2.3 Cultural Resources

This section discusses the existing cultural and archaeological resources in Imperial County. The regulatory environment and existing conditions have been assessed and analyzed to provide the County with a baseline for an update to the COSE. This includes a constraints and opportunities analysis for siting development and conservation. This document is primarily based on the 1993 EIR by Brian F. Mooney Associates, the *2014 Renewable Energy and Transmission Element Update, Baseline Environmental Inventory Report* for the County of Imperial (Chambers Group 2014), and the 2014 Draft EIR/Environmental Impact Statement (EIS) for the DRECP (BLM et al. 2014).

2.3.1 Terminology

Definitions of the cultural and archaeological resource terms used in this section are provided below.

- **Cultural Resource** – A broad concept that encompasses archaeological sites, objects, structures, buildings, and places and areas of traditional importance typically of concern to Native American and other ethnic groups.
- **Archaeological Resource** – The material remains of human activity dating to the prehistoric (predating 1770 AD) or historic period (postdating 1770 AD).
- **Built-Environment Resource** – A resource that was constructed by humans, generally consisting of buildings, structures, and objects (King 2011).
- **Ethnographic Resource** – An element of the natural or built-environment or another cultural resource type that is assigned cultural significance by traditional users or groups (NPS 1998). Important subsets of this resource type are traditional cultural properties (a type of National Register historic property) and tribal cultural resources (a type of California Register historical resource).
- **Cultural Landscape** – A "geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values" (Birnbaum 1994).
- **Prehistoric Resources** – The remains of activities in the past prior to sustained European contact.
- **Historical Resource** – A resource that meets the criteria for listing on the California Register of Historical Resources (California Register) or other significance criteria found in the California Environmental Quality Act (14 California Code of Regulations (CCR) Section 15064.5[a]). Generally, anything older than 45 years old can be eligible for listing.
- **Historic Property** – A resource that is included in, or is eligible for inclusion in, the National Register of Historical Places and may include any prehistoric or historic district, site, building, structure, traditional cultural property, or object (16 USC Section 470[w][5]). Generally, anything older than 50 years old can be eligible.
- **Unique Archaeological Resources** – Archaeological artifacts, objects, or sites that meet CEQA criteria, even if not eligible for nomination on the California Register (14 CCR Section 15064.5[c][3]).

2.3.2 Regulatory Environment

The following is a list of laws, policies, and plans relevant to cultural and archaeological resources.

Federal

- Antiquities Act of 1906 (16 USC 431–433)
- National Historic Preservation Act of 1966 as Amended (NHPA) (Public Law [PL] 89 665; 16 USC 470-1)
- National Trails System Act of 1968 (16 USC 1241 et seq.)
- Federal Land Policy Management Act of 1976 (43 USC 1701 et seq.)
- Archaeological Resources Protection Act of 1979 (16 USC 470aa–mm)
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC 3001–13)
- Omnibus Public Lands Management Act of 2009 (PL 111-11)
- American Indian Religious Freedom Act of 1978 (42 USC 1996)
- Religious Freedom Restoration Act of 1993 (42 USC 2000bb et seq.)
- Executive Order 11593 Protection and Enhancement of the Cultural Environment (1971)
- Executive Order 13007 Indian Sacred Sites (1996)
- Executive Order 13175 Consultation and Coordination with Indian Tribal Governments (2000)

State

- California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.)
- California Public Resources Code (PRC), Sections 21083.2 and 21084.1
- California Register of Historic Resources (PRC Section 5024.1)
- California Health and Safety Code, Sections 7050.5, 8062, 7052, and 7054
- California PRC Section 5097.9 et seq.
- California Code of Regulations, Title 14, Division 3, Chapter 1, Sections 4307–4309
- CCR Title 14, Division 3, Chapter 3, Section 15064.5
- Senate Bill 18 – Local and Tribal Intergovernmental Consultation, Chaptered Bill 905
- Assembly Bill 52 – Native Americans: California Environmental Quality Act (2014)

County

- Imperial County General Plan, *Conservation and Open Space Element*, Section III, Goal 3

2.3.3 Existing Conditions

This section includes a description of the basic environment and geography of Imperial County and a description of the cultural setting, together which provide background information for the description of previously identified existing cultural resources in the County.

2.3.3.1 Environmental Setting

Imperial County is located in the Colorado Desert, a low desert that is a part of the wider Sonoran Desert that covers much of the southwestern United States and northwestern Mexico. The center of Imperial County is the Imperial Valley, formed by tectonic movement between the North American and Pacific

plates, forming a sunken area between branches of the Peninsular Ranges. This is referred to as the Salton Trough, the northern landward extension of the Gulf of California (Alles 2007). A smaller division, the Salton Sink, is composed of the Imperial Valley and the Coachella Valley to the north in Riverside County and is very low in elevation. In the eastern portion of the Imperial Valley are the Algodones Dunes, a long area of shifting sand dunes that remains uninhabited. To the west and the east of Imperial Valley are mountainous areas, with the Colorado River forming the County's eastern border. Where the Colorado River empties into the Gulf of Mexico, finer sediments are released onto a vast and growing delta, while coarser materials fall out along the bed and nearby floodplains of the river. The trough is being constantly filled with sediments as it deepens, while portions of the Imperial Valley remain well below sea level.

Lake Cahuilla

The most important feature in the study of the prehistory and history of Imperial County is Lake Cahuilla, the modern iteration of which is the Salton Sea. Because the Salton Sea is a rare source of fresh water in the desert, human populations would have been attracted to live and gather plant and animal resources near the lake. This enormous lake periodically formed when flooding in the Colorado River broke through low-lying areas and flooded the Salton Trough, inundating up to an average elevation of about 40 feet above mean sea level (amsl). Based on modern data regarding the flow of water in the lower Colorado River and the Salton Trough rate of evaporation, a full cycle of inundation and desiccation would have taken about three-quarters of a century. This includes a minimum of about 18 years for the river to fill the basin and a minimum of 56 years for the lake to dry up after it was isolated from the Colorado River (Schaefer and Laylander 2007). Early researchers thought Lake Cahuilla had been a single episode lake existing for at least five centuries, between 1000 and 500 years before present (BP) (Laylander 2006). More recently studies have indicated that there were repeated lake formations, with at least four cycles since 1300 years BP and an unknown number prior to 2000 years BP (Waters 1983). Laylander (1995) established the existence of a substantial stand for the lake in the seventeenth century AD. Radiocarbon dating, stratigraphic deposits, and observations over the last 150 years show that the rise and fall of the lake were cyclical events that occurred perhaps every 200 to 300 years. Human occupation sites mark the ancient shorelines both above the high stand mark and along the lower, retreating shorelines (Waters 1983; Laylander 2006).

The ancient shoreline of Lake Cahuilla nearly surrounds the Salton Trough (Figure 2.3-1). On the surface, the Salton Trough exhibits ancient lakebed sediments, alluvial channels, and dune sands. The central portion (Imperial and Coachella Valleys, Salton Sink) is covered by clay and silt deposits from the prehistoric lakestands. Shoreline deposits circumscribe the central lakebed deposits and consist mostly of unconsolidated sand and gravel, grading into silts and clays. During the Late Prehistoric period, Lake Cahuilla stretched from north of Indio to south of Mexicali (Laylander 1995).

The Colorado River flooded parts of the Salton Trough in 1840, 1842, 1852, 1859, 1862, 1867, and 1891. The flood of 1862 interrupted the stage route between Yuma and San Diego for weeks, and a flat boat was used to cross the New River. During the summer of 1891, the flooding formed a lake several miles long. The most recent flooding occurred between 1904 and 1907, when the Colorado River entered the irrigation system leading to the Salton Sink (Bard 2002). Heavy silting greatly reduced the amount of water reaching the Imperial Valley farmers, leading to the California Development Company creating a breach at the banks of the Colorado River; however, this action caused uncontrolled flooding of the Salton Sink through 1905 and resulted in the historic iteration of Lake Cahuilla, called the Salton Sea. Flooding to the region was not completely halted until 1907 (Brian F. Mooney Associates 1993).

2.3.3.2 Cultural Setting

Three elements of the cultural setting of Imperial County are important to understanding the cultural resources present: prehistoric, ethnographic, and historic. The prehistoric setting covers the era prior to sustained European contact (AD 1770), while the historic setting covers the period subsequent to that contact. The ethnographic setting covers the overlap between the two, presenting information regarding the Native American inhabitants of the County, as understood through historical accounts and information given to anthropologists by Native Californians.

Prehistoric

The prehistoric background of the Colorado Desert, including Imperial County, consists of three major periods: the Paleoindian (12,000 to 8,000 years BP), the Archaic (8,000 to 1,500 years BP), and the Late Prehistoric (1,500 years BP to European Contact). Although human occupation before 12,000 years BP has been established in North and South America (Erlandson et al. 2007), the evidence for the early occupation of California is rare and controversial. Some scholars argue that these sites do exist including the Yuha Pinto Wash, Lake Manix, Calico Hill, and China Lake sites (Davis, Brown, and Nichols 1980). However, the dates assigned to these sites had been obtained from questionable materials that resulted in the archaeological community's skepticism of an early occupation in California (Erlandson et al. 2007; Sutton et al. 2007). This point of view is changing with the acceptance of occupation in Oregon and South America prior to 14,000 years BP and the discovery of two sites (Arlington Man and Daisy Cave) on the northern Channel Islands dating securely to as early as 12,700 years BP and 11,500 years BP, respectively. To date, no sites conclusively dated to before 12,000 have been identified in Imperial County (Erlandson et al. 2007; Schaefer and Laylander 2007).

