

18. Cultural Resources

18.1 Introduction

This chapter describes the cultural resources setting for the Extended, Secondary, and Primary study areas. Cultural resources are sites, buildings, structures, objects, and districts that may have traditional or cultural value. This broad range of resources includes archaeological sites that reflect the prehistoric and historic-era past; historic-era resources, such as buildings and structures; landscapes and districts; and traditional cultural properties (TCPs), i.e., those resources that are historically rooted in a community's beliefs, customs, and practices. Descriptions and maps of these three study areas are provided in Chapter 1 Introduction.

The regulatory setting for cultural resources is discussed briefly in this chapter, and is presented in greater detail in Chapter 4 Environmental Compliance and Permit Summary.

This chapter focuses primarily on the Primary Study Area. Potential impacts in the Secondary and Extended study areas were evaluated and discussed qualitatively. Potential local and regional impacts from constructing, operating, and maintaining the alternatives were described and compared to applicable significance thresholds. Mitigation measures are provided for identified significant or potentially significant impacts, where appropriate.

18.2 Affected Environment

18.2.1 Extended Study Area

18.2.1.1 Prehistoric Context

Archaeologists study the physical evidence of past human behavior called “material culture¹,” they look for changes in material culture over time and across geographic regions to reconstruct the past. Change occurs in material culture because the culture of a single group of people has evolved in place due to environmental factors, population changes that include socioeconomic dynamics within the group, or influences from “outside” populations. There is evidence that neighboring populations shared ideas that are reflected by material culture traits. In some cases, a culture was replaced by a new group of people who arrived with artifacts that reflected their unique culture.

Archaeological evidence currently indicates that people arrived in California around 13,000 years ago. Engaged in the hunting of large game and gathering of plant foods, these early nomadic groups entered the region not only by land, but also by sea, following the coastline in boats (Moratto and Chartkoff, 2007). There is a minimal record of the earliest inhabitants, and their presence is demonstrated mainly by sparse remains of large stone spear points with a characteristic groove or “flute” sometimes associated with the fossilized remains of extinct animals (Negrini et al., 2006). Subsistence practices evolved over time from nomadic hunting and gathering to increased sedentism² with greater intensification of resource exploitation. This was paired with changes in technology, such as relinquishing the hunting spear for the

¹ Material culture refers to artifacts or other items that reflect a group's culture. Examples of material culture include, but are not limited to, items such as tools of flaked stone (e.g., arrowheads, scrapers), pottery, bone fish hooks, and shell beads.

² Sedentism refers to more permanent year-round settlement as opposed to a nomadic existence.

bow and arrow, and exchanging handstones and millingstones³ for mortars and pestles. Although these changes generally occurred universally throughout the Extended Study Area, they did not all occur everywhere at the same time; thus the mortar and pestle are known in the San Francisco Bay Area by 6000 years before present (B.P.) (Milliken et al., 2007), but they don't appear in the Sierra Nevada until approximately 2500 B.P. (Hull, 2007).

The indigenous population grew as sedentism increased and resource availability stabilized, and as subsequent waves of migrants continued to arrive in the state; thereby leaving increased evidence (i.e., material culture) of human activity and changing human behavior. Gradual at first, growth among California's native populations became rapid in the period just prior to European incursion. As a result, evidence of past human activity, i.e., the "archaeological record," became progressively more complex. When systematic archaeological research began in California in the late 19th century, archaeologists began organizing the archaeological record into cultural stages to develop a chronological sequence, or "culture history," of California.

These cultural histories were developed regionally and archaeologists have produced a number of culture chronologies, using regionally specific nomenclature, across California. California has eight identified archaeological regions: the North Coast, Northeastern, Central Valley, Sierra Nevada, San Francisco Bay, Central Coast, Southern Coast, and Desert regions (Moratto, 1984). The regions, in turn, are divided into numerous subregions (Figure 18-1). The prehistoric context for the Extended Study Area includes portions of all of these regions. Within these regions, various chronologies attempt to account for changes in the archaeological record as a result of inferred changing human behavior. The archaeological record in California, therefore, reflects some shared broad-based patterns, but it also exhibits locally expressed culture traits. The numerous indigenous groups who arrived into the region now referred to as California were linguistically diverse, and they further distinguished themselves from their neighbors by developing cultural traits unique to their communities.

Fredrickson (cf. 1994) adapted Willey and Phillips' (1958) terminology for California and defined the following periods of culture development: the Paleo-Indian Period, followed by the Lower Archaic, Middle Archaic, Upper Archaic, Lower Emergent, and Upper Emergent periods. These concepts identify changes in resource procurement and social complexity over time and are often related to regionally broad patterns of culture that are reflected by the presence of similar artifact types. Other researchers also often identify these archaeological horizons according to the geological time scale and are, therefore, referred to as the Late Pleistocene, and early, middle, and late Holocene cultures.

As previously mentioned, although the various archaeological regions developed specific cultural traits, the prehistories of all of the regions reflect a similar progression of technological changes and social complexity over time. The broad periods defined by Fredrickson (cf. 1994) (the Paleo-Indian Period; the Lower, Middle, and Upper Archaic periods; and Lower and Upper Emergent periods) are applicable to all of the archaeological regions in the Extended Study Area; though to differing degrees. More detailed information about these stages is presented below in Section 18.2.1.3 under the Prehistoric Context for the Primary Study Area. Although the discussion focuses on the Primary Study Area, the general characteristics of the periods can be related to all of California prehistory.

³ Handstones and millingstones are stone tools most often associated with the grinding of seeds. As the name implies, the handstone can be held in the hand. It has a generally flat surface that is rubbed across a similarly flat base, which is the millingstone.

