-ISO-HT-10) noted in APN 040-110-21ST.

Table 5.1-3 Archaeological Resources in the Project Survey Area

Temporary Identification	Description	NRHP/ CRHR Eligibility
Darden-S-HT-162	Unpaved segmented driveway, two concrete foundations, and one historic-era cylindrical weathered colorless glass jar with an Owen's Illinois makers mark	Not eligible
Darden-S-CJ-46	Poured concrete foundation with two distinct foundation levels, a drain and basin, and a concrete entrance path that extends off the lower northern portion of the foundation	Not eligible
Darden-S-CJ-120	Capped oil well surrounded by a concrete foundation, concrete rubble, and historic-period refuse, including bottles and miscellaneous glass fragments, ceramics, metal and glass slag, brick, and miscellaneous ferrous and non-ferrous metal fragments	Not eligible
Darden-S-AB-03	Two poured concrete foundations, one with a metal plate-capped water well and the other foundation likely used to support a well pump, and four poured concrete supports	Not eligible
Darden-ISO-MS-01	Brown-grey chert biface, broken at base	Not eligible
Darden-ISO-HT-10	Sandstone mortar	Not eligible
Darden-ISO-CJ-68	Obsidian flaked tool, possible lunate crescent	Recommended Eligible
Darden-ISO-CJ-71	Obsidian modified flake and obsidian debitage	Not eligible
Darden-ISO-MML-74	Chert flake	Not eligible
Darden-ISO-MRL-75	Chert flake	Not eligible
Darden-ISO-CJ-103	Chert flake	Not eligible
Darden-ISO-HT-107	Obsidian biface, broken on distal end	Not eligible
Darden-ISO-KB-121	Chert flake	Not eligible

CRHR = California Register of Historical Resources; NRHP = National Register of Historic Places

5.1.2.4 Architectural Survey and Results

Under the direction of Rincon Architectural Historians, surveyors documented historic-period built environment resources during the survey periods referenced in Section 5.1.2.3 with an additional built environment survey taking place on August 7 and 8, 2023. The condition and integrity of built environment resources within the Project site and a 0.5-mile radius were documented and assessed. Built environment resources within the 0.5-mile survey area were documented and assessed from public rights-of-way. Survey accuracy was maintained using a handheld GPS unit and a digital field map of the Project site. Characteristics and survey conditions were documented using field records and a digital camera. Copies of the survey notes and digital photographs are maintained by staff at the Rincon San Diego office. During the pedestrian survey, cultural resources that have the potential to be impacted by the Project were recorded and evaluated for inclusion in the NRHP and CRHR, utilizing the research design included in Confidential Appendix I. The research design was completed early in the development of the project description, so figures and background research included are reflective of an earlier iteration of the current Project site but the research design remains relevant to the Project.

Fieldwork and background research resulted in the identification of 36 newly recorded historic-age built environment properties within the Project site and a 0.5-mile buffer (Table 5.1-4).

Table 5.1-4 Built Environment Resources in the Project Survey Area

Resource Name or Temporary Identification	Assessor's Parcel Numbers	Description	NRHP/CRHR Eligibility	Relationship to Project Site
Darden-BE-AB-152	050-060-44 050-060-45	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-AB-155	050-060-45	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-AB-159	050-080-01	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-101	050-030-29	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-115	050-030-24	Reservoir and canal	Not eligible	**Within Project site**
Darden-BE-CJ-117	050-030-25 050-030-10	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-119	050-030-10	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-127	050-030-10	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-139	050-080-01	Irrigation ditch and basin	Not eligible	**Within Project site**
Darden-BE-CJ-149	050-020-47	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-150	050-030-33	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-166	050-020-47	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-206	040-110-15	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-CJ-211	050-030-32	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-JCB-13	040-110-31	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-LM-89	050-030-07	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-LM-90	050-030-07	Irrigation ditch	Not eligible	**Within Project site**
Darden-BE-LM-92	050-030-07	Irrigation ditch	Not eligible	**Within Project site**
Los Banos-Midway 500 kV and Los Banos-Gates 500 kV Powerlines (Darden-BE-MR-172)	045-160-24	Powerlines	Not eligible	**Within Project site** and 0.5-mile buffer

Resource Name or Temporary Identification	Assessor's Parcel Numbers	Description	NRHP/CRHR Eligibility	Relationship to Project Site
Darden-BE-216	040-110-15	Irrigation ditch	Not eligible	**Within Project site**
19056 South Napa Avenue	050-070-63	Two single-family dwellings and two ancillary buildings	Not eligible	Within 0.5-mile buffer
P-10-006207/ CA-FRE-003645H	N/A	California Aqueduct/ San Luis Canal Division of the California Aqueduct (OTIS Resource Number 653828)	Determined eligible for NRHP and CRHR	**Within Project site** and 0.5-mile buffer
P-10-006610/ CA-FRE-003769H	N/A	Gates-Panoche 230 kV No. 1&2 (AE-3043-BE-002)	Recommended ineligible for NRHP or CRHR	**Within Project site** and 0.5-mile buffer
P-10-006612/ CA-FRE-003770H	N/A	Schindler-Panoche 115 kV Power Line (AE-3043-BE-004)	Recommended ineligible for NRHP or CRHR	**Within Project site** and 0.5-mile buffer
P-10-007205	N/A	I-5 (Montgomery Freeway, San Diego Freeway, Santa Ana Freeway, Golden State Freeway, West Side Freeway)	Recommended ineligible for NRHP or CRHR	**Within Project site** and 0.5-mile buffer
24927 West Mount Whitney Avenue	050-100-46	Single-family residence with an ancillary building	Not eligible	Within 0.5-mile buffer
Darden-BE-AR-100	050-060-43	Irrigation Ditch	Not eligible	Within 0.5-mile buffer
Darden-BE-AR-102	050-060-24 050-060-38 050-060-27 045-070-35 050-060-23 050-060-40 050-020-36	Irrigation Ditch	Not eligible	Within 0.5-mile buffer
24464 West Cerini Avenue	050-060-20	Single-family residence with two ancillary buildings	Not eligible	Within 0.5-mile buffer
Vista del Llano Farms	050-020-37 050-020-25 050-020-46 050-020-45 050-020-44 050-020-39 050-020-38	Agricultural property with ancillary farming buildings, workers' housing, and single-family residences	Not eligible	**Within Project site** and 0.5-mile buffer
18117 South Sonoma Avenue	050-020-37	Six farming buildings and an irrigation ditch	Recommended eligible for listing in the NRHP and CRHR	Within 0.5-mile buffer