<u>Paleoindian Period (about 12,000 to 8,000 years BP)</u>

The Paleoindian Period occurred at the end of the Pleistocene and beginning of the Holocene era. Isolated fluted projectile points, assigned to the Fluted Point or Clovis Tradition, have been recovered in the County from Ocotillo Wells and the Yuha Desert (Dillon 2002; Moratto 1984; Rondeau, Cassidy, and Jones 2007). All are surface finds and have no associations with extinct fauna. Traditionally the people during the terminal Pleistocene were thought to be mobile big-game hunters; however, recent studies suggest that in California their economies were more diverse and focused on smaller animals and plant foods and that large game played a minor role (Erlandson et al. 2007). These mobile people lived in small groups in temporary camps located near permanent water sources (Sutton et al. 2007). Sites attributed to this period in the Colorado Desert are characterized by circular cleared areas in the desert pavement (sleeping circles) and flaked stone tools (scrapers or cores) covered with a thin layer of patina that accumulates with age and exposure. Unfortunately, both kinds of archaeological material still lack solid chronological verification and therefore could date to a wide range of time periods (Schaefer and Laylander 2007).

The material culture pattern observed in Imperial County during the Paleoindian Period is often referred to as the San Dieguito Complex, which may have extended through the Early Archaic Period (see below). San Dieguito Complex sites in Imperial County are characterized by a lack of ceramics, lithic assemblages, rock features, and cleared circles (Bard 2002). The San Dieguito Complex is thought to be the material remains of a nonspecialized hunting and gathering society. Extensive evidence of occupation in the Colorado Desert during the San Dieguito period is limited, likely the combined result of highly mobile early settlement patterns as well as the instability of landforms in the Salton Basin and Colorado River Valley (Schaefer and Laylander 2007). The San Dieguito period is considered to overlap

and/or coincide with several other prominent material culture patterns including the Playa culture, Lake Mohave Complex, Western Pluvial Lakes Tradition, and Western Lithic co-tradition (Laylander 2005).

Archaic Period 8,000 to 1,500 years BP

This period is broken into two subperiods: Early (8,000 to 4,000 years BP) and Late (4,000 to 1,500 years BP) (Schaefer 1994). The Early Archaic was characterized by a drier climate and shallow and fluctuating lake levels. This climate change, also referred to as the Altithermal Period, may have forced the mobile hunter-gatherers into more hospitable regions, resulting in the semi-abandonment of Imperial County. Although examples are rare, archaeological sites from this period are likely to occur in remnant pluvial lake basins, along ancient dry stream channels, and near springs/seeps (Sutton et al. 2007). Early Archaic occupation is generally indicated by stone circles and sparse lithic scatters on desert pavements. The available archaeological evidence suggests that there were very low population densities during this period and forager strategies were practiced. In the Colorado Desert, archaeological sites dating to the Middle Holocene are rare. One such site, the Salton Sea Test Base in Imperial County, contained a cluster of early projectile point types including Lake Mojave, Pinto, and Elko forms (Schaefer and Laylander 2007). Although the chronology of Lake Cahuilla's intermittent rises and falls has not been completely refined (see above), archaeological assemblages surrounding the ancient shoreline are important indicators of settlement patterns during this period. Few studies have been conducted around the southern shores of Lake Cahuilla; however, the patterns identified at the Salton Sea Test Base along the western shoreline are expected to be present along the entire lake shore (Schaefer and Laylander 2007). Few Pinto (Pinto series) or Amargosa (Elko series) projectile points have been found on the desert pavements in the Colorado Desert (Schaefer 1994). The Pinto Complex is a regional hunting and gathering adaptation that characterized the Early Archaic Period in Imperial County (Bard 2002; SCA 2014). This complex is often identified through the presence of a basal-notched projectile point type known as the Pinto Series (Justice 2002).

The subsequent Late Archaic (4,000 to 1,500 years BP) is characterized by the opportunistic exploitation of both large and small animals, with a greater emphasis on milling tool food processing technology to exploit seasonally available seeds and nuts. These archaeological materials are referred to as the Gypsum or Amargosa complexes. The Armargosa Complex sites are represented by features and artifacts that indicate use by diversified hunters and gatherers who adapted to drier and warmer Holocene conditions, specifically at the higher elevations of the Mojave Desert and Great Basin. One important Late Archaic site, located just to the west of Imperial County in Anza-Borrego Desert State Park, is the early component of the Indian Hill rock shelter. A series of 11 rock-lined cache pits and numerous hearths indicate a residential base or temporary camp in which food storage was integral to the hunting and gathering subsistence and settlement strategy (Cleland and Apple 2003; Schaeffer 1994; Schaefer and Laylander 2007). Numerous Elko-eared dart points, flaked and milling stone tools, and three burials were also recovered during excavation. Similar finds were made at a small rock shelter in Tahquitz Canyon near Palm Springs (Schaefer 1994). More recently a late Archaic Period campsite was identified in 8-meter-deep dune deposits adjacent to the north Lake Cahuilla shoreline. Radiocarbon dates and associated avian and fish remains confirm a Late Archaic Period Lake Cahuilla occupation. Additional Archaic sites certainly lie buried under alluvial fans and wash deposits, sand dunes, and Lake Cahuilla sediments (Bard 2002).

Also closely associated with Lake Cahuilla during the Archaic and subsequent Late Prehistoric periods is Obsidian Butte, an obsidian outcrop that was accessible by boat when the water level dropped below 130 feet below sea level and was accessible by foot when the lake dropped below 225 feet below sea

level. This outcrop was the predominant obsidian procurement site for peoples of the Colorado Desert and was traded across Southern California and into Baja California (Gates and Crawford 2010).

Late Prehistoric Period

The period between 1,500 years BP and European contact (AD 1769 in California) is commonly referred to as the Late Prehistoric Period. It was during this period that early forms of the Colorado Desert's modern ethnographic lifeways emerged. A series of dry and wet episodes characterize the climate during this period (Sutton 1996; Weide and Barker 1974). The beginning of this period was a pre-ceramic transitional phase from 1,500 to 1,250 years BP. This was a continuation of the prehistoric Amargosa Complex, with similar subsistence and settlement patterns. Major innovations include the introduction of paddle-and-anvil pottery making around 1,250 years BP and the introduction of floodplain agriculture. Viewed regionally, pottery use in the Late Prehistoric Period of the Colorado Desert can be divided into three periods or material culture patterns (Arnold, Walsh, and Hollimon 2002; Love and Dahdul 2002; Waters 1982a, 1982b, 1982c). Patayan I times, about 1250 to 950 BP, witnessed the inception of several ceramic traditions. During Patayan II times, 950 to 500 BP, increased local manufacture and use of pottery occurred. Patayan III, 500 to 240 BP, saw the introduction of "Colorado Buff" pottery and the westerly spread of ceramics to coastal Southern California. One of the infilling episodes for Lake Cahuilla corresponds to Patayan II, 950 to 500 years BP. Previous studies suggest the final Lake Cahuilla recession occurred around 450 years BP, but recent research reveals a fifth infilling between 350 and 250 years BP (Schaefer 1994; Laylander 1995). The majority of sites in the Colorado Desert date to the Late Prehistoric period (Laylander, Shelley, and Daniels 2010).

In the Colorado Desert, sites vary from simple pot drops (clusters of broken pieces of pottery) to seasonal camps and more permanent residential bases. Settlement appears to have been more intensive along the northwest shoreline of Lake Cahuilla in the Coachella Valley as represented by large-scale multiseasonal occupations and seasonal temporary camps. Sites along the eastern shoreline are less dense and smaller (Schaefer and Laylander 2007). As desert lakes dried during periods of low precipitation, people moved settlements away from the lakeshore to rivers, streams, and springs (Schaefer 1994). Artifacts in the Colorado Desert in Imperial County include small projectile points (representing the use of bow-and-arrow technology), drills, flake scrapers, slate pendants, millstones, metates (type of millstone), and shell beads. Burial practices also shifted from burials (inhumations) to cremations. Agriculture, paddle and anvil pottery (Brownware and Buffware from Arizona), and Desert Side-notched points were introduced in this period. These have been attributed to being influences of the Patayan or Hakataya peoples who lived along the Colorado River. Studies of the native languages of the area and movement of artifact styles indicated that around 1000 years BP, the ancestors of the Takic-speaking Cahuilla entered the Coachella and northern Imperial valleys and surrounding areas, likely pushing the Yuman-speaking peoples to the south (Sutton 2009).

Other cultural traits include rock art and an intricate long-distance trade network as evidenced by numerous trail systems. Also, fish traps and house pits can be found along the northwestern shoreline of Lake Cahuilla (Schaefer and Laylander 2007). The recession of Lake Cahuilla around 300 BP prompted migratory shifts of prehistoric populations in the Colorado Desert, with some groups moving westward into the Anza-Borrego region as well as north into San Bernardino and Riverside counties, while the primary area of occupation in the Colorado Desert shifted to the Colorado River (Sutton 2011; Warren 1984).

Ethnographic

The Cahuilla, Tipai, and Quechan ethnolinguistic groups, described below, have inhabited the Imperial County area since before European contact.

Cahuilla

The Cahuilla people occupied a territory in south-central California, between the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, east to the Colorado Desert, and west into the San Jacinto Plain near Riverside and the Palomar Mountains (Bean 1978). Numerous pre-European contact trade routes existed through the Cahuilla territory extending as far west as Santa Catalina and as far east as the Gila River.

Cahuilla subgroups are typically defined by the topographical settings in which they lived: Pass, Mountain, and Desert. Although linguistic variations between the subgroups are known, all belong in the Cupan division of the Takic family (Bean 1978; Golla 2011). Permanent settlements of the Cahuilla were typically situated in canyons or on alluvial fans where food and water was consistently available. They relied heavily on faunal and floral resources for sustenance; temporary camp or settlement sites were used for seasonal hunting and gathering activities dependent on climate and weather conditions. Cahuilla political organization was complex, involving two nonterritorial and nonpolitical groups based on paternal lineage (patrimoieties). These patrimoieties were further subdivided into political-ritual-corporate units or clans comprising several villages. Leadership positions among clans were usually inherited through patrilineal succession.