18.2.1.2 Ethnographic Context

The indigenous peoples of California were extremely diverse and populous when Europeans first began to colonize the state. This diversity is reflected in the large number of mutually unintelligible languages that have been identified. At least 64, and possible as many as 80, languages were spoken (Shipley, 1978). These different languages essentially translate to individual tribes or tribelets. Although many ethnographic groups shared cultural traits based on geographic location and available resources, each also had unique expressions of culture.

The Extended Study Area overlaps portions of 32 identified Native American tribal groups in California (Figure 18-2) (Kroeber 1925: Plate 1). As with all California Indians, these groups subsisted by hunting and gathering. Coastal groups relied heavily on marine food resources, such as fish, shellfish, and marine mammals, as well as terrestrial resources, while interior groups relied primarily on terrestrial resources for shelter and subsistence. The Native populations were decimated by disease, loss of subsistence habitat, and genocide during the early years of colonization by Europeans and Euro-Americans. However, during the late 19th and early 20th centuries, ethnographers identified many viable Native communities surviving throughout California, including the Extended Study Area.

The territorial boundaries delineated by early ethnographers for Native California groups have varied over time and are often poorly defined. In addition, many tribal boundaries overlapped. The boundaries should not be considered fixed, but reflect general areas in which Native American groups resided. Most groups migrated within these general boundaries throughout the year. The Native California tribes affiliated with the Extended Study Area (and the Secondary Study Area and Primary Study Area, below) are depicted in Figure 18-2.

18.2.1.3 Historic-Era Context

The initiation of the historic era varied by region throughout California, but generally it began between the mid-1500s and mid-1800s. Historic-era cultural activities provide a record of Spanish, Mexican, and American rule, occupation, and land use. An abbreviated history is presented to provide a background of the presence, chronological significance, and historical relationship of cultural resources within the Extended Study Area.

The earliest explorations of California by Europeans were by sea. Portuguese captain Juan Rodriquez Cabrillo landed in the vicinity of San Diego in 1542. He also toured the Channel Islands before heading up the coast along the length of the State. He was followed by Sir Francis Drake in 1579 and Sebastian Viscano in 1602. None of these first explorers established settlements or had extensive interactions with Native Californians.

During the Spanish Period (1769 to 1822), the Spanish government established a series of presidios, missions, and towns along the Alta California (New Spain) coast, from San Diego to San Francisco. The Spanish colonized the local Native Americans along the way. Despite Spanish occupation, however, California remained largely unsettled throughout this period. The routes used to travel between the presidios and missions provided the outline for today's U.S. 101 and I-5 (Kyle et al., 2002).

The Mexican people took New Spain back from the Spanish in 1822, and renamed it the Republic of Mexico, thus beginning the Mexican Period (1822 to 1848). During this time, the Catholic missions were secularized, and the Indians were left to fend for themselves. Large land grants, also known as ranchos,

were given to loyal Californios⁴. Many governments ruled or vied for power over California during this time. This unrest lured outsiders who were seeking to take advantage of California's abundant resources. As more settlers arrived, relations between Mexico and the United States grew tense, ultimately resulting in war in 1846. California was formally annexed to the United States by the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican-American War (Kyle et al., 2002).

The end of the Mexican-American War and the discovery of gold marked the beginning of the American Period (1848 to present). This discovery drew many people into California, caused a significant increase in the local non-native population and, in turn, decimated the indigenous population. Sacramento, San Francisco, Stockton, and many other cities grew from small settlements to "boom" towns, and roads, churches, schools, and other towns were built throughout the State. The American Civil War took place from 1861 to 1865, and although California's involvement was minimal, construction of the railroad may have been the most important immediate effect of the Civil War on California. Easy access to rail lines made citrus growing and other large-scale agricultural pursuits an important element in the State's economy. The creation of a government and a system of laws led to the admission of California as a free state in 1850 (Kyle et al., 2002).

18.2.1.4 Cultural Resources

Prehistoric Resources

Prehistoric resources are the material remains of human activities that predate contact with non-Native Americans. Prehistoric resources in the Extended Study Area may include habitation or village sites, temporary campsites, roasting pits/hearths, burials, bedrock milling features, lithic scatters, rock art, rock features (such as hunting blinds), and isolated artifacts.

Prehistoric resources have been found in many ecosystems and terrains, including river and stream drainages, and coastal strips, which are often prime locations for Native American village sites and processing camps. They are found in valleys, hills, mountains, deserts, grasslands, and forests, particularly adjacent water courses. Previous archaeological work indicates that areas within the Extended Study Area, such as Lake Almanor, San Luis Reservoir, New Melones Reservoir, and Castaic Lake, may be particularly sensitive for cultural resources, as opposed to areas, such as the plains of the Central Valley, where fewer resources have been recorded.

Ethnographic Resources

Ethnographic resources in the Extended Study Area may include known village sites, ceremonial sites, plant gathering locations, and hunting or fishing areas. Similar to prehistoric resources, ethnographic resources are likely to occur in the same types of areas, such as river and stream drainages and coastal strips, and within the same project components. The projects within the Extended Study Area where ethnographic resources may occur include, but are not limited to, Lake Almanor, New Melones Reservoir, and Castaic Lake.

Historic-Era Resources

Historic-era resources are physical sites, structures, or built features that coincide with the advent of written records. These resources include both historic-era archaeological sites and architectural structures.

⁴ A term used to describe the Spanish-speaking people who moved into California and colonized the state during the Spanish and Mexican periods (1769 to 1848).

Historic-era resources within the Extended Study Area may include town sites, homesteads, ranches, privy pits, dumps, mining remains, transportation facilities, water conveyance systems, resource extraction facilities (such as quarries), and ranches and associated facilities. Architectural structures refer primarily to buildings and structures, such as bridges. Historic-era resources often occur in the same places as prehistoric sites, because these were the desirable locations for human settlement that provided food, shelter, and other necessary resources. Areas within the Extended Study Area that are particularly sensitive for historic-era resources include Lake Almanor, New Melones Reservoir, and more generally, the Sierra Nevada foothills.