Resource Name or Temporary Identification	Assessor's Parcel Numbers	Description	NRHP/CRHR Eligibility	Relationship to Project Site
17631 South Sonoma Avenue	050-020-25	Quonset hut, one commercial building, four single-family residences, and an irrigation ditch	Recommended eligible for listing in the NRHP and CRHR	Within 0.5-mile buffer
17830 and 17880 South Sonoma Avenue	050-020-46	Three single-family dwellings and two ancillary buildings	Not eligible	Within 0.5-mile buffer
17056 South Sonoma Avenue	050-020-38 050-020-39	Agricultural property with three buildings and two manufactured buildings	Not eligible	Within 0.5-mile buffer
Darden-BE-AR-103	040-070-25	Irrigation Ditch	Not eligible	Within 0.5-mile buffer
Darden-BE-AR-104	050-080-12	Irrigation Ditch	Not eligible	Within 0.5-mile buffer
Darden-BE-AR-106	050-030-48	Irrigation Ditch	Not eligible	Within 0.5-mile buffer
Westlands Water District Reservoirs 1 and 2	045-070-40 045-160-14	Two circular reservoirs on separate parcels	Not eligible	**Within Project site** and 0.5-mile buffer
PG&E Cantua Substation	045-080-49	Open-air substation	Not eligible	Within 0.5-mile buffer
Cantua Creek Bridge	N/A	Concrete bridge spanning Cantua Creek at South Derrick Avenue	Not eligible	Within 0.5-mile buffer

CRHR = California Register of Historical Resources; NRHP = National Register of Historic Places; kV = kilovolt

5.1.2.5 Native American Consultation

On August 29, 2022, and August 30, 2023, the Native American Heritage Commission (NAHC) responded to Rincon's Sacred Lands Files (SLF) request, stating that the results of the SLF search were negative. On August 4, 2023, letters were mailed via email and United States Postal Service to representatives of 12 Native American Tribes. On August 18, 2023, Rincon completed follow-up telephone calls to each representative. No comments were received regarding the Project. The results of the SLF and a consultation tracking table are included in Appendix I-2 of Confidential Appendix I.

5.1.2.6 Historical Group Outreach

On behalf of IP Darden I, LLC and Affiliates (Applicant), Rincon Archaeologist contacted the Fresno Historical Society on August 10, 2023, to request information regarding cultural resources that may exist within or near the Project site. Rincon followed up with a phone call on August 18, 2023, as well as an additional follow-up email on August 22, 2023. No comments were received regarding the Project. A copy of the outreach letter and a consultation tracking table are included in Appendix I-2 of Confidential Appendix I.

5.1.3 Regulatory Setting

A review of existing relevant LORS was conducted to understand the regulatory context for cultural resource management surrounding the Project. These are detailed in Section 5.1.6, Laws, Ordinances, Regulations, and Standards.

5.1.4 Impact Analysis

The following subsections discuss the potential direct and indirect impacts related to cultural resources from construction and operation and maintenance (O&M) of the Project.

5.1.4.1 Methodology

Rincon completed archival research, pedestrian surveys for archaeological and built environment historical resources, and contacted the NAHC, Tribes, and the Fresno County Historical Society to gather information related to the cultural resources that may be impacted by the Project. The full analysis is included in Darden Clean Energy Project Cultural Resources Technical Report prepared by Rincon included in Confidential Appendix I.

California Public Resources Code (PRC) Section 21804.1 requires that lead agencies determine if a project could have a significant impact on historical or unique archaeological resources. As defined in PRC Section 21084.1, a *historical resource* is a resource listed in, or determined eligible for listing in, the CRHR, a resource included in a local register of historical resources or identified in a historical resources survey pursuant to PRC Section 5024.1(g), or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant. PRC Section 21084.1 also states resources meeting the above criteria are presumed to be historically or culturally significant unless the preponderance of evidence demonstrates otherwise. Resources listed in the NRHP are automatically listed in the CRHR and are, therefore, historical resources under CEQA. Historical resources may include eligible built environment resources and archaeological resources of the precontact or historic periods.

CEQA Guidelines Section 15064.5(c) provides further guidance on the consideration of archaeological resources. If an archaeological resource does not qualify as a historical resource, it may meet the definition of a "unique archaeological resource" as identified in PRC Section 21083.2. PRC Section 21083.2(g) defines a *unique archaeological resource* as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: 1) contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information, 2) has a special and particular quality such as being the oldest of its type or the best available example of its type, or 3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological resource does not qualify as a historical or unique archaeological resource, the impacts of a project on those resources will be less than significant and need not be considered further (*CEQA Guidelines* Section 15064.5[c][4]). *CEQA Guidelines* Section 15064.5 also provides guidance for addressing the potential presence of human remains, including those discovered during the implementation of a project.