While the Cahuilla likely came into contact with Europeans during explorations of the late sixteenth and seventeenth centuries, few interactions between the groups were recorded until the establishment of the Mission System between 1774 and 1819 (Bean 1978). The Spanish established several *asistencias* (sub-missions) in the Cahuilla territory beginning in 1819. Since the introduction of the reservation system in the territory circa 1865, the Cahuilla people have typically lived on the reservations established in Riverside County. Programs have been developed to encourage the continuation of the Cahuilla cultural identity, including community language and skill classes as well as ethnographic centers such as the Malki Museum on the Morongo Reservation (Bean 1978; Morongo Band of Mission Indians 2014).

Tipai

The Tipai, previously called Diegueño or Kamia, occupied an area that roughly extended from the Pacific Coast at San Diego eastward to the Sand Hills of Imperial County as well as south into modern-day Mexico (Luomala 1978). Although the Tipai traded primarily among themselves and with the closely linked Ipai to the north, extensive trade routes through their territory expanded their interaction between other coastal groups and as far inland as New Mexico (Pritzker 2000).

The Tipai language is designated as Diegueño and is part of the Yuman-Cochimi family. The Quechan and Ipai languages to the east and north, respectively, share close ties with that of the Tipai (Golla 2011; Luomala 1978). Political organization was divided into 30 autonomous, seminomadic bands. Leaders were selected through patrilineal succession (Luomala 1978; Pritzker 2000). Villages were predominantly seasonal, consisting of campsites rather than permanent settlements. A Tipai member of the Jacumba-Campo region once estimated that his large clan occupied over 19 settlements during the 1850s (Luomala 1978). Winter villages were typically found in sheltered foothills and valleys. Subsistence of the Tipai consisted primarily of seasonal vegetal foods with opportunistic hunting

practiced during gathering. Clans in the Imperial Valley also practiced some farming of maize, beans, and tobacco (Pritzker 2000).

Contact between Tipai and Europeans was, as with the Cahuilla, not largely recorded until the implementation of the Mission System. The Tipai were historically part of the native populations rounded up and brought to the mission. In 1775, a Tipai-Ipai revolt resulted in the destruction of Mission San Diego de Alcalá. The mission was later rebuilt, and conversion practices continued. The Tipai were continually treated poorly through the Mexican and American periods, though many of the small reservations founded toward the end of the nineteenth century remained in the vicinity of traditional villages (Pritzker 2000).

Quechan

The Quechan, also known as the Yuma, continue to occupy their traditional territory at the confluence of the Gila and Colorado rivers at the edge of the California, Arizona, and Mexican borders. From here their territory stretched north along the Colorado River and to the east of the Gila River (Bee 1983). Trade interactions prior to European contact are not well known; however, warfare was emphasized in the Quechan traditional myths and histories. The Cocopa and Maricopa were major enemies of the Quechan, while the group frequently allied themselves with the Mohave. The number of war parties may have increased post contact for economic reasons (Bee 1983).

The Quechan speak a language in the Yuman-Cochimi language family (Golla 2011; Bee 1983). People living in the territory were geographically divided into a series of settlements or *rancherías* north and south of the confluence of the Colorado and Gila rivers. *Rancherías* comprised extended family groups with populations ranging into the hundreds. A 1774 Spanish observation counted over 800 inhabitants of the largest, *Ranchería xuksíl* (Bee 1983). Subsistence primarily consisted of cultivated plants rather than gathered resources, which allowed for larger populations. Quechans were able to plant their fields multiple times throughout a year with crops including teparies, maize, watermelons, black-eyed beans, pumpkins, muskmelons, and winter wheat. The Quechan recognized several patrilineal clan groups; however, a clan name was used only by females. Tribal structure, rather than *ranchería* or clan structure, played a crucial role during war expeditions against neighboring tribes. Post European contact sources noted two separate leadership positions among the Quechan: the first for civil affairs, the second for war (Bee 1983).

Although not listed in the accounts of the de Alcarón expedition of 1540, their position at the confluence of the two rivers made relationships between the Quechan and Europeans of crucial importance. Documentation of Quechan traditions and life began in the late seventeenth century; and Spanish relations with the group remained positive until 1780 and 1781 when a small contingency of priests, soldiers, and farming families established the settlements of Mission San Pedro y San Pablo de Bicuñer and Mission Puerto de Purísima Concepción in the territory. Both settlements were razed by Quechans shortly after being established (Bee 1983; Brian F. Mooney Associates 1993; OHP 2014). Continued attempts at settlements were made during the Mexican and American periods, with only Fort Yuma (established 1852) remaining. The Quechan reservation was established in 1884, while disputes over allotments continued until 1912. A school was created on the reservation at the old Fort Yuma around the same time. The Quechan continue to occupy the reservation to this day (Inter Tribal Council of Arizona 2011).

Historic

The historic period in California is generally broken into three parts: the Spanish period (1769 to 1821), the Mexican period (1821 to 1848), and the American period (1848 to present).

The Spanish Period (1769 to 1821)

The first Europeans arrived in Imperial County with the Hernando de Alcarón expedition of 1540; however, the Spanish did not begin to colonize what was then known as Alta California until 1769. Several exploratory land routes were established through the County. The first was led by Pedro Fages (1772) while chasing deserters of the Spanish army. Juan Bautista de Anza led two expeditions in 1774 and 1775 (see Figure 2.3-2). Spanish settlements were largely restricted to the West Mesa, now known as the Yuha Desert, in the southwestern portion of the County. Inhospitable terrain of the Algodones Dunes discouraged early exploration and colonization of the eastern portions of the County. Included in the early settlement sites of the Spanish period are the Mission Puerto de Purísima Concepción (1780) and Mission San Pedro y San Pablo de Bicuñer (1781) along the de Anza Trail, along the Colorado River in the southeast portion of the County. As described above, both missions were destroyed in 1781 in conflicts between the Spanish and the Quechan (OHP 2014; Brian F. Mooney Associates 1993).

The Mexican Period (1821 to 1848)

The Mexican Period in Imperial County was characterized by efforts to reestablish an overland route from Sonora to the California coast in order to encourage trade and settlement. Following several expeditions, the Sonora Road was established in 1825, following portions of the de Anza Trail through the County before turning westward through the Carrizo Corridor and branching toward both San Diego and Temecula (see Figure 2.3-2). The Mexican government established a small adobe post, Fort Romualdo Pacheco, along this route in 1825. The fort was abandoned the next year following an attack by the Kumeyaay (OHP 2014).

The Sonora Road would not gain in popularity until the late 1830s when the southwestern portion of the route shifted north of the United States-Mexico border. In 1846, US General Stephen W. Kearny led his troops across the Yuha Desert and through the Carrizo Corridor during the Mexican-American War (1846–1848). Several weeks following Kearny's march, a portion of the Mormon Battalion was led by Colonel Phillip St. George Cooke from Iowa to San Diego with the plan to establish a wagon route to California (see Figure 2.3-2) (Brian F. Mooney Associates 1993).

The American Period (1848 to present)

The American Period in Imperial County is marked by further exploration and by development of the agricultural potential of the Imperial Valley. The signing of the Treaty of Guadalupe Hidalgo in 1848 and the U.S. acquisition of California was immediately followed by the establishment of the Southern Emigrant Trail, which largely followed the old Sonora Road (Brian F. Mooney Associates 1993). This route was extensively used by settlers, miners, and the military on their way to California. A mail route following the Southern Emigrant Trail from Yuma was established in 1848; the Butterfield Overland Mail (1858–1861) would also make use of the route (see Figure 2.3-2). Camp Salvation, established near present-day Calexico, was one of many stops along the Southern Emigrant Trail to provide water to travelers along the trail (OHP 2014). The Southern Emigrant Trail was used as the primary overland route into this region of California until the establishment of the Smith-Groom Country Road in 1865. These routes generally followed that of the de Anza and Garces expedition (see Figure 2.3-2). Until the twentieth century, few people permanently settled in Imperial County.

Irrigation measures, vital to the County's development during this period, were first made by the California Development Corporation using water from the Colorado River, which was then diverted to the Alamo River via the Alamo Canal. Irrigation from the Alamo Canal Project soon prompted a large population boom in the area; the town sites of Imperial, Brawley, Calexico, Heber, and Silsbee were constructed as part of irrigation projects to entice settlers to become permanent residents. In 1904, heavy silting greatly reduced the amount of water reaching the Imperial Valley farmers. Under stress, the California Development Company attempted to create a breach at the banks of the Colorado River; however, this action caused uncontrolled flooding of the Salton Sink through 1905 and resulted in the Salton Sea. Flooding to the region was not completely halted until 1907 (Brian F. Mooney Associates 1993).

Railroad lines, including a branch of the Southern Pacific Railroad extending through the Imperial Valley to Calexico (1903), were constructed throughout portions of the County. The introduction of automobiles also prompted the development of new and better roads. One such road included Plank Road, a 7-mile-long, movable road built over the sand dunes between Imperial Valley and Yuma in 1914. Portions of the road were added and improved on through the 1920s and 1930s (OHP 2014; Brian F. Mooney Associates 1993).

2.3.3.3 Existing Prehistoric, Ethnographic, and Historic Period Resources

Data used to identify known locations of sensitive cultural resources in Imperial County was determined through the review of existing technical studies previously completed by the County and the IID and the DRECP (see Section 1, Introduction). The review also consulted the Office of Historic Preservation's inventory of resources listed on the National Register or California Register or designated as California Historical Landmarks or California Points of Historical Interest.

Prehistoric Resources

As discussed in subsection 2.3.3.2, prehistoric resources are the remains of activities in the past prior to sustained European contact. The previous studies conducted in the County identified resources including villages, rock shelters, habitation sites, lithic scatters, trails, rock art localities, and milling stations. Isolated artifacts not associated with the larger sites have also been identified in Imperial County. Previously identified prehistoric resources can be used as a general guideline to understanding the nature of localized prehistoric inhabitation and provide assistance in determining areas of known sensitivity for prehistoric resources.

The site definitions provided in Table 2.3-1 are based on the information provided in the literature review and are to be used as a general guideline to understanding the nature of prehistoric sites in the region. In addition, the identification of known areas of sensitivity does not preclude the possibility of locating additional prehistoric resources in other portions of the County.