Traditional Cultural Properties

TCPs within the Extended Study Area may include archaeological or ethnographic sites, geographical locations, or features that are associated with the cultural practices or beliefs of a living community that are rooted in that community's history, and are essential in maintaining the continuing cultural identity of the community. TCPs are most often associated with Native American practices and beliefs; however, other communities or cultural groups may acknowledge similar properties. TCPs can occur in any type of location, but tend to be located in proximity to prehistoric and ethnographic resources such as habitation sites. Similar to the archaeological and ethnographic resources listed above, TCPs would be expected in the vicinity of Lake Almanor, San Luis Reservoir, New Melones Reservoir, and Castaic Lake, although they could be situated anywhere within the Extended Study Area.

18.2.2 Secondary Study Area

18.2.2.1 Prehistoric Context

The prehistoric context for the Secondary Study Area contains six of the California archaeological regions (the North Coast, Northeastern, Central Valley, Sierra Nevada, San Francisco Bay, and Central Coast regions) and their subregions (Figure 18-1); all found in the northern portion of the State.

18.2.2.2 Ethnographic Context

The Secondary Study Area covers a large area that overlaps 13 of the identified Native American tribal groups in California (Figure 18-2). These ethnographic groups included the Yurok, Hupa, Chimariko, and Wintu in the extreme northern part of the Secondary Study Area; the Yana, Nomlaki, Konkow, Patwin, Nisenan, Plains Miwok and Bay Miwok tribal groups within the central portion of the Secondary Study Area; and the Coast Miwok, Bay Miwok Patwin, and Costanoan around the San Francisco Bay.

18.2.2.3 Historic-Era Context

The historic-era context for the Secondary Study Area is the same as that described for the Extended Study Area. Information on the historic-era context is presented in the Extended Study Area discussion.

18.2.2.4 Cultural Resources

Prehistoric Resources

The potential prehistoric resources in the Secondary Study Area are identical to those in the Extended Study Area: habitation or village sites, temporary campsites, roasting pits/hearths, burials, bedrock milling features, lithic scatters, rock art, rock features (such as hunting blinds), and isolated artifacts. Prehistoric resources within the Secondary Study Area are more likely to cluster around the watersheds of

the Trinity, American, Sacramento, and Feather rivers, as well as the Bay/Delta region. Conversely, prehistoric resources within the plains of the central Sacramento Valley are likely to be less prevalent.

Ethnographic Resources

Ethnographic resources in the Secondary Study Area are the same as those in the Extended Study area, and may include known village sites, ceremonial sites, plant gathering locations, and hunting or fishing areas. Ethnographic resources are likely to cluster around the same locations as prehistoric resources, including the Trinity, American, Sacramento, and Feather rivers, Shasta Lake, Lake Oroville, and Folsom Lake, as well as the Bay/Delta region.

Historic-Era Resources

Similar to the Extended Study Area, historic-era resources within the Secondary Study Area may include town sites, structures, transportation facilities, water conveyance systems, resource extraction facilities (such as quarries), ranches and associated facilities, homesteads, privy pits, and dumps. Historic-era resources often occur in the same areas as prehistoric resources because these were the desirable locations for food, shelter, and resources. Areas particularly sensitive for historic-era resources include the watersheds of the Trinity, American, Sacramento, and Feather rivers, the San Francisco Bay/Delta region, as well as the plains of the central Sacramento Valley.

Traditional Cultural Properties

Similar to the Extended Study Area, TCPs within the Secondary Study Area may include sites, locations, or features that are associated with the cultural practices or beliefs of a living community that are rooted in that community's history, and are essential in maintaining the continuing cultural identity of the community. TCPs are most often associated with Native American beliefs and practices, such as areas where natural materials are gathered to enhance the continuity of cultural traditions like basket making supplies. However, other communities or cultural groups may acknowledge similar properties. TCPs may occur anywhere, but are likely to be located in proximity to prehistoric and ethnographic resources. TCPs are known to exist around Shasta Lake and the Lake Oroville area.

18.2.3 Primary Study Area

18.2.3.1 Prehistoric Context

The prehistoric context for the Primary Study Area lies at the boundary of the North Coast and Central Valley archaeological regions (Figure 18-1), but is almost entirely within the latter region. The known archaeological record for the regions around the Primary Study Area reflects the trajectory offered by Fredrickson (cf. 1994) that was provided earlier in this chapter. White et al. (2009), as presented below, outlined five periods to describe the cultural chronology for the regions that contain the Primary Study Area: the Paleo-Indian, Early (or Lower) Archaic, Middle Archaic, Late (or Upper) Archaic, and Emergent periods.

Paleo-Indian Period

Recent sampling at Borax Lake near Clear Lake provides tentative obsidian hydration dating evidence that indicates occasional obsidian quarrying activity was occurring in northern California as early as 16,000 years ago (White et al., 2009). However, the find remains unconfirmed, and no other archaeological traces of this age have been identified in the north state. The most reliable evidence

indicates that northern California was first colonized at the end of the Pleistocene Era around 12,000 years ago. Sparse data indicate that these earliest peoples were small populations of culturally conservative hunters and foragers who moved between widespread resource patches and practiced technological traditions that were similar from region to region. Their co-occurrence with Pleistocene mega-fauna is suspected, but not demonstrated. The most ancient confirmed cultural traces in northern California are associated with the Western Clovis Tradition. The Western Clovis Tradition (Willig and Aikens, 1988), dating between approximately 13,500 to 10,500 B.P., is represented by one site and a few scattered artifacts in northern California, and is marked by use of the distinctive Clovis fluted projectile point; one of which was discovered along Thomes Creek in Tehama County north of the Primary Study Area. Diet and settlement specifics are unknown at this time and remain a matter of speculation (Fredrickson, 1984; Fredrickson and White, 1988).