According to CEQA, an impact that results in a substantial adverse change in the significance of a historical resource is considered a significant impact on the environment. A substantial adverse change could result from physical demolition, destruction, relocation, or alteration of the resource

or its immediate surroundings such that the significance of the historical resource would be materially impaired (*CEQA Guidelines* Section 15064.5 [b][1]). *Material impairment* is defined as demolition or alteration in an adverse manner [of] those characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR or a local register (*CEQA Guidelines* Section 15064.5[b][2][A]).

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require that reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a][b]).

Section 15126.4 of the *CEQA Guidelines* stipulates that an Environmental Impact Report shall describe feasible measures to minimize significant adverse impacts. In addition to being fully enforceable, mitigation measures must be completed within a defined time period and be roughly proportional to the impacts of the project. Generally, a project which is found to comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (the Standards) is considered to be mitigated below a level of significance (*CEQA Guidelines* Section 15126.4 [b][1]). For historical resources of an archaeological nature, lead agencies should also seek to avoid damaging effects where feasible. Preservation in place is the preferred manner to mitigate impacts to archaeological sites; however, data recovery through excavation may be the only option in certain instances (*CEQA Guidelines* Section 15126.4[b][3]).

The information in the cultural resources report and CEQA guidelines for cultural resources were used to inform the following impact analysis.

5.1.4.2 Impact Evaluation Criteria

The potential for impacts to cultural resources and their uses were evaluated using the criteria described in the California Environmental Quality Act (CEQA) Environmental Checklist (Appendix G of the CEQA Guidelines). For cultural resources, the CEQA Checklist asks, would the project:

- Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5; and/or
- Disturb any human remains, including those interred outside of dedicated cemeteries?

Regarding potential impacts to tribal cultural resources, the California Energy Commission (CEC) would consult with eligible tribes once the Opt-In Application is deemed complete. Impacts on tribal cultural resources are not addressed in this Opt-In Application because under Assembly Bill (AB) 52, the lead agency, CEC, must identify these resources during consultation. Therefore, no tribal cultural resources have been identified, and the impacts associated with tribal cultural resources have not been determined.

Impact CUL-1

Threshold:	Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

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

Construction

Less than Significant Impact. No historical resources are known to exist within the solar facility or Options 1 and 2 step-up substation component locations. The California Aqueduct (P-10-006207) crosses the gen-tie line corridor and is a determined eligible resource for the NRHP and CRHR. The Project does not propose any direct, physical alteration to the aqueduct, or its character-defining features and the Project would not impact the resource's ability to convey its significance. The gen-tie line would span the aqueduct and would not physically alter the aqueduct, as related to the aqueduct's significance as the largest water conveyance system developed as part of the State Water Project. All Project work would be constructed adjacent to and above the boundaries of the resource. The Project would introduce a new visual element to the setting; however, this would not impact the resource's ability to convey its significance. The setting of the California Aqueduct throughout its length has historically included other infrastructure such as transmission lines and has been continuously altered with construction of new transmission lines, roads, and bridges since its construction. Approximately 3.2 miles (5 km) south of the Project site, the Schindler-Panoche 115 kV Transmission Line runs east-west over the California Aqueduct; the transmission line pre-dates the aqueduct as it was constructed between 1937 and 1956 according to aerial imagery, while the California Aqueduct was not constructed in this area until 1962 to 1967. The proposed gen-tie line would be consistent with the historical and current setting of the resource.

Two newly recorded built environment resources were also recommended eligible for listing in the NRHP and CRHR under Criterion C/3 as part of the survey effort and therefore are considered historical resources pursuant to CEQA. 18117 South Sonoma Avenue and 17631 South Sonoma Avenue both contain rare examples of farmworkers housing stemming from their development and use as part of the former Vista del Llano Farms. The eligible, contributing elements of these two properties are limited to the single Quonset hut cabin at 17631 South Sonoma Avenue and a grouping of four worker's dormitories at 18177 South Sonoma Avenue. Both resources are located outside of the Project site; neither the buildings nor the properties on which they are located would be directly altered by the Project. The Project would result in a change in setting to both resources through the introduction of new solar facility; however, this would not result in the material impairment of either resource. The setting of both resources has continually changed over time, through the subdivision of the larger of Vista del Llano Farms and demolition of other workers' housing and facilities of the former cotton production operation. As such, setting is not a primary physical feature which conveys the historical significance of either resource. Further, the immediate setting of both resources would not be altered as part of the Project. The eligible Quonset hut cabin at 17631 South Sonoma Avenue is approximately 300 feet (91 m) from the Project site and separated by South Sonoma Avenue. 18117 South Sonoma Avenue is located within the 0.5-mile buffer of the Project site and separated by South Sonoma Avenue; however, the eligible elements of this resource, specifically the four dormitory buildings, are located approximately 1.21 miles (1.9 km) from the Project site. While new solar panels would be introduced to the east of both resources, the areas to the north, west, and south of these resources would not be altered in any way and would remain agricultural in character. The Project does not propose any direct, physical

alteration to the aqueduct, a determined eligible resource for the NRHP and CRHR, or its character-defining features; therefore, impacts would be less than significant.

Operation

No Impact. O&M activities associated with the solar facility, Options 1 and 2 step-up substation, and gen-tie line components would not involve ground-disturbing activities that would have the potential to destroy a historical resource. Therefore, no operational impacts to historical resources would occur as a result of these Project components.