Table 2.3-1. Types of Previously Identified Prehistoric Resources in Imperial County

Site Type	Site Definitions
Villages	Villages are sites that exhibit a level of sustained residency with resources suitable for sustaining long-term or seasonal habitation. Typically located along watercourses. Associated artifact assemblages may include (but are not limited to) bedrock outcrops, lithic artifacts, groundstone, shell, animal bone, fire-affected rock, ceramics, pictographs and petroglyphs, house rings, and evidence of funerary practices.

Table 2.3-1. Types of Previously Identified Prehistoric Resources in Imperial County

Site Type	Site Definitions
Rock Shelters	Rock shelters are typically located in higher elevations in areas that sustain habitable rock overhangs that can support brief habitation episodes or be utilized for ceremonial purposes. Associated artifacts can include (but are not limited to) pictographs and petroglyphs, fire-affected rock, lithic artifacts, midden soil, animal bone, bedrock milling features, ceramics.
Seasonal Habitation Sites	Temporary camps or transition areas were used to exploit an immediate or seasonal resource. Usually located near watercourses. Associated artifact assemblages may include (but are not limited to) ground stone, lithic debitage, and bedrock milling features. Near the ancient Lake Cahuilla shoreline, this site type may also include stone fish traps.
Lithic Scatters	Flaking stations may indicate possible opportunistic quarrying activities or tool reduction stations. Clusters can be identified in isolation or in association with other site types and are not restricted in geographic location.
Bedrock Milling Features	Grinding stations are typically located along watercourses near exposed bedrock outcrops (typically granite or granodiorite) with suitable resources in the area for processing.
Rock Art	Rock art localities are areas of exposed rock, usually bedrock outcrops but also boulders, that have had designs or figures either incised (petroglyphs) or painted on their surface (pictographs). These areas may be located on vertical surfaces, the ceilings of caves and overhangs, or on the tops of outcrops. Rock art localities are usually sacred spaces to Native American groups.
Geoglyphs	Geoglyphs are large designs or motifs most often created by moving rocks or earth to create an image on the ground. This type of site is well known in the Yuha Desert area of Imperial County. Geoglyphs may be more easily identified through the use of aerial imagery, but they can also be identified on the ground.
Trails	Trails are cultural resources that link diverse features in systems, districts, and landscapes. Generally there are many contributing attributes to trail systems. Trail-associated sites or features can include: concentrations of ceramics/pot drops, cleared circles, rock rings, rock clusters, rock cairns, rock alignments, petroglyphs, and geoglyphs.
Isolates	Isolated artifacts were not included in the study group.

Ethnographic Resources

As discussed in subsection 2.3.3.2, ethnographic resources are elements of the natural or built-environment or another cultural resource types that are assigned cultural significance by traditional users or groups. Ethnographic studies in the area suggest the concept of sacred geography has always been important to the desert cultures of this region. From the earliest times, native peoples have attributed special significance to geographic features, which play important roles in religious and cultural practices. Many of these features are remembered in songs passed down through oral tradition, serving as "maps" of mythological traditions, as well as economic sites such as quarry sites. Examples of these types of sites include the following:

Ceremonial Site: A prehistoric or historic period area of sacred character. Physical evidence of ceremonial activities are usually present in the form of dance patterns, vision quest circles, intaglios, rock cairns, rock art localities, etc.

Sacred Area: A prehistoric or historic period area of sacred character. Evidence of physical activities is not always present. Certain mountaintops, power places, and vision quest locations are examples of sacred areas. These places are often marked by rock art.

Traditional Use Area: An area of traditional use for hunting, gathering (of food or medicinal plants), fishing, or traveling.

Trails: Trail systems can date to the prehistoric or historic periods and have a combination of sacred and secular functions. Both natural and cultural elements along the route may contribute to the trail system.

Historic Period Resources

As discussed in subsection 2.3.3.2, historic period resources are the remains of activities in the past subsequent to sustained European contact. Identified historic period built-environment and archaeological resources represent a range of activities including, but not limited to, mining, transportation, and ranching/homesteading and are represented throughout the County. The number of previously identified historic period resources is smaller than prehistoric resources, making determination of areas of known or established sensitivity difficult. It is possible, however, to make informed deductions about the types of resources likely to be encountered based on the previously identified sites in combination with the documented history of the area.

The site definitions provided in Table 2.3-2 are based on the information provided in the literature review and are to be used as a general guideline to understanding the nature of historic sites in the region. In addition, the identification of known areas of sensitivity does not preclude the possibility of locating additional historic period sites in other portions of the County.

Table 2.3-2. Types of Previously Identified Archaeological Sites in Imperial County

Site Type	Site Definitions
Towns	Towns are sites that exhibit a built environment which may indicate a permanent population with established economic and social structures. Associated structures may include (but are not limited to) buildings used for residential, trade, government, or religious purposes.
Military Sites	Military sites include permanent settlements, temporary camps, or extensive training areas that exhibit a military presence in the region. Associated artifact assemblages may include (but are not limited to) military issued debris and refuse or landscape modified by use of military equipment such as tanks.
Mining	Mining related sites are representative of extractive operations focused on the acquisition of mineral materials. Such sites may include (but are not limited to) individual shafts and prospecting pits with associated tailings or mining complexes with extraction and processing elements. Mining complexes may also be considered as small towns.
Ranches/Homesteads	Ranch/homestead sites consist of a variety of material that may indicate rural habitation and land use patterns. This material may include (but is not limited to) building foundations, fence lines, rock walls, orchards and agricultural fields, landscaping elements, or outbuildings.
Religious Sites	Religious sites are closely linked with the Spanish and Mexican periods of California. Such sites may include (but are not limited to) intact or razed missions and chapel outposts. This site type may also be linked with military or ranching sites.
Refuse Scatters	Historic refuse deposits may indicate land use patterns such as settlement and travel. Scatters can be identified in isolation or in association with other site types. Associated artifact assemblages most commonly include (but are not limited to) cans, glass bottles, ceramics, or household items and debris.
Transportation Routes	Transportation routes (trails, roads, and rail lines) are often linked to significant historic events or are shown to have impacted trade and settlement patterns. Many of these routes can be identified through historic records; however, they may also be indicated by stone markers and lines, tracks left by wheels, railroad ties and debris, or refuse.
Isolates	Isolated finds are not included in the study group.

Cultural Landscapes

As discussed in subsection 2.3.1, cultural landscapes are a type of resource defined by National Park Service (NPS) Preservation Brief 36 as a geographic area, including both cultural and natural resources

and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values (Birnbaum 1994). At least four cultural landscapes are known to be present in Imperial County. Three are prehistoric trail systems and the fourth is a World War II US Army training ground.

Pacific to Rio Grande Trails Landscape (PRGTL) and Prehistoric Trails Cultural Landscape

The PRGTL is a large cultural landscape important for understanding human migration and settlement of the Americas, along with patterns of trade throughout the prehistory of western North America. This cultural landscape accommodates three trail corridors from the southern Pacific Coast of California, across the desert regions of Southern California and the Colorado Plateau, to the northern Rio Grande Valley in what is now New Mexico. The California Energy Commission (CEC) determined the landscape was eligible for listing in the California Register as a district (CEC 2014). This landscape overlaps with the County, and the southernmost of the identified trail corridors essentially follows the route of State Route 78 from San Diego County into Imperial County, before turning southeast through the Imperial Valley and crossing the Colorado River near Yuma, Arizona.

The Prehistoric Trails Network Cultural Landscape (PTNCL) represents smaller geographic and temporal portions of the much broader regional PRGTL. Originally based on the Halchidoma Trail in Riverside County, it was expanded as a discontinuous cultural landscape. While only documented archaeologically in northeastern Riverside County, it likely continues south into Imperial County, as this area was part of the extensive network of trade and exchange trails that prehistorically crossed the desert regions of southeastern California, spanning from the Pacific Coast to the Colorado River. The PTNCL site types are divided into three categories: destinations, trails, and trail-associated sites or features. Destinations primarily include water sources but also include residential, religious, and resource-collection sites. Trails can either be created by the movement of traveling feet or formally constructed. They average 30 centimeters in width and can be traced for many miles, interrupted only by gullies and washes. Trail-associated sites or features can include concentrations of ceramics/pot drops, cleared circles, rock rings, rock clusters, rock cairns, rock alignments, petroglyphs, and geoglyphs. When the trail itself is not preserved, its route can often be approximately traced by distinctive patterns of trail-associated sites and features (Bagwell and Bastian 2010). Like the wider PRGTL, the CEC determined the landscape was eligible for listing in the California Register as a district (CEC 2014).

Keruk/Xam Kwatcan Trail

The Keruk/Xam Kwatcan Trail is a Yuman sacred and secular trail system that runs the length of the Colorado River between Spirit Mountain (Newberry Mountains) in the north and Pilot Knob (Cargo Muchacho Mountains), near the southeastern corner of Imperial County, in the south. The entire trail system consists of various segments of the trail, several significant mountain ranges and specific peaks, numerous side trails, numerous earth figures/geoglyphs, and thousands of objects such as lithics, cairns, potsherds, and cleared sleeping or camping areas. The trail system, following both sides of the Colorado River along the river escarpments, was also a route for secular travel. One of the primary roles of this trail system and other associated locations and objects was mourning ritual. Families of deceased people would travel the trail system, helping them travel into the afterlife. The approximately 300 earth figures/geoglyphs located along the route are especially important in this process. Along the outer perimeters of this trail corridor are rock cairns, cleared rings, campsites, and smaller interconnecting trails. Lithic scatters, including crushed quartz rock, are sometimes found in association with the other site types. Throughout the entire Keruk/Xam Kwatcan Trail corridor, the areas are covered with various specific objects of archaeological importance and cultural relevance such as lithic sites and potsherds.

The CEC has determined the Xam Kwatcan trail eligible for listing on the California Register as a district (CEC 2013).