Early (or Lower) Archaic Period

Early Archaic cultures are represented in the Primary Study Area by the Borax Lake Pattern, which is the northern California expression of the Western Stemmed Tradition dating between approximately 10,500 to 7000 B.P. (Willig and Aikens, 1988). The characteristic artifact types that reflect human activity during the Early Archaic include wide-stemmed projectile points, as well as handstones and millingstones. Deep flute-like basal thinning, large bladelet flakes, and well worked unifacial⁵ tools are carryovers from Paleo-Indian technology. A few sites have produced plant and animal remains, indicating that the Borax Lake Pattern diet featured large nuts, and small and large game. Several sites attributed to this age have been identified within the foothills of Glenn and Colusa counties.

Middle Archaic Period

Middle Archaic cultures occurred from ca. 7500 to 2500 years B.P. It is widely documented in North America, and clearly established for northern California, that the geological period of the Middle Archaic, the Middle-Holocene, was a time of climatic instability (Adam and West, 1983; Benson et al., 2002). Although generally warmer and drier than the Early Holocene climate, the Middle Holocene was also marked by significant climatic fluctuations. Two consequences have been recognized in the regional archaeological record as a result of this instability. First, the development of upland and lowland soils was affected in such a way that the capacity of the landscape to store archaeological deposits was diminished; i.e., the more arid climate of the Middle Holocene diminished erosion and siltation mechanisms that cause soil build-up that normally traps and caps archaeological deposits. This was compounded by abrupt climatic events that would cause severe erosion of any archaeological remains that were developed. Second, the density and distribution of economically significant resources also appears to have been affected by climatic and landscape instability, leading to cultural responses such as local decreases in population, interregional population movements, and dietary change. Consequently, Middle Archaic archaeology is uncommon and the available record is problematic.

Several trends in prehistoric culture change first emerged during the Middle Archaic, including the development of settlements associated with ridgetops (Hildebrandt and Hayes, 1993), rivers/marshes (Heizer, 1949), and lakesides. Dietary specializations based on the acorn, deer, and freshwater and

⁵ Unifacial tools demonstrate manufacturing methods (e.g., flaking) on one face or side; alternately bifacial tools are worked on two faces or sides.

anadromous fisheries also occurred. The archetypal⁶ Middle Archaic culture is the Windmill Pattern, which was present in the Sacramento and San Joaquin valleys, the Sacramento-San Joaquin Delta, and the Mt. Diablo region. Windmill material culture featured artifacts made of varied stone materials, such as quartz crystals, chert, slate, obsidian, asbestos, and biotite, as well as red ochre, and worked clay. Worked shell included small beads, and red and black abalone square beads and various ornament styles Twined basketry is known from impressions left in baked clay. Other baked clay objects included cooking balls, perforated disks, and grooved net sinkers (Beardsley, 1954; Heizer, 1949; Moratto, 1984). Based on the rarity of ground stone tools, the abundance of projectile points, and the presence of remains from elk, pronghorn, deer, rabbit, coyote, beaver, lynx, bear, and waterfowl, it is assumed that hunting was the focus of Windmill Pattern subsistence (Heizer, 1949; Moratto, 1984). The Mendocino Pattern and Berkeley Pattern were the distinct regional cultural traditions within the Primary Study Area that first emerged in northern California during the Middle Archaic Period.

Late (or Upper) Archaic Period

Regional climate stabilized around 3000 B.P., and by 2500 B.P., the widespread generalized technological traditions of the Middle Archaic Period were replaced by distinct regional specializations. Archaeologists have also found evidence of an increase over time in the scope and distance of intergroup trade patterns, a widespread change from less to more complex social forms, and an increase in population density. The archetypal Late Archaic culture is the Berkeley Pattern, which reflects the basic archaic adaptation of the rich alluvial basins of central California. There was also considerable cultural diversity within the Berkeley Pattern, and local cultures have been identified from the Delta north through the central Sacramento Valley and central North Coast Ranges (Bennyhoff, 1994; White, 2003). Certain traits, however, are common to all Berkeley Pattern variants, including a highly developed bone tool industry, atlatl⁷ engaging hooks, and dart-sized non-stemmed points (Beardsley, 1954; Fredrickson, 1974; Lillard et al., 1939). Berkeley Pattern sites contain many features, especially fire-cracked rock heaps, shallow hearths, rock-lined ovens, house floors, cairns⁸, and graves. Complete house floors suggest that large pole-framed houses between 12 and 18 feet in diameter were built. Clay with tule or bulrush impressions indicates that the houses were thatched and sod-packed. The Berkeley Pattern economy varied regionally, and generally focused on seasonally structured resources that could be harvested and processed in bulk, such as acorns, salmon, shellfish, and deer. The high frequency of mortars and pestles relative to chipped stone implies a heavy reliance on acorn processing (Fredrickson, 1974; Moratto, 1984).

Continuing a pattern of increasing cultural diversity in central California, Berkeley Pattern sites were established during the same time period as late Windmill Pattern sites in the northern San Joaquin Valley (Fredrickson, 1974). In the North Coast Ranges, Berkeley Pattern sites were established during the same time period as the Mendocino Pattern sites, with the Berkeley Pattern prevalent in alluvial basins and the Mendocino Pattern common to adjoining foothill and mountain terrains, suggesting different ecological niches. The Primary Study Area, at the boundary of these niches (e.g., foothill habitat in the area of Sites Reservoir and valley habitat around the Terminal Regulating Reservoir), might be expected

⁶ An archetype is the original model or type after which other similar things are patterned. The Windmill was the original pattern identified within Central California that represented a Middle Archaic culture. Thus, analyses of other Middle Archaic cultures in Central California are compared to the Windmill Pattern.