BESS

Construction

No Impact. No historical resources were identified within the Options 1 and 2 BESS component location. Therefore, no construction impacts to historical resources would occur as a result of this Project component.

Operation

No Impact. O&M activities associated with the Options 1 and 2 BESS component would not involve ground-disturbing activities that would have the potential to destroy a historical resource. Therefore, no operational impacts to historical resources would occur as a result of this Project component.

Green Hydrogen

Construction

No Impact. No historical resources were identified within the Options 1 and 2 green hydrogen component or the alternate component site location. Therefore, no construction impacts to historical resources would occur as a result of this Project component.

Operation

No Impact. O&M activities for the green hydrogen component at the Options 1 and 2, and alternate site location would not involve ground-disturbing activities that would have the potential to destroy a historical resource. Therefore, no operational impacts to historical resources would occur as a result of this Project component.

Utility Switchyard

Construction

No Impact. No historical resources were identified within the utility switchyard location. Therefore, no construction impacts to historical resources would occur as a result of this Project component.

Operation

No Impact. O&M activities for the utility switchyard would not involve ground-disturbing activities that would have the potential to destroy a historical resource. Therefore, no operational impacts to historical resources would occur as a result of this Project component.

Overall Project

Less than Significant Impact. The California Aqueduct (P-10-006207) crosses the gen-tie line corridor and is a determined eligible resource for the NRHP and CRHR. The Project does not propose any direct, physical alteration to the aqueduct, or its character-defining features; therefore, impacts would be less than significant. Two additional built environment resources were also recommended eligible: 17631 South Sonoma Avenue and 18177 South Sonoma Avenue. Both resources are located outside of the Project site, but in the survey area. As such there is no potential for the Project to materially impair either resource such that they would no longer be able to convey the reasons for their significance. The Project would therefore result in a less than significant impact.

Impact CUL-2

Threshold:	Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

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

Construction

Less than Significant Impact with Mitigation. One isolated find, Darden-ISO-CJ-68, is recommended eligible for inclusion in the NRHP and CRHR (meets Criterion C/3). Darden-ISO-CJ-68 was observed within the solar facility component location. The gen-tie corridor and Options 1 and 2 step-up substation component locations would be underlain by Quaternary fan deposits, and the proposed solar facility would be underlain by both Quaternary basin deposits and Quaternary fan deposits. These geologic units have moderate to high archaeological sensitivity for buried archaeological resources. In addition, the areas within 6.2 miles (10 km) of the Fresno Slough, 0.3 miles (482 m) of intermittent drainages such as Cantua Creek, and 328 ft (100 m) of historic-era roads and trails present an elevated sensitivity for archaeological resources. Historical land use in the area has resulted in the disturbance of the first several inches of soil located within the plow and planting zone considered to be roughly 18 inches below ground surface. This portion of the Project site varies from moderate to high sensitivity below the plow and planting zone within the Project site. Ground-disturbing activities for the solar facility, Options 1 and 2 step-up substation, and gen-tie line could result in significant impacts to archaeological resources due to the depth of proposed ground-disturbing activities and location within moderate to high-sensitivity areas, specifically where gen-tie pole installation, MV distribution poles, underground trenching, and solar panel pile installation will occur. The incorporation of Mitigation Measures CUL-1 through CUL-6 would reduce potentially significant impacts to known and potential archaeological resources to a less than significant level. Mitigation Measure CUL-1, requires the retention of a Cultural Resources Specialist (CRS) to ensure the cultural resources mitigation requirements for the Project are executed, Mitigation Measure CUL-2 requires the collection of Darden-ISO-CJ-68 prior to construction, Mitigation Measure CUL-3 would require the CRS to oversee the preparation of a Monitoring and Discovery Plan, Mitigation Measure CUL-4 requires the implementation of a Worker Environmental Awareness Program to inform project contractors of the cultural resources requirements for the Project, Mitigation Measure CUL-5 requires archaeological monitoring for ground disturbance within moderate to high sensitivity areas, and Mitigation Measure CUL-6 outlines the protocols in the event of an

unanticipated discovery. With adherence to these mitigation measures potential for impacts to buried archaeological resources would be reduced to less than significant.

Operation

No Impact. O&M activities for these Project components would not involve ground-disturbing activities that would have the potential to unearth archaeological resources. Therefore, no operational impacts to archaeological resources would occur as a result of the Project.

BESS

Construction

Less than Significant Impact with Mitigation. The Options 1 and 2 BESS component locations would be underlain by Quaternary fan deposits. These geologic units have moderate to high archaeological sensitivity for buried archaeological resources. In addition, the areas within 6.2 miles (10 km) of the Fresno Slough present an elevated sensitivity for archaeological resources. Historical land use in the area has resulted in the disturbance of the first several inches of soil located within the plow and planting zone considered to be roughly 18 inches below ground surface. The Option 1 BESS location exhibits high sensitivity, while the Option 2 BESS location exhibits moderate to low sensitivity. Ground-disturbing activities for the Options 1 and 2 BESS component within soils not previously disturbed could result in significant impacts to archaeological resources due to the depth of proposed ground-disturbing activities and location within moderate to high-sensitivity areas. However, incorporation of Mitigation Measures CUL-1 and CUL-3 through CUL-6 would reduce potentially significant impacts to these resources to a less than significant level as described above under "*Solar Facility, Step-Up Substation, and Gen-Tie*".