Salt Song Landscape

The Salt Song Trail is a Southern Paiute and Chemehuevi sacred trail system that makes a circuit between the Mojave and Colorado deserts and the southern portion of the Wasatch Range, passing through Utah, Nevada, California, and Arizona. At times it closely follows the Colorado River. The trail is believed to be traveled by the deceased, with the aid of traditional practitioners who, through song, story, and prayer, usher the deceased along the path on their post-burial journey to the afterlife. The trail consists of physical marks on the land, both trail marks and natural land patterns, wayside locations where specific songs and other ceremonies are sung or conducted, and a corridor along the trail system (Musser-Lopez and Miller 2010). A precise delineation and boundary justification for the Salt Song Landscape is difficult because the landscape extends over a large swath of the Southwest and California. In Imperial County, the trail travels southeast following the eastern side of the Imperial Valley along the Chocolate Mountains before turning east to the Colorado River (Musser-Lopez and Miller 2010). The CEC determined that the Salt Song Landscape is eligible for listing on the California Register as a district (Gates 2012).

Desert Training Center Cultural Landscape

California Historical Landmark #985 is the World War II Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA). When it was in operation between 1942 and 1944, the DTC/C-AMA stretched from Pomona, California, eastward to Aguila, Arizona, and from Yuma, Arizona, northward to Searchlight, Nevada. At 12 million acres, the DTC/C-AMA was the largest-ever military training center. Typical 1940s military features that have been documented in the DTC/C-AMA include rock cairns, faint two-track roads, structural features, concertina wire, tank tracks, footprints of runway and landing strips, foxholes, bivouacs, concrete defensive positions, refuse scatters, and trails (Bischoff 2000). California Historical Landmark #985 does not have an official boundary, and seven markers are located in different areas of San Bernardino, Riverside, and Imperial counties (OHP 2014). The resource was determined eligible for the California Register by the CEC as the Desert Training Center Cultural Landscape under Criteria 1 and 4, the equivalent of National Register Criteria A and D. As defined by the CEC, this consists of all the archaeological remains of the DTC/C-AMA WWII military training activities that were conducted across the entire region (CEC 2014). The BLM is in the process of preparing a National Register district nomination for the DTC/C-AMA (Bischoff 2010). This landscape overlaps the entire project area in both California and Arizona.

Resources Listed on State or National Registries

The National Register of Historical Places, the California Register of Historical Resources, the California Historical Landmarks list, and the California Points of Historical Interest list are all registries of cultural resources that have been determined to be significant by state, local, and federal agencies. Cultural resources on these lists are given special considerations when they may be affected by actions and undertakings. However, it is important to note that it is expensive to nominate a resource to the National Register or the California Register or as a California Historical Landmark or Point of Historical Interest. Thus only a small fraction of resources ever undergo this process. Resources that have been determined to be eligible for listing on one of these registers are afforded the same special considerations as those that have been successfully nominated. All resources over 45 years old must be evaluated for their eligibility for listing on the National Register or the California Register as part of the

NEPA, Section 106, and CEQA process. The following discussion of National Register properties, California Historical Landmarks, and Points of Historical Interest should not be considered to be an exhaustive list of resources that must be considered in any environmental review process.

Ten archaeological sites and districts in the County have been listed as eligible to the National Register for meeting one or more of the National Register criteria. These properties, as well as any resources eligible for listing on the National Register, must have potential effects from an action or undertaking evaluated and mitigated. Prehistoric National Register properties include four geoglyphs and two archaeological districts. The Southwest Lake Cahuilla Recessional Shoreline Archaeological District and the Yuha Basin Discontinuous District have the potential to yield further information to the general prehistory of the region and represent areas with a higher risk of prehistoric cultural sensitivity. All historic period resources listed to the National Register represent American period buildings built during the first half of the twentieth century. Historic properties are listed in Table 2.3-3.

Fourteen buildings, sites, and events in the County have been identified to be of statewide significance and are listed as California Historical Landmarks by the State Office of Historic Preservation (OHP). These resources may have anthropological, political, architectural, economic, scientific or technical, religious, experimental, or other historical value. The earliest of these listed sites, the 1540 launch site of the Hernando de Alarcón expedition, holds significance as the first documented arrival of European explorers in California. California Historical Landmarks numbers 770 and above are automatically listed in the California Register. Thus 9 of the 14 resources in the County are also listed on the California Register. These properties, as well as any resources eligible for listing on the California Register, must have potential impacts from a project evaluated and mitigated. If a California Historical Landmark is threatened by a project, environmental review under CEQA may be required (OHP 2014).

In addition to the 14 landmarks, 4 cultural resources are listed as California Points of Historical Interest. The OHP defines Points of Historical Interest as buildings, sites, features, or events that are of local significance and may have anthropological, military, cultural, political, architectural, economic, scientific or technical religious, experimental, or other historical value. If a Point of Historical Interest is threatened by a project, environmental review under CEQA may be required (OHP 2014).

All listed National Register Properties, California Historical Landmarks, and Points of Historical Interest are identified in Table 2.3-3. No cultural resources have been successfully nominated to the California Register in Imperial County without being a California Historical Landmark, although that does not mean that there are not resources that are eligible for nomination in the County (OHP 2014).

Table 2.3-3. Previously Identified and Listed Cultural Resources in Imperial County

Resource Name	Period	Location (Relative)
National Register of Historic Places		
Calexico Carnegie Library	Historic	Calexico
Desert View Tower	Historic	Ocotillo
Southwest Lake Cahuilla Recessional Shoreline Archaeological District	Prehistoric	Salton City
Spoke Wheel Rock Alignment	Prehistoric	Ocotillo
Stone Head (L-7)	Prehistoric	Yuma
U.S. Inspection Station – Calexico	Historic	Calexico
U.S. Post Office – El Centro Main	Historic	El Centro
Winterhaven Anthropomorph (L-8)	Prehistoric	Yuma
Winterhaven Anthropomorph and Bowknot (L-9)	Prehistoric	Winterhaven

Table 2.3-3. Previously Identified and Listed Cultural Resources in Imperial County

Resource Name	Period	Location (Relative)
Yuha Basin Discontinuous District	Prehistoric	Plaster City
California Historical Landmarks		
Camp Salvation (No. 808)	Historic	Calexico
Desert Training Center, California-Arizona Maneuver Area established by Major General George S. Patton, Jr.--Camp Pilot Knob (No. 985)	Historic	Felicity
Fort Yuma (No. 806)	Historic	Winterhaven
Hernando de Alarcón Expedition (No. 568)	Historic	Andrade
Mountain Spring Station (No. 194)	Historic	Mountain Springs
Picacho Mines (No. 193)	Historic	Winterhaven
Plank Road (No. 845)	Historic	Winterhaven
Site of Fort Romualdo Pacheco (No. 944)	Historic	Imperial
Site of Mission Puerto de Purísima Concepción (No. 350)	Historic	Winterhaven
Site of Mission San Pedro y San Pablo de Bicuñer (No. 921)	Historic	Bard
Tecolote Rancho Site, Imperial Valley Home of Harold Bell Wright (No. 1034)	Historic	Holtville
Tumco Mines (No. 182)	Historic	Ogilby
Twentieth Century Folk Arts Environment--Charley's World of Lost Art (No. 939)	Historic	Winterhaven
Yuha Well (No. 1008)	Historic	Seeley
California Points of Historical Interest, Imperial County		
Crucifixion Thorns Natural Area (No. 187)	Unspecified	Ocotillo
Hotel Barbara Worth Site (No. 842)	Historic	El Centro
Picacho (No. 826)	Historic	Winterhaven
Townsite of Silsbee and Indian Well (No. 569)	Historic	El Centro

Source: OHP 2014

2.3.4 Constraints and Opportunities

This section discusses the potential constraints due to cultural and archaeological resources regulatory requirements and existing conditions and potential opportunities for the *Conservation and Open Space Element*.

2.3.4.1 Constraints Due to Regulatory Requirements

Federal, state, and local government regulations and policies concerning cultural resources have the potential to constrain land uses associated with the COSE.

Section 106

Section 106 of the National Historic Preservation Act requires that all federal agencies review and evaluate how their actions or undertakings may affect historic properties. For Imperial County, Section 106 may apply if federal funding or federal approval is involved or if an undertaking is being carried out by the federal agency or on federally owned or controlled property. Examples include the US Army Corps of Engineers 404 permit, Federal Emergency Management Agency (FEMA) funds, Community Development Block Grant funds, or involvement with agencies such as the BLM, USFS, and the National Park Service.

California Environmental Quality Act

CEQA requires that local agencies consider potential significant environmental impacts to cultural resources as a result of proposed projects. Significant resources are those that are listed in or considered eligible for listing in the California Register of Historical Resources. Nevertheless, a resource or property not listed on the California Register does not exclude it from being a significant resource and does not make it exempt from CEQA evaluation. Specific to Imperial County, this includes historic districts and prehistoric and historic period archaeological sites in the County.

Senate Bill 18

Senate Bill (SB) 18, which went into effect on January 1, 2005, requires local governments to consult with Native American tribes prior to making certain planning decisions and to provide notice to tribes at certain key points in the planning process. The purpose of involving tribes at these early planning stages is to allow consideration of cultural places in the context of broad local land use policy before individual site-specific, project-level land use decisions are made by a local government. The consultation requirements of SB 18 apply to general plan or specific plan processes proposed on or after March 1, 2005. This regulation is of particular importance to the County General Plan, since several tribes, both California Native American tribes and federally recognized Indian tribes, have modern and ancestral ties to Imperial County.

Assembly Bill 52

Assembly Bill (AB) 52, passed on September 25, 2014, reshapes the way that CEQA deals with resources of concern to Native Americans by creating a new category of resource, the tribal cultural resource, and the way that CEQA lead agencies must consult with California Native American tribes, including both federally and non-federally recognized tribes. Beginning on July 1, 2015, CEQA lead agencies must begin Native American consultation prior to the release of a negative declaration, mitigated negative declaration, or Draft EIR if requested by a California Native American tribe. The associated regulations will be complete on July 1, 2016.