⁷ An atlatl is a rod or stick-like device used to throw a spear; thereby giving the projectile greater velocity and force. An atlatl engaging hook, in this instance, is a carved stone hook attached to the atlatl; the spear is placed in the hook in preparation for throwing.

⁸ Cairns are piles of stones, usually to mark graves.

to reveal archaeological remains that reflect elements of both the Berkeley and Mendocino patterns, with an emphasis on the latter.

Emergent Period

The relatively stable climate established at the outset of the Late Holocene continued through the modern period, although a “climatic anomaly” dating around 900 B.P. may have caused widespread disruption (comparable to the Middle Holocene) (Jones et al., 1999). In northern California, after 1100 B.P., many archaic technologies and cultural traditions disappeared in each region, and were replaced by the onset of cultural patterns and behaviors similar to those existing locally at the time of culture contact with Euro-Americans.

The archetypal Emergent Period culture is the Augustine Pattern. The Augustine Pattern is a widespread tradition that reflects the integration of long-distance trade spheres, and the introduction of the bow and arrow, which replaced the atlatl as the favored hunting implement. The Augustine Pattern has been divided into two phases common to most or all localities. Phase 1 markers include *Olivella* shell whole and lipped beads. Banjo-type abalone ornaments also first appear with Phase 1 of the Augustine Pattern, as well as elaborately incised bird bone whistles and tubes, and “flanged” soapstone pipes. Phase 2 artifacts include small corner-notched and triangular points, clam shell disk beads, bead drills, magnesite cylinders, bedrock mortars, and housepit sites often attributable to known ethnographic villages (Beardsley, 1954; Fredrickson, 1984; Moratto, 1984).

Other new traits that distinguished the Augustine Pattern include tightly flexed burials and cremation. Cremation was a form of burial apparently reserved for high status individuals during Phase 1, but was widespread during Phase 2 (Fredrickson, 1974; Moratto, 1984). Grave offerings, such as shell beads and ornaments, regularly occurred with utilitarian items, including mortars and pestles often broken before burial. In the Sacramento Valley area, fishing equipment is more common, elaborate, and diverse than in earlier phases, and includes several types of harpoons, bone fish hooks, and gorge hooks (Beardsley, 1954; Elsasser, 1978; Moratto, 1984). Basketry has been identified from charred remains found in graves, and a form of pottery is also known from sites in the Central Valley (Beardsley, 1954; Moratto, 1984). Baked clay balls, probably used for cooking, are a common constituent in Central Valley Archaeological Region sites where stone is absent (Beardsley, 1954; Moratto, 1984). The Augustine Pattern economy was regionally variable, although fishing and acorn gathering appear to have increased in importance over time. Shaped mortars and pestles predominate, with charred acorns frequently found in middens. Culture contact between Native Californians and immigrant populations from throughout the world occurred at various times in northern California. In the Sacramento Valley, contact generally occurred between 1750 and 1820.

18.2.3.2 Ethnographic Context

At the time of European contact with the Native Americans of California, the tribal groups known to have occupied the northern Sacramento Valley included the Wintu, Nomlaki, Yana, Konkow, Nisenan, and Patwin peoples. These populations settled primarily along streams and rivers and used a broad range of native plants and animals for subsistence, primarily focusing on acorns, fish, and deer. Population density in this region was one of the highest in the state.

The Primary Study Area is situated primarily within the ethnographic territory of the Hill and River Patwin and, to a lesser extent, in areas belonging to the Nomlaki, and the Konkow Maidu. Essentially all of the facilities in the Primary Study Area are located within ancestral Patwin lands. The exceptions are

the northern portions of the T-C Canal and a section of the GCID Canal in Glenn County that are on lands affiliated with the Nomlaki, and a small portion of the GCID Canal south of the Glenn/Tehama County line that is in territory associated with Konkow occupation. The GCID Pumping Plant is on the border between the Nomlaki and Konkow Maidu.

Patwin

The Hill Patwin lived in the North Coast Range foothills, and the River Patwin inhabited approximately 80 miles along the Sacramento River. The Primary Study Area is at the northern limits of Patwin territory. The Patwin are linguistically classified as part of the Wintuan family of the Penutian language stock. Wintuan is separated linguistically and culturally into three major groups from north to south: the Wintu, Nomlaki, and Patwin. These three groups represent mutually-unintelligible languages. Each language was further subdivided into local dialects, differentiated into riverine and foothill zones (Shipley, 1978).

Throughout the middle and late Holocene up until European colonization, the indigenous people of northern California maintained hunting and gathering subsistence-based cultures. The absence of agriculture in the greater part of California may be linked with the efficiency of the collecting and hunting economy. Acorns were the staple food source of the Patwin, and were used in making gruel, soup, and bread. Other foods used by the Patwin include deer, fish (including salmon, perch, pike, and sucker), birds (such as geese, duck, and quail), blackberries, elderberries, grubs, worms, seeds, bulbs, and wild honey (Johnson, 1978).

Patwin architecture is very complex in terms of its permanence, size, and the amount of people required to organize and build community structures. Patwin dance houses are said to have been some of the largest in California (Kroeber, 1932; McKern, 1923). Patwin houses were constructed for both permanent and temporary functions, and have been designated into four types of permanent housing: the dwelling house, the menstrual hut, the sweat house, and the ceremonial dance house. Patwin dance houses were the largest community structures, and were larger than those of the Nomlaki and Wintu (Kroeber, 1925). Somewhat unique to the Patwin, although also practiced by the Pomo and Nomlaki, was the use of granaries, which were used to store acorns and other grains.