Operation

No Impact. O&M activities for this Project component would not involve ground-disturbing activities that would have the potential to unearth archaeological resources. Therefore, no operational impacts to archaeological resources would occur as a result of the Project.

Green Hydrogen

Construction

Less than Significant Impact with Mitigation. The Option 1, Option 2 and alternate green hydrogen component locations would be underlain by Quaternary fan deposits. These geologic units have moderate to high archaeological sensitivity for buried archaeological resources. In addition, the areas within 6.2 miles (10 km) of the Fresno Slough, 0.3 miles (482 m) of intermittent drainages such as Cantua Creek, and 328 ft (100 m) of historic-era roads and trails present an elevated sensitivity for archaeological resources. The soils found at the Tehachapi foothills carry an elevated probability of sudden flooding events, which could result in buried artifacts or features. Historical land use in the area has resulted in the disturbance of the first several inches of soil located within the plow and planting zone considered to be roughly 18 inches below ground surface. This portion of the Project site varies from moderate to high sensitivity below the plow and planting zone within the Project site. However, incorporation of Mitigation Measures CUL-1 and CUL-3 through CUL-6 would reduce potentially significant impacts to these resources to a less than significant level as described above under "*Solar Facility, Step-Up Substation, and Gen-Tie*".

Operation

No Impact. O&M activities for this Project component would not involve ground-disturbing activities that would have the potential to unearth archaeological resources. Therefore, no operational impacts to archaeological resources would occur as a result of the Project.

Utility Switchyard

Construction

Less than Significant Impact with Mitigation. The utility switchyard location would be underlain by Quaternary fan deposits. These geologic units have moderate to high archaeological sensitivity for buried archaeological resources. In addition, the areas within 0.3 miles (482 m) of intermittent drainages such as Cantua Creek and 328 ft (100 m) of historic-era roads and trails present an elevated sensitivity for archaeological resources. The soils found at the Tehachapi foothills carry an elevated probability of sudden flooding events, which could result in buried artifacts or features. Known archaeological resources have been recorded in similar geomorphological contexts to this portion of the Project site. Historical land use in the area has resulted in the disturbance of the first several inches of soil located within the plow and planting zone considered to be roughly 18 inches below ground surface. Therefore, the proposed utility switchyard location exhibits high sensitivity below the plow and planting zone within the Project site. However, incorporation of Mitigation Measures CUL-1 and CUL-3 through CUL-6 would reduce potentially significant impacts to these resources to a less than significant level as described above under "*Solar Facility, Step-Up Substation, and Gen-Tie"*.

Operation

No Impact. O&M activities for this Project component would not involve ground-disturbing activities that would have the potential to unearth archaeological resources. Therefore, no operational impacts to archaeological resources would occur as a result of the Project. No mitigation is required.

Overall Project

Less than Significant Impact with Mitigation. Of the 13 archaeological resources located within the Project site, one is recommended eligible for inclusion in the NRHP/CRHR (Darden-ISO-CJ-68). The Project has the potential to impact buried archaeological resources based on the age of landforms, proximity to intermittent water sources, proximity to previously recorded resources, and location within potential prehistoric travel corridors. Retention of a designated Cultural Resources Specialist, collection of Darden-ISO-CJ-68 prior to construction, implementation of a Worker Environmental Awareness Program, archaeological monitoring, and unanticipated discovery measures to mitigate the potential for impacts to buried archaeological resources during construction is recommended for the Project construction phase. No impacts are expected during the operation phase of the Project. Implementation of Mitigation Measures CUL-1 through CUL-6 would reduce potentially significant impacts to these archaeological resources during Project construction to a less than significant level.

Mitigation Measures

CUL-1 Designated Cultural Resources Specialist

The Applicant shall retain a designated Cultural Resources Specialist (CRS) who will be available to carry out mitigation measures related to cultural resources for the Project. The CRS shall meet or exceed the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983). The CRS shall be qualified in site detection, evaluation of deposit significance, consultation with regulatory agencies, and plan site evaluation and mitigation activities.

CUL-2 Collection of Darden-ISO-CJ-68

Prior to the start of construction, Darden-ISO-CJ-68 shall be collected under the direction of the CRS. A Native American representative shall also be contacted to participate in the collection of the find. Once collected, Darden-ISO-CJ-68 shall be sketched and photographed. The isolate shall be collected and final disposition will be determined by the lead agency and any Native American tribes who choose to consult on the Project.

CUL-3 Archaeological Monitoring and Discovery Plan

Prior to the start of permitted ground disturbing activities, an Archaeological Monitoring and Discovery Plan shall be prepared by the CRS. The monitoring plan shall include a description of the monitoring methodology, including when monitoring will be required, the authority of the monitor to halt construction should a discovery be made, contact information should a discovery be made, definition of site types typically present within the area, define the types of resources that would require that work be halted or redirected, provide the protocols for unanticipated discoveries (e.g., who to call and next steps for documentation and coordination), methodology for establishing an Environmentally Sensitive Area (ESA) should one be required, review and approval protocols (e.g., define review periods for agencies and stakeholders), and dispute resolution.

CUL-4 Worker Environmental Awareness Program (WEAP)

Prior to the start of ground disturbance, the construction crew shall participate in on-site training on the proper procedures to follow if cultural resources are uncovered during the Project excavations, site preparation, or other related activities. This Worker Environmental Awareness Program shall include a comprehensive discussion of applicable laws and penalties under the law, samples or visuals of artifacts that might be found in the vicinity of the Project site, a discussion of what such artifacts may look like when partially buried or wholly buried and then freshly exposed, a discussion of what prehistoric and historic-period archaeological deposits look like at the surface and when exposed during construction, instruction that employees are to halt work in the vicinity of a discovery (within 50 feet) and requirements for working within 50 feet of an ESA. This information shall be provided in an informational brochure that outlines reporting procedures in the event of a discovery and shall be provided to all individuals working on-site.