2.3.4.3 Constraints Due to Existing Conditions

The County would be constrained by the presence of known or previously unidentified cultural resources. Ideally cultural resources are best identified by researching the findings of previous investigations through record searches with the Southern Coastal Information Center of the California Historical Resource Information System; archival map research to identify overall sensitivity for historic period resources as well as locations of built resources of at least 45 years of age; review of built-environment resources using aerial photography sources; review of all landforms for their potential to contain buried resources; field surveys designed to confirm known resource locations and identify new resources; and correspondence with Native American contacts provided by the Native American Heritage Commission and a search of the Sacred Lands File maintained by the Native American Heritage Commission.

Per Brian F. Mooney Associates, as of 1993, 7,000 prehistoric and 200 historic period resources had been identified in Imperial County. Since then, additional fieldwork in the County has brought that number up to 14,860 resources on file at the South Coastal Information Center for Imperial County. Of those, 12,398 are archaeological sites and the rest are either isolates or historic structures (Lennox 2014). This is an approximately twofold increase in the two decades between the previous COSE baseline study and this one. As the entire County has not been surveyed, sensitive prehistoric and

historic period cultural resource sites that have not been identified or systematically recorded, including built-environment resources, are likely to exist in areas in Imperial County. Previously identified and newly identified archaeological sites will require further study and avoidance to ensure that the cultural and scientific values present at these sites are not adversely affected by potential development.

The detailed studies discussed above are beyond the scope of this programmatic analysis. Instead, a sensitivity model was developed in order to provide a general idea of potential locations of cultural resources present in the County. Additionally, the DRECP Native American elements maps were used to identify areas of importance to Native Americans (Figure 2.3-3) and the DRECP cultural resources setting was used to identify areas established by the BLM as areas of critical environmental concern (Table 2.3-4) (BLM et al. 2014).

Sensitivity Modeling

Sensitivity modeling is a method of producing predictions of locations wherein cultural resources are more likely to be encountered. These models are generally based on (1) assumptions about human behavior in the past derived from historical records and ethnographic analogies and (2) correlations with patterns of cultural resource distribution previously observed in the archaeological record. This modeling was conducted in order to provide the County with a general idea of where cultural resources are likely to occur. A previous archaeological sensitivity map (see Figure 2.3-4), produced by Jay von Werlhof, portrays areas of where the density of known sites in 1993 were higher, indicating a higher possibility of encountering previously unknown resources (Brian F. Mooney and Associates 1993). However, this study is now out of date because of the two decades of additional research that has been completed since its publication. For the current study, two cultural resources predictive models were designed to assist in determining opportunities and constraints. The first identifies areas sensitive for encountering prehistoric cultural resources, while the second identifies areas sensitive for encountering historic period archaeological and built environment resources. The prehistoric predictive model was based on four datasets: (1) named streams, waterbodies, wetlands, and playas/dry lakes; (2) ecotone boundaries; (3) obsidian toolstone sources; and (4) slope (Figures 2.3-1 and 2.3-5), while the historic period model incorporated known travel routes, historic period sites, and water sources (Figure 2.3-4).

Prehistoric Predictive Model. The predictive model for prehistoric resources focused on proximity to a water source, access to natural resources (both dietary and material), and slope of the landforms. Based on previous research in the Great Basin (Drews, Ingbar, and Branigan 2004), Inyo County (Garfinkel 1976), and Death Valley National Park (NPS 2002), the most important consideration for prehistoric occupation was proximity to water sources, both present currently and present in the past. To account for this, a buffer of 1,000 meters was applied to the named streams, waterbodies, wetlands, and playas/dry lakes layer (obtained from the National Hydrological Database dataset [USGS, 2014]).

In addition to water, access to natural resources was another important consideration for prehistoric population settlement. Food resources such as mesquite and pinyon were important, especially in the arid Great Basin, and prehistoric sites are often found near such resource locations (NPS 2002). A predictive model created for the Santa Ynez River Valley in western California (Neal 2007) found a positive correlation between sites and 200 meters of an ecotone boundary, i.e., the boundary between two different vegetation zones. Thus, a 200-meter buffer was established at the interface between the vegetation zones plotted by the California Gap Analysis Program from the University of California-Santa Barbara Biogeography Lab.

Other resources available in the County important to prehistoric populations include sources of raw material for making stone tools, in this case obsidian sources. Garfinkel (1976) noted the importance of

obsidian sources as potential site locations, and thus the location of the sole Imperial County obsidian toolstone source identified by the Northwest Research Obsidian Studies Laboratory is included in this analysis. Sources of toolstone are important for the resource it offers, and groups likely made excursions and established temporary camps to exploit sources of toolstone on an as-needed basis, but toolstone source locations likely did not influence the location of more permanent settlements.

Slope was the final dataset used in the prehistoric sensitivity analysis. Research conducted in Western Colorado (Kvamme 1985) found that most village sites were located on a 16.1 percent (9 degree) slope or lower and that no sites were located steeper than 40 percent (21.8 degree) slope. Therefore, areas with a slope of less than 16.1 percent were included as areas where sites were likely to occur. Areas with slopes between 16.2 and 40 percent are areas where sites may be located but are unlikely to occur, and areas over 40 percent are where sites are not likely to occur. These sensitive areas are depicted on Figure 2.3-1. Regions most sensitive for prehistoric resources are those areas within 1,000 meters of a water source (in this case, named streams, waterbodies, wetlands, and playas/dry lakes), within 200 meters of an ecotone boundary, near obsidian toolstone sources, and less than 16.1 percent slope (Figure 2.3-5). These areas of intersected prehistoric resource sensitivity were concentrated in the Owens Valley Study Area, which also contained an obsidian source.

Historic Period Predictive Model. The historic period archaeological and built-environment resource sensitivity model was based on five datasets: (1) named waterbodies; (2) proximity to the Juan Bautista de Anza National Historic Trail; (3) proximity to exploration routes, surveys, and trails from 1769 to 1872; (4) locations of historic period railroad towns; and (5) the locations of dams, mines, and wells that are at least 50 years old. Named streams and waterbodies were included because access to water was important not only for prehistoric peoples but also for European and American settlers. Also, reservoirs and dams are included as they could contain historic period–associated infrastructure. Habitation in the desert was often centered on well locations; thus, known historic period wells were also included. A large number of exploratory routes and surveys took place through Imperial County between 1769 and 1872. These routes were included because temporary camps and other resources often occur near to travel corridors. One of the most important was the route taken by Juan Bautista de Anza on the first overland exploration of California. This route became a National Historic Trail in 1990. The corridor, as mapped by the National Park Service's Juan Bautista de Anza National Historic Trail unit, is included as a sensitive area. Finally, many historic period cultural resources occur near mining locales, which may also be cultural resources in and of themselves. Regions most sensitive for historic period sites are likely to occur in those areas near historic period roads and trails, mines, and sources of water (Figure 2.3-2).

Previously Identified Areas of Cultural Resource Sensitivity and Protection

Ethnographic Resources

The extensive ethnographic research performed during the planning of the California Desert Conservation Area (CDCA) in 1980 involved identifying areas of cultural importance to Native American groups. These areas are referred to as Native American Elements. These were presented in the Native American Concerns portion of the DRECP Draft EIR/EIS (BLM et al. 2014). They are primarily located along the western edge of the County and along the Colorado River, with an additional area in the southern Chocolate Mountains (Figure 2.3-3). Please note that these Native American Elements are not exhaustive of all areas important to Native American groups in the County and reflect only the ethnography and consultation done during the planning of the CDCA.

BLM Areas of Critical Environmental Concern

A review of the DRECP identified 12 Areas of Critical Environmental Concern (ACEC) that are sensitive for cultural resources present in Imperial County (see Table 2.3-4). The DRECP divides Imperial County into two ecoregion subareas: the Cadiz Valley and Chocolate Mountains, and the Imperial Borrego Valley. No ACECs that are sensitive for cultural values appeared to be present in the Cadiz Valley and Chocolate Mountains portion of the County (BLM et al. 2014).

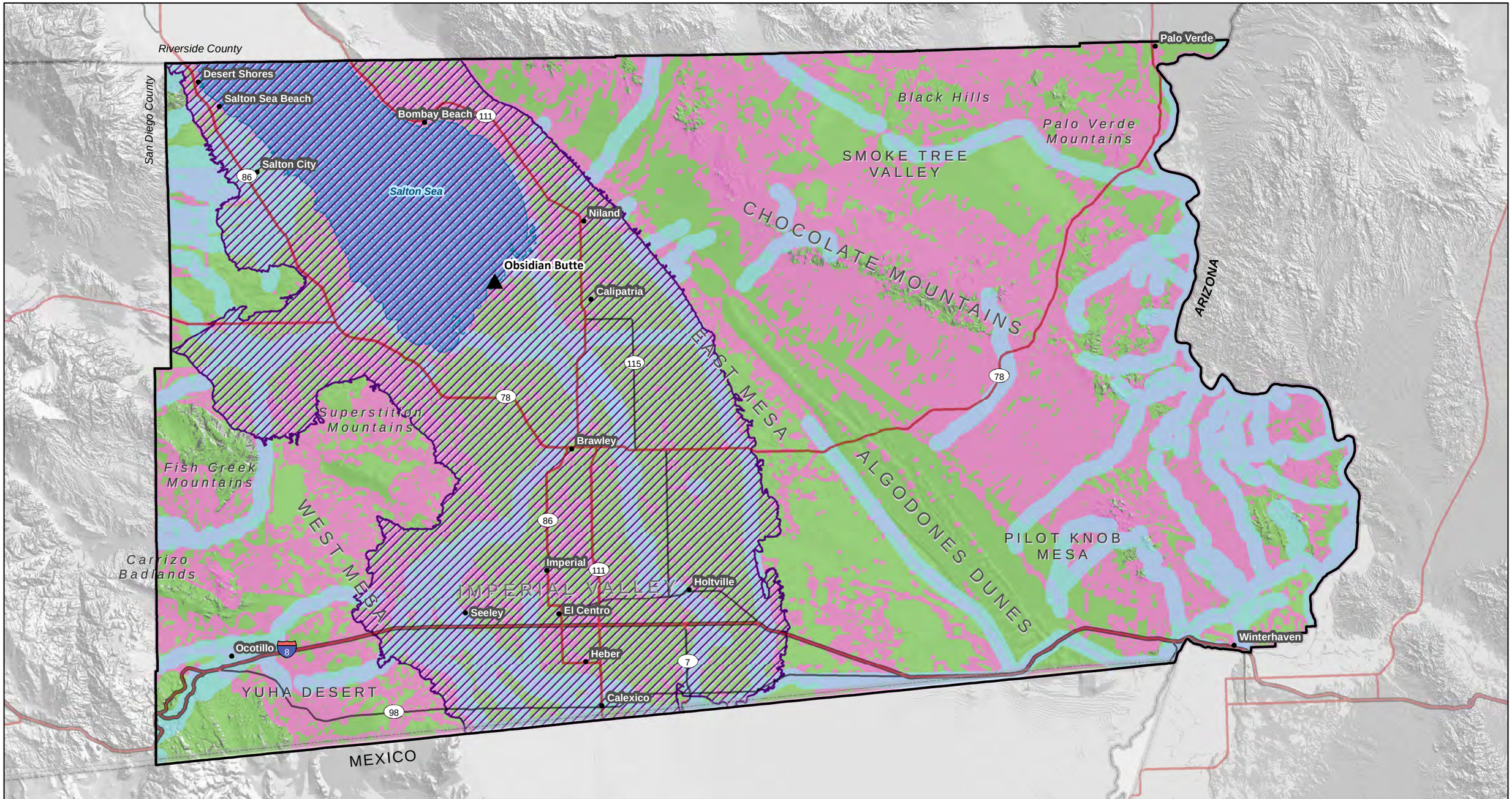
Table 2.3-4. Areas of Critical Environmental Concern in Imperial County