The Patwin traded shell beads for obsidian, along with cordage, headbands, and other commodities from neighbors such as the Pomo along the coast and the Maidu in the foothills of the Sierra Nevada (Kroeber, 1965). Patwin ceremonial and religious practices combined elements of social performance, lineage, social hierarchy, economy, and technology. The Kuksu Society, or “big-head” dance, practiced in varying forms throughout California, was a male secret society focusing on initiation through ritualistic raising of the dead (Kroeber, 1925, 1932).

Nomlaki

The Nomlaki occupied an area that is nearly entirely within the present-day boundaries of Glenn and Tehama counties. Within Glenn County, the Nomlaki lived in the western half of the county, occupying some portion of the western valley edge and the east-facing slopes of the North Coast Range. In Tehama County, they controlled both sides of the Sacramento River and lands westward to the county line (Goldschmidt, 1978).

The Nomlaki are linguistically closely related to the Patwin, and they also shared many cultural traits. For example, because they inhabited similar environments, Nomlaki subsistence practices and staple foods were virtually the same as those of their Patwin neighbors. Other common traits were the construction of

semi-subterranean, earth-covered dance houses; the strong leadership of a community chief, which was an inherited position; and the existence of occupational specialization, in which specific families were considered specialists in a variety of positions, such as fishing, medicine, or basketry (Goldschmidt, 1978).

Trading was an occupational specialty, but non-specialist individual families might also conduct trade for necessities. Trade between Hill and River Nomlaki populations were common, whereby the River communities would supply fish, and the Hill families would provide seeds and animals. The Nomlaki also participated in the trading system that extended up the Sacramento Valley to the Oregon border; shells from the San Francisco Bay were traded for skins, yew wood, and obsidian that would be passed down from the north (Goldschmidt, 1978).

Konkow Maidu

The Konkow Maidu lived along the Sacramento River within the Primary Study Area, although most of their territory was in the west-facing slopes of the Sierra Nevada. Their territory included the watersheds of Big Chico and Honcut creeks, and the South Fork Feather River, significant portions of the North and Middle forks of the Feather River, and the Feather River proper downstream of Oroville to downstream of Honcut Creek. The Konkow Maidu language is distantly related to Patwin and Nomlaki because it, too, is of the Penutian language stock (Riddell, 1978).

Konkow winter villages consisted of multi-family semi-subterranean homes that were centered along the Sacramento River or adjacent to the lower reaches of the major drainages within their territory. During the other seasons, they moved throughout their lands to hunt and gather foods to sustain them through the winter months. The Konkow moved up into the higher mountain elevations to hunt deer in the summer, while the gathering of acorns, pine, and other nuts was an important activity in the fall. Berries, seeds, roots, bulbs, and greens were harvested when they were ripe. Other important animal resources included elk, rabbits, and salmon (Riddell, 1978).

Descendants of the ethnographic Patwin, Nomlaki, and Konkow Maidu continue to live in or near the Primary Study Area today. Many members of the Native American community continue to have strong ties to their ancestral lands

18.2.3.3 Historic-Era Context

Contact between Native Californians and immigrant populations from all over the world occurred at various times in northern California, dating to as early as 1579, when Sir Francis Drake visited the Coast Miwok in Tomales Bay. The Primary Study Area formed the northern frontier of Spanish and Mexican territory. Accordingly, the region's earliest known non-Native Californian visitors consisted of Spanish military expeditions on patrol. The history of early culture contact in the Sacramento Valley began with the Moraga expedition of 1808 and ended suddenly with a devastating smallpox epidemic in 1833.

Colusa County

Colusa County was established in 1851, with its modern boundaries defined in 1891. Although trappers were most likely the first Europeans to visit the area, the first written account of Colusa County comes from John Bidwell, who in 1843 passed through the area enroute from Oregon to Sacramento (then known as Captain Sutter's Fort *New Helvetia*). The earliest noted use of the proposed Sites Reservoir area was by Granville P. Swift. Swift constructed a stone corral to hold wild horses that he traded, and was reputed to have built an adobe house near the corral between 1844 and 1846 (Hobart, 2001).

Cattle grazing activities brought permanent residents to the region. The first recorded pioneers arrived in 1853 and settled at the stone corral and nearby Antelope Valley (Shoopman, 1951). Farming began in the early 1850s and generally took place without irrigation, although abundant springs in the area provided additional water when needed. Crops grown in the Antelope Valley and vicinity included wheat, cling peaches, grapes, and nectarines that were shipped to market by steamships stopping in Colusa along the Sacramento River on their way to Sacramento (Colusa Sun, 1890).

Two key mining activities, including the excavation of sandstone and salt, took place in and around the Antelope Valley in the late 1800s and early 1900s. Alfred Knowles began the first sandstone quarry near the town of Sites in 1886, adding impetus to the construction of the Colusa & Lake Railroad, which delivered the rock to Colusa, and then to various locales such as San Francisco. To house the quarry workers who arrived from such diverse locations as Prussia, Ireland, Germany, Australia, Switzerland, the British Isles, Sweden, Portugal, and Italy, the settlement of Quarryville was established on a flat between two sandstone mines. The town contained 10 to 12 new houses, a hotel and a saloon, and large machinery sheds by 1897 (Colusa Daily Sun, 1897 in Wallace, 1970). When cement began to replace sandstone as the construction material of choice, the quarry business slumped, forcing the railroad to cease its service in 1915. The loss of railroad service caused further hardship on the quarries by limiting their ability to transport their stone to outside sources (Wagon Wheels, 1987). By the early 1920s, the Sites area had lost its two most valuable economic resources: sandstone mining and the railroad. Quarryville completely vanished by approximately 1917 (Colusa Daily Sun, 1916 in Wallace, 1970).

Although salt mining in Antelope Valley took place as early as 1860, more intensive mining activities began with the formation of the Antelope Crystal Salt Company in 1890. Salt mining in the proposed Sites Reservoir area, however, could not compete with larger firms from the Bay Area and southern California. The Antelope Crystal Salt Company was officially dissolved in 1900, thus ending the large-scale manufacturing of salt in Colusa County. In the spring of 1865, oil was discovered in Colusa County. Several test wells were drilled in the Antelope Valley area, but none proved profitable (Geis, 1923; Green, 1950).