CUL-5 Archaeological Monitoring

Archaeological monitor(s) working under the direction of the CRS shall be on-site during permitted ground disturbing activities described herein that occur within the moderate to high sensitivity locations identified in Figure 5.1-2. Activities that shall require an archaeological monitor include mass grading that exposes previously undisturbed soils (approximately 18 inches below ground

surface based on previous agricultural practices), and open trench excavation with mechanical equipment. Activities that do not expose soil profiles, such as pile driving, ditch witch trenching, and the use of hand tools, will not require monitoring unless they occur within 50 feet of an ESA.

During monitoring, the monitors shall examine the work areas for the presence of prehistoric artifacts (e.g., chipped stone tools and production debris, stone milling tools, ceramics), historic-period debris (e.g., metal, glass, ceramics), and/or soil discoloration that might indicate the presence of a cultural midden. Each monitor shall maintain a daily log documenting ground disturbing activity, work locations, description, and provenience of any archaeological discoveries (if any), and any necessary action items for monitoring.

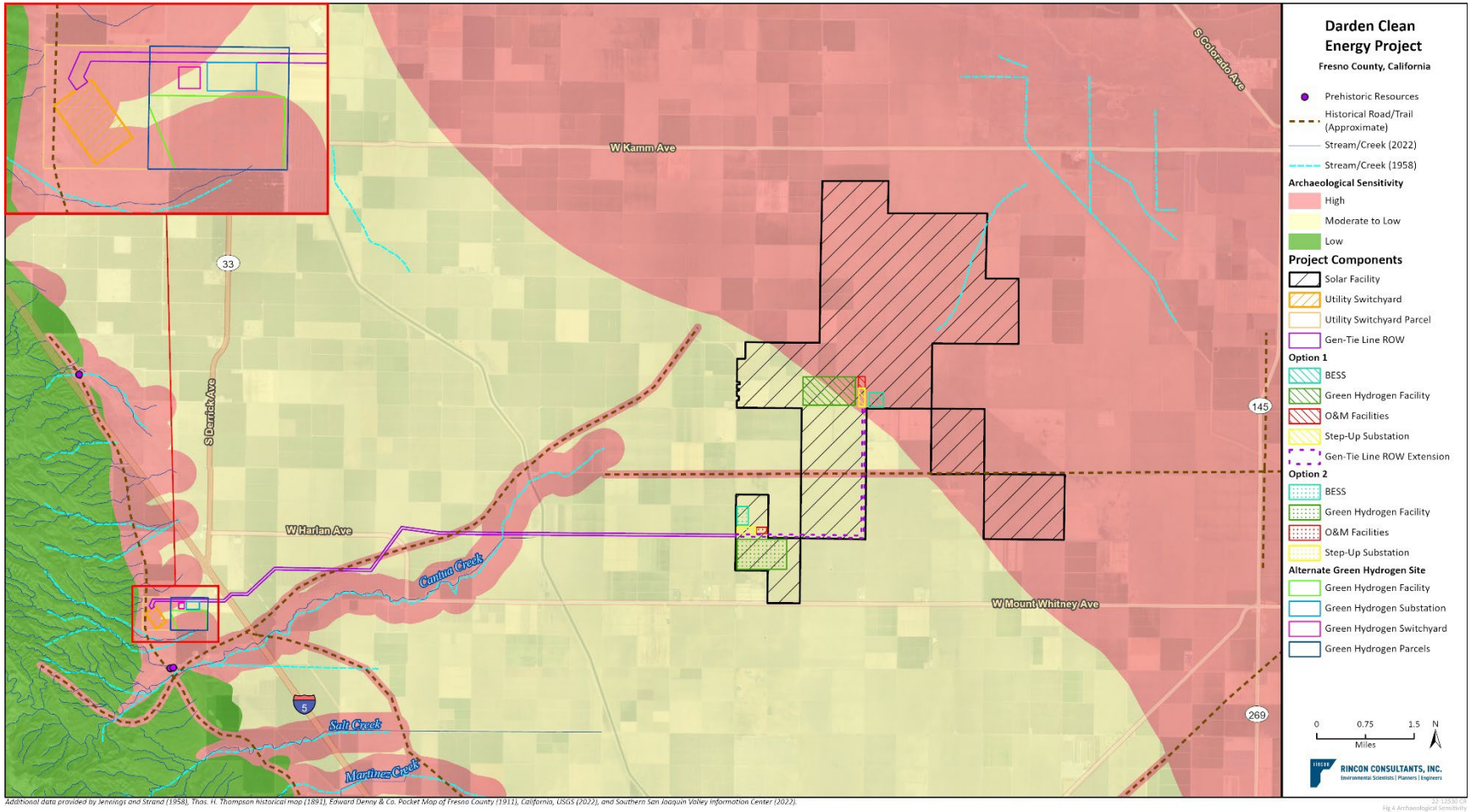
The archaeological monitor shall have the authority to halt and redirect work in the event of a discovery. If archaeological resources are encountered during ground-disturbing activities, work in the immediate area shall be halted and/or redirected, and the find evaluated for listing in the CRHR. Should an unanticipated resource be found as CRHR eligible and avoidance is infeasible, additional analysis (e.g., testing) may be necessary to determine if project impacts would be significant.