Ecoregion Subarea	ACEC	Designated Management Values
Imperial Borrego Valley	East Mesa	prehistoric values
	Indian Pass	prehistoric values
	Lake Cahuilla A (#2)	prehistoric values
	Lake Cahuilla B (#3)	prehistoric values
	Lake Cahuilla C (#5)	prehistoric values
	Lake Cahuilla D (#6)	prehistoric values
	Pilot Knob	prehistoric and Native American values
	Plank Road	unique historic road
	San Sebastian Marsh/ San Felipe Creek	prehistoric, historic, and Native American values
	Singer Geoglyphs	prehistoric values
	West Mesa	cultural values
	Yuha Basin	prehistoric and historic values

Source: BLM et al. 2014

2.3.4.4 Opportunities

The County has opportunities to change the land use designation in areas with important prehistoric, historic period, and Native American cultural resources to allow preservation of these cultural resources while also implementing future County development. In addition, the County has the opportunity to update any historical preservation ordinances that will preserve significant cultural resources and cultural landscapes that will improve understanding of California's cultural history.



Major Highways
Highways
Major Roads

Obsidian Resources
Imperial County Boundary
Salton Sea

Lake Cahuilla
1000m Buffer Around Named River and Waterbodies
200m buffer around Ecotones*
Areas with 15% Slope or Less

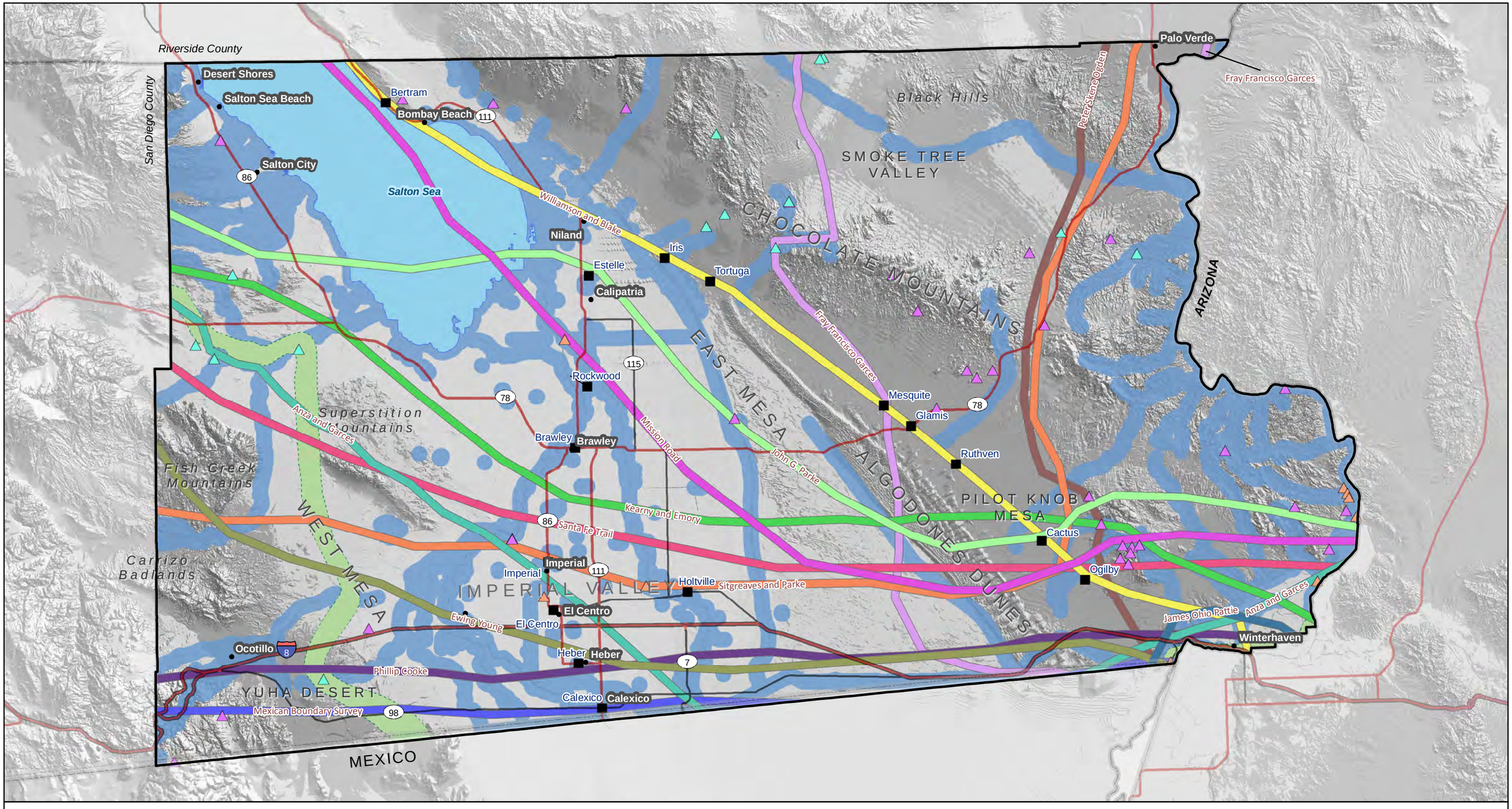
0 7.5 15 Miles

Source: Redlands Institute, USGS

* Ecotones were extracted from USGS GAP data (2013).

Figure 2.3-1

Imperial County
Areas of Heightened Prehistoric Sensitivity



Major Highways
Highways
Major Roads

Imperial County Boundary
Historic Period Railroad Towns
Historic Period Dam
Historic Period Mine
Historic Period Well

0 7.5 15 Miles

Source: DRECP, NPS

Exploration and Trail Routes, 1770-1890:

- Anza and Garces
- Ewing Young
- Fray Francisco Garces
- James Ohio Pattie
- John G. Parke
- Kearny and Emory
- Mexican Boundary Survey
- Mission Road
- Peter Skene Ogden
- Phillip Cooke
- Santa Fe Trail
- Sitgreaves and Parke
- Williamson and Blake
- Juan Bautista De Anza National Historic Trail corridor
- 1000m buffer around Named Streams and Waterbodies