The town of Sites was established in 1886 on land donated by John Sites, who arrived in the area in 1853 and owned over 5,000 acres where he farmed and raised cattle. The town was originally constructed to serve as the terminus for the Colusa & Lake Railroad, which was established primarily to provide transportation of local crops to market. By 1887, with the opening of the sandstone quarries and the influx of laborers, the town possessed a store, a post office and a school, soon followed by hotels, boarding houses, and a church (Green, 1950; Wagon Wheels, 1987). After the Colusa & Lake Railroad ceased its service and the quarries closed down, Sites was still a viable town serving farmers and ranchers in the area.

A series of economic and natural disasters dramatically affected the town. The closing of the quarries around 1910, coupled with the abandonment of the railroad, was detrimental to the economic health of the town during the early decades of the 20th Century. In 1965, a large wildfire measuring three to four miles wide swept through the town, destroying many of the houses, and sealing the fate of the once thriving community (Wagon Wheels, 1987). By 1987, the population of Sites had diminished to a total of 17. The school building, train depot, railroad warehouse, and churches have since vanished, and today only a handful of homes and abandoned structures dot the landscape that was once a bustling town. The remains of a water tank, a few partially buried railroad ties, and abandoned town streets are some of the few remaining relics of Sites.

Glenn County

Glenn County was created from the northern portion of Colusa County when that county was divided. It was incorporated on March 15, 1891. The county was named for Doctor Hugh J. Glenn, a dentist from Missouri, who came to California in 1849 and worked a mining claim at Murderer's Bar on the American River (Beck and Haase, 1974; Kyle et al., 2002). Dr. Glenn made several trips across the plains driving herds of cattle, horses, and mules from Missouri to California. In 1867, he purchased Rancho Jacinto in what is now Glenn County and began farming wheat (Gudde, 1998; Kyle et al., 2002). Dr. Glenn continued to purchase land until he had thousands of acres under wheat cultivation and 200 to 300 employees. The community of Jacinto, 27 miles north of the town of Colusa, served as the supply center for his operation because of its proximity to the Sacramento River. The town provided housing for his employees, a hotel, a large general store, several blacksmith shops, a butcher shop, a post office (1858-1910), several large grain warehouses, and the first school established in the region (Kyle et al., 2002). In 1879, the New Constitution and Democratic parties nominated Dr. Glenn for governor of California, but he was defeated by George C. Perkins. On February 17, 1883, Dr. Glenn was shot to death at his home by an employee. He did not live to see the county named after him. The land amassed by the man who would become known as the world's "Wheat King" has since been subdivided into smaller farms and is now all irrigated (Kyle et al., 2002). The town of Jacinto, where he established his empire, is gone.

The community of Willows was formed in 1876 when the Central Pacific Railroad pushed its lines northward to Oregon. The town was named from a clump of willow trees bordering a water hole fed by several springs that stood out on the otherwise treeless plain. In the early days, it was the only landmark between the settlements on the river to the west and the foothills to the east (Gudde, 1998; Kyle et al., 2002). By the time Willows was established, the water hole had been filled in. From 1880 until 1916, the post office was known as Willow until the *s* was added in 1917. Willows became a center for shipping in the late 19th century for many large wheat and barley ranches. When Glenn County was formed in 1891, Willows was named the County seat and continues as the County seat today (Kyle et al., 2002). The City of Willows also serves as the headquarters for the Mendocino National Forest, which covers the western section of the County (Beck and Haase, 1974).

Glenn County has retained its agricultural origins with over one thousand farms dominating the economy. Major commodities include rice, wheat, hay, almonds, walnuts, corn, oranges, prunes, milk products, and livestock (Glenn County Court, 2011).

18.2.3.4 Cultural Resources

Methodology

A records search for the Primary Study Area was conducted at the Northwest Information Center, California State University, Sonoma (NWIC) and the Northeast Information Center, California State University, Chico (NEIC), of the California Historical Resources Information System (CHRIS). Archival research of historical records at various repositories was conducted, and consultation with Native American Tribes and other knowledgeable individuals was initiated.

California State University, Chico's Archaeological Research Program (ARP) conducted an intensive pedestrian survey of the proposed Sites Reservoir, including the inundation area (except for lands that were inaccessible due to lack of landowner permission), the Sites and Golden Gate dam sites, the nine saddle dam locations, the Sites Reservoir Inlet/Outlet Structure, the Recreation Area locations, and the road relocations and South Bridge site. The inventory covered 35,774 acres, and 144 archaeological sites were

recorded on California Department of Parks and Recreation forms (DPR 523); another 429 archaeological isolates were also recorded. A draft inventory report outlining the results of this study was prepared by White et al. (2009), which was updated in 2013 (Offermann, 2013).⁹ Furthermore, the ARP conducted a partial archaeological inventory of the proposed Delevan Pipeline, Delevan Pipeline Intake Facilities, and Delevan Pipeline Discharge Facility (Westwood and White, 2005). Because the survey areas included a buffer around these facilities, virtually the entire area within the proposed Project Buffer has been surveyed; the exception being the area around and west of the Holthouse Reservoir Complex. Survey of the proposed Holthouse Reservoir Complex, however, has been initiated and approximately 348 acres of this facility have been studied by California Department of Water Resources (DWR) archaeologists. The remaining proposed Project facilities were not surveyed for archaeological resources due to lack of access or because the facilities were added too late to the Project description to allow for field work. Areas and facilities that remain to be surveyed for archaeological resources prior to Project construction include:

- 790 acres within the Sites Reservoir footprint
- Previously inaccessible portions of the Delevan Pipeline
- The remaining portions of the Holthouse Reservoir Complex (including the location of the Holthouse Reservoir Electrical Switchyard) and Project Buffer
- Sites Pumping/Generating Plant
- Tunnel from Sites Pumping/Generating Plant to the Sites Reservoir Inlet/Outlet Structure
- Sites Electrical Switchyard
- Field Office Maintenance Yard
- GCID Canal Facilities Modifications
- TRR
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline Electrical Switchyard
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- GCID Canal Connection to the TRR
- Delevan Transmission Line (only the portion that is not located within the Delevan Pipeline construction disturbance area).