Archaeological monitoring may be reduced or terminated at the discretion of the CRS in consultation with the lead agency, as warranted by conditions such as encountering bedrock, the presence of fill soil, or negative findings during initial ground disturbance. If monitoring is reduced to spot-checking, spot-checking shall occur when ground-disturbance moves to a new location or when ground disturbance will extend to depths not previously excavated (unless those depths are within bedrock).

CUL-6 Unanticipated Discovery of Cultural Resources

In the event archaeological resources are unexpectedly encountered during ground-disturbing activities, work within 50 feet of the find shall halt and the project CRS be contacted immediately to evaluate the resource. If the resource is determined by the CRS to be prehistoric, then a Native American representative shall also be contacted to participate in the evaluation of the resource. If the CRS and/or Native American representative determines it to be appropriate, archaeological testing for CRHR eligibility shall be completed. If the resource proves to be eligible for the CRHR and significant impacts to the resource cannot be avoided via Project redesign, the CRS shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, per the requirements of the CCR Guidelines Section 15126.4(b)(3)(C). The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to cultural resources related to the resource. Pursuant to the data recovery plan, the CRS and Native American representative, as appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. The lead agency shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional repository of the CHRIS, per CCR Guidelines Section 15126.4(b)(3)(C).

Figure 5.1-2 Archaeological Sensitivity



Impact CUL-3

Threshold:	Would the project disturb any human remains, including those interred outside of formal cemeteries?

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

Construction

Less than Significant Impact with Mitigation. No formal cemeteries or human remains interred outside of formal cemeteries are known to exist within the solar facility, Options 1 and 2 step-up substation, or the gen-tie line component locations. However, ground disturbing activities have the potential to disturb soils that contain human remains. These Project components would be constructed within areas that have had minimal below surface (greater than 18 inches) disturbance occur. Therefore, the potential exists for previously undiscovered human remains to be discovered during Project-related ground disturbance. Mitigation Measure CUL-7 would require that construction be halted in the vicinity of discovery of human remains and work remain halted until avoidance or treatment of the human remains has been carried out. With adherence to Mitigation Measure CUL-7, potentially significant impacts would be less than significant.

Operation

No Impact. O&M activities for the solar facility, Options 1 and 2 step-up substation, and gen-tie line components would not involve ground-disturbing activities that would have the potential to disturb human remains. Therefore, no operational impacts to human remains would occur as a result of the Project.

BESS

Construction

Less than Significant Impact with Mitigation. No formal cemeteries or human remains interred outside of formal cemeteries are known to exist within the Options 1 and 2 BESS component locations. However, ground disturbing activities have the potential to disturb soils that contain human remains. This Project component would be constructed within areas that have had minimal below surface disturbance occur. Therefore, the potential exists for previously undiscovered human remains to be discovered during Project-related ground disturbance. As described above under "*Solar Facility, Step-Up Substation, and Gen-Tie,*" with adherence to Mitigation Measure CUL-7, impacts would be less than significant.

Operation

No Impact. O&M activities for the Options 1 and 2 BESS component would not involve ground-disturbing activities that would have the potential to disturb human remains. Therefore, no operational impacts to human remains would occur as a result of the Project.

Green Hydrogen

Construction

Less than Significant Impact with Mitigation. No formal cemeteries or human remains interred outside of formal cemeteries are known to exist within the Options 1 and 2 green hydrogen components, or the alternate component location. However, ground disturbing activities have the potential to disturb soils that contain human remains. This Project component would be constructed within areas that have had minimal below surface disturbance occur. Therefore, the potential exists for previously undiscovered human remains to be discovered during Project-related ground disturbance. As described above under "*Solar Facility, Step-Up Substation, and Gen-Tie,*" with adherence to Mitigation Measure CUL-7 impacts would be less than significant.

Operation

No Impact. O&M activities for the Options 1 and 2, and alternate green hydrogen component would not involve ground-disturbing activities that would have the potential to disturb human remains. Therefore, no operational impacts to human remains would occur as a result of the Project.

Utility Switchyard

Construction

Less than Significant Impact with Mitigation. No formal cemeteries or human remains interred outside of formal cemeteries are known to exist within the utility switchyard component location. However, ground disturbing activities have the potential to disturb soils that contain human remains. This Project component would be constructed within areas that have had minimal below surface disturbance occur. Therefore, the potential exists for previously undiscovered human remains to be discovered during Project-related ground disturbance. As described above under "*Solar Facility, Step-Up Substation, and Gen-Tie,*" with adherence to Mitigation Measure CUL-7, impacts would be less than significant.

Operation

No Impact. O&M activities for the utility switchyard would not involve ground-disturbing activities that would have the potential to disturb human remains. Therefore, no operational impacts to human remains would occur as a result of the Project.

Overall Project

Less than Significant Impact with Mitigation. No human remains are known to exist within the project site. During construction, potential exists for previously undiscovered human remains to be discovered during ground-disturbing activities (i.e., grading, excavating, trenching, boring). Project operation would not involve ground-disturbing activities that would have the potential to encounter human remains. With adherence to Mitigation Measure CUL-7, overall Project construction impacts would be less than significant.

Mitigation Measures

CUL-7 Human Remains

No human remains are known to be present within the Project site. However, the discovery of human remains is always a possibility during ground-disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be of Native American origin, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from subsequent disturbance.