Figure 2.3-2
Imperial County
Areas of Heightened
Historic Period Sensitivity

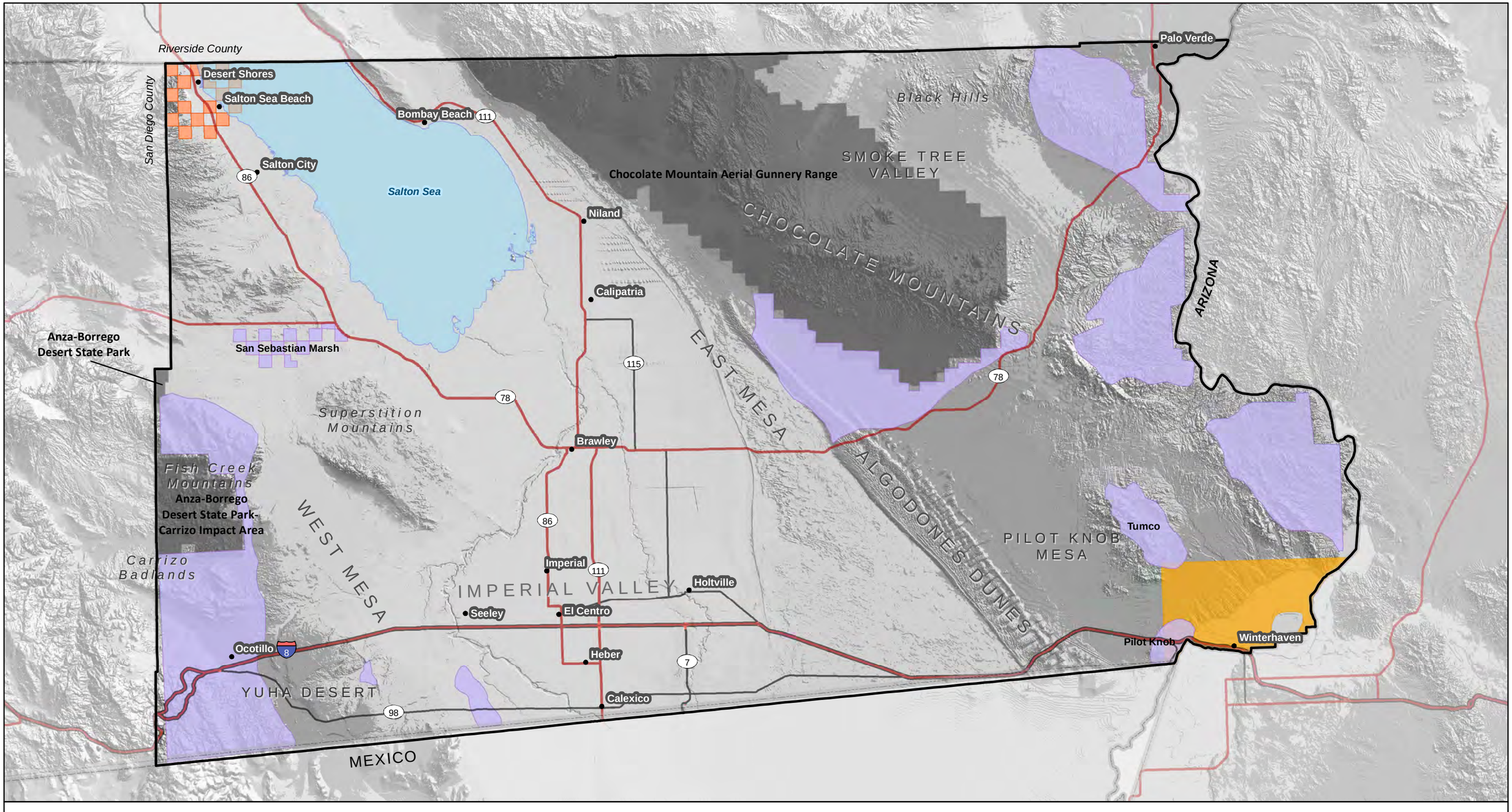


Figure 2.3-3

Imperial County
Known Areas of Native American Cultural Sensitivity

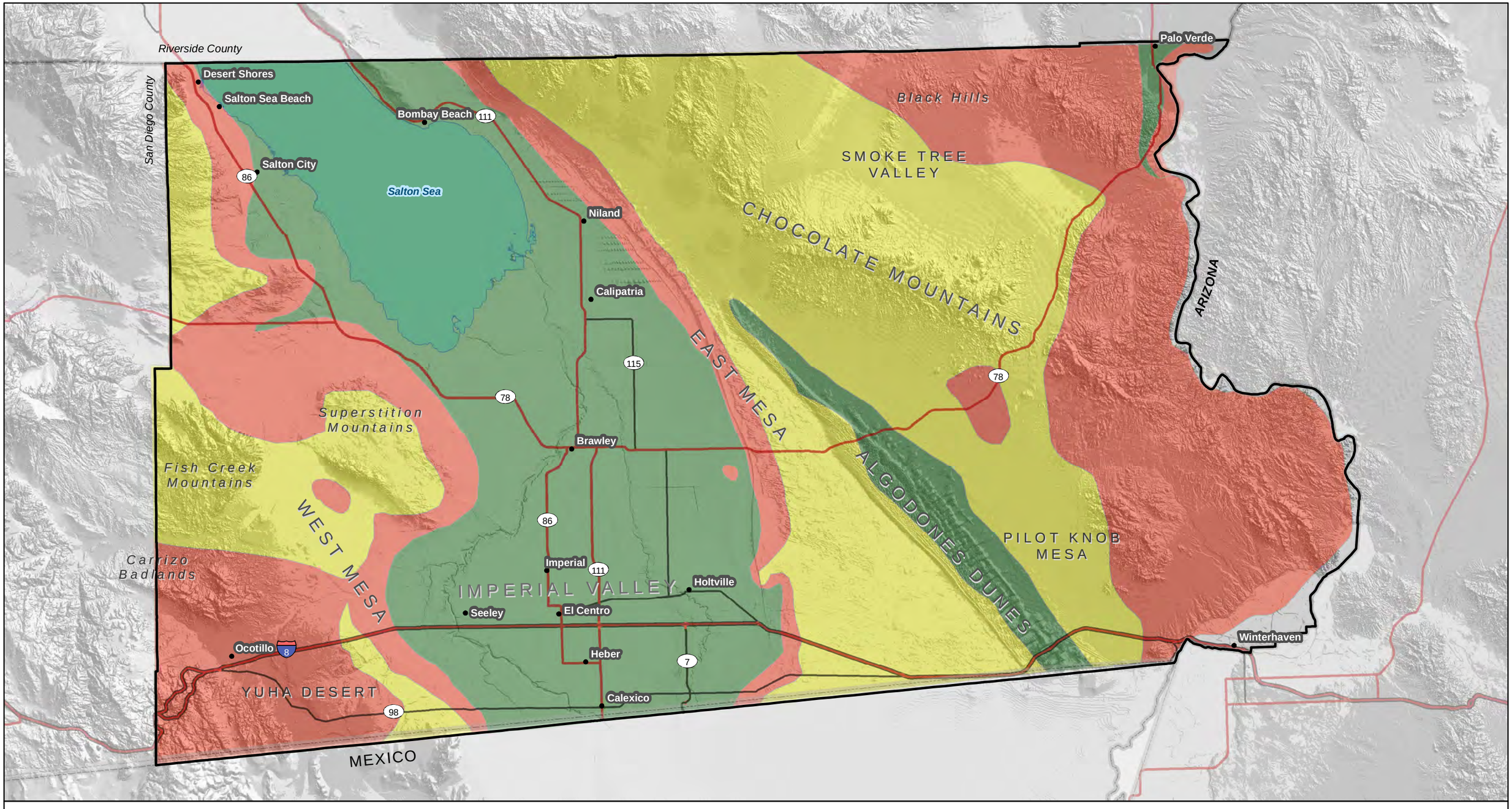


Figure 2.3-4
Imperial County
Prehistoric Resource Sensitivity
from Brian F. Mooney Associates 1993

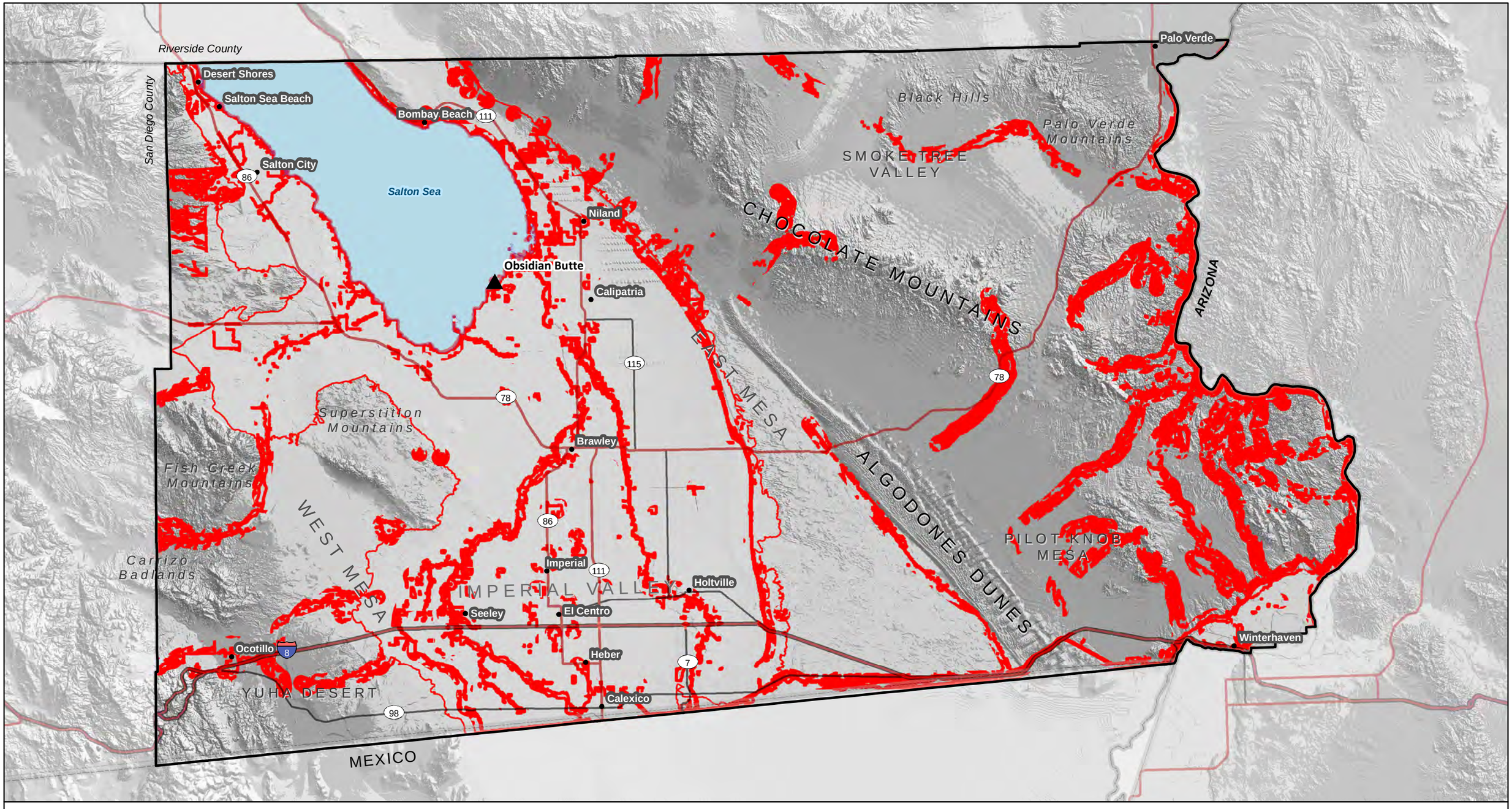


Figure 2.3-5

Imperial County
Intersected Areas of High Prehistoric Sensitivity