An inventory of the built environment resources outside of the proposed Sites Reservoir Inundation Area was conducted in the fall of 2012 by URS Corporation (URS) (Jimenez, 2013). This inventory identified and recorded 15 resources on DPR 523 forms within the Primary Study Area. An evaluation of the resources determined that six appear eligible for listing in the National Register of Historic Places

⁹ Archaeological data are considered confidential pursuant to California PRC 6254.10 and Section 304 of the National Historic Preservation Act; therefore, these reports are not appended to this document.

(NRHP) and the California Register of Historical Resources (CRHR), and nine do not appear eligible for the NRHP/CRHR. Two resources, Funks Dam and the Tehama-Colusa Canal, were found to be less than 45 years old and were not recorded. A listing of the recorded and evaluated resources is presented in Table 18-1. Descriptions of the resources are presented under “Historic-Era Resources” below.¹⁰

**Table 18-1
Built Environment Resources Identified Outside of the Proposed Sites Reservoir Inundation Area in the Primary Study Area**

Property Type	Site Name/Location	County	Owner	Description	Evaluation
Farmstead	Huffmaster Road Farmstead (1), Antelope Valley	Colusa	Private Ownership	Two circa 1964 and 1962 ranch-style houses, pre-1952 barns, non-historic period outbuildings	Evaluated-Ineligible
Farmstead	Huffmaster Road Farmstead (2), Antelope Valley	Colusa	Private Ownership	Circa 2006 single-family house, circa 1920 barn and 1970 shop	Evaluated-Ineligible
Farmstead	McDermott Road Farmstead (1), Maxwell	Colusa	Private Ownership	Two single-family houses, six silos, and two outbuildings.	Evaluated-Ineligible
Farmstead	McDermott Road Farmstead (2), Maxwell	Colusa	Private Ownership	A 1920 single-family house, circa 2000 barn, circa 1952 outbuilding, and single trailer	Evaluated-Ineligible
Farmstead	Funks Reservoir Farmstead	Colusa	Private Ownership	Circa 1933 single-family farmhouse, pole barn, lambing barn, workshop, livestock scale, water tank, pumphouse, and chicken coop	Evaluated-Ineligible
Farmstead	County Road 69 Farmstead, Antelope Valley	Glenn	Private Ownership	A 1938 single-family house, bunkhouse, and shed, all built in 1938; three 1967 pole barns and lambing barn, all built in 1967. Numerous non-historic buildings are also on the property	Evaluated-Ineligible
Quarry	Knowles Quarry, Maxwell	Colusa	Private Ownership	Circa 1886 Sites Sandstone quarry, also known as the Knowles Quarry. Two non-historic buildings, a mobile trailer, and pole barn, are on-site	Evaluated-Eligible
Canal	Glenn-Colusa Canal Headgate	Glenn	GCID	Circa 1941 eight-bay concrete constructed headgate/bridge; earthen bermed canal prism with stone riprap sides	Evaluated-Ineligible
Canal	Glenn-Colusa Canal	Colusa and Glenn	GCID	Circa 1887-1920 earthen canal	Evaluated-Eligible
Levee	Sacramento River Levee, near Stegeman	Colusa	USACE/Maxwell Irrigation District	Circa 1947-53 earthen berm levee/road	Evaluated-Eligible
Canal	Maxwell Irrigation District Canal, near Stegeman	Colusa	Maxwell Irrigation District	Maxwell Irrigation District, old pumping plant and drainage canal	Evaluated Ineligible/
Canal	Colusa Basin Drain	Colusa	Colusa Basin Drainage District	A 10-mile earthen bermed canal, built between 1903-1911; contributing features added in 1919-1920	Evaluated-Eligible
Railroad	Union Pacific Railroad Siphon, Willows	Glenn	GCID	Circa 1917 gravitational railroad siphon located on the GCID Canal and Union Pacific Railroad	Evaluated-Eligible

¹⁰ Full descriptions and evaluations of the 15 evaluated built environment resources are presented in Jimenez (2013), including DPR 523 forms for each resource.

**Table 18-1
Built Environment Resources Identified Outside of the Proposed Sites Reservoir Inundation Area
in the Primary Study Area**

Property Type	Site Name/Location	County	Owner	Description	Evaluation
Road	Colusa & Lake Railroad Historic District along Stone Corral Creek	Colusa	Colusa County	Two circa 1886 roads that include the historic C&LRR bed and a wagon road	Evaluated-Eligible
Utility Line	WAPA Transmission Line towers, near Funks Reservoir	Colusa	Private Ownership	Two circa 1958-60 transmission lines and towers that carry power for WAPA	Evaluated-Ineligible

Several other detailed cultural resources studies would be required to comply fully with federal and State cultural resources laws prior to construction of the Project (any alternative). These include the recordation of historic-era built environment resources within the reservoir footprint, and a detailed ethnographic study of the Primary Study Area to identify TCPs. Furthermore, in an effort to identify geographic areas sensitive for buried cultural resources, geoarchaeological studies would be conducted. Lastly, all cultural resources identified within the Primary Study Area would be evaluated for eligibility for inclusion in the NRHP and the CRHR. These activities would be carried out under the guidance of a programmatic agreement