5.1.5 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

Impacts to cultural resources are generally site- and resource-specific, and therefore potential cumulative impacts may be realized if two or more projects occur in the same location. The geographic scope of potential cumulative cultural resource impacts is limited to the immediate vicinity of ground-disturbing activities that would occur during construction or O&M. As shown in Figure 5-1, Cumulative Projects within 15 Miles of the Project Site, the Project would not spatially overlap with any of the Cumulative Projects included in Table 5-1. Moreover, all Cumulative Project proponents would be expected to comply with state law relating to cultural resources. Cumulative impacts to cultural resources would be less than significant.

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 cultural resources would be less than significant.

5.1.6 Laws, Ordinances, Regulations, and Standards

The LORS that may apply to the Project related to cultural resources are summarized in Table 5.1-5. The local LORS discussed in this section are ordinances, plans, or policies of Fresno County.

Table 5.1-5 LORS Applicable to Cultural Resources

Jurisdiction	LORS	Applicability	Opt-In Application Reference	Project Conformity
Federal	Section 106, National Historic Preservation Act	Applies if the Project would require a federal permit.	NA	The Project will not include any federal permitting.
State	California Environmental Quality Act	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	Certification of the Project by the CEC will be required to comply with CEQA, as required by the CEC's Opt-In Application process.
State	Assembly Bill 52	Requires lead agencies to consult with Tribal Governments to address Tribal Cultural Resources that may be impacted by a Project.	NA	CEC will be required to complete consultation as part of the Opt-In process.
State	Health and Safety Code Section 7050.5	Work shall be halted in the event of human remains discovery.	Impact CUL-3	Mitigation Measure CUL-7 requires compliance with Health and Safety Code Section 7050.5 in the event of a discovery of human remains.
State	PRC Section 5097.98	Most Likely Descendant designation following discovery of human remains determined by the Coroner to be of Native American origin.	Impact CUL-3	Mitigation Measure CUL-7 requires compliance with PRC Section 5097.98 in the event of a discovery of human remains.
Local	Fresno County General Plan OS-J.1	Identify, protect, and enhance Fresno County's important historical, archeological, paleontological, geological, and cultural sites and their contributing environment during Project review.	Throughout this Opt-In Application	The Project would conform with the Fresno County General Plan Goals and Policies, as required by the California Energy Commission's Opt-In Application process.

CEQA = California Environmental Quality Act; PRC = Public Resources Code;

5.1.6.1 Federal LORS

Federal regulatory protection for cultural resources would apply if a specific project involved federally owned or managed lands, a federal license, permit, approval or funding, and/or crosses federal lands. The Project site does not cross federally owned or managed lands and is not currently being funded in part or by federal funding; therefore, there are no applicable federal LORS related to cultural resources.

5.1.6.2 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 cultural resources.

California Assembly Bill 52 of 2014

As of July 1, 2015, Assembly Bill (AB) 52 was enacted and expands CEQA by defining a new resource category, "tribal cultural resources". AB 52 establishes, "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states the CEQA lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3).

PRC Section 21074 (a)(1)(A) and (B) define *tribal cultural resources* as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and that meets at least one of the following criteria, as summarized in *CEQA Guidelines* Appendix G:

1) Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k).
2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process with California Native American tribes that must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." California Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency. The CEC as the lead agency would be required to comply with AB 52 during the Opt-In process.

California Health and Safety Code

Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the Coroner of the county in which the remains are discovered has determined if the remains are subject to the Coroner's authority. If the human remains are of Native American origin, the Coroner must notify the NAHC within 24 hours of this identification.

California Public Resources Code Section 5097.98

Section 5097.98 of the California PRC states that the NAHC, upon notification of the discovery of Native American human remains pursuant to Health and Safety Code Section 7050.5, shall

immediately notify those persons (i.e., the Most Likely Descendant [MLD]) that it believes to be descended from the deceased. With permission of the landowner or a designated representative, the MLD may inspect the remains and any associated cultural materials and make recommendations for treatment or disposition of the remains and associated grave goods. The MLD shall provide recommendations or preferences for treatment of the remains and associated cultural materials within 48 hours of being granted access to the site.

5.1.6.3 Local LORS

The Fresno County General Plan contains policies that seek to preserve historical, archaeological, paleontological, geological, and cultural resources of the county through development review, acquisition, encouragement of easements, coordination with other agencies and groups, and other methods (Fresno County General Plan 2000). Of the policies outlined in the General Plan, OS-J.1 provided below, may require conformance by the applicant.

Goals

Goal OS- J – To identify, protect, and enhance Fresno County's important historical, archeological, paleontological, geological, and cultural sites and their contributing environment.

Policies

OS-J.1 The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archeological, paleontological, and cultural sites and their contributing environment from damage, destruction, and abuse to the maximum extent feasible. Project-level mitigation shall include accurate site surveys, consideration of project alternatives to preserve archeological and historic resources, and provision for resource recovery and preservation when displacement is unavoidable.

5.1.7 Agencies and Agency Contact

Table 5.1-6 lists the state agencies responsible for cultural resources management for the Project and the issues they are responsible for addressing.

Table 5.1-6 Agency Contacts for Cultural Resources

Issue	Agency	Contact
Native American Tribal Cultural Resources, Traditional Cultural Properties, Most Likely Descendant Designation	Native American Heritage Commission	1550 Harbor Blvd. Suite 100, West Sacramento, CA 95691 (916) 373-3710
Local Regulatory Requirements	Fresno County Planning Department	2220 Tulare St #6, Fresno, CA 93721 (559) 600-4230

5.1.8 Permits and Permit Schedule

Other than certification by the CEC, no state, federal, or local permits are required for the Project for the management of cultural resources. Consultation with the State Historic Preservation Officer will not be required under Section 106 of the NHPA unless the Project requires a federal permit.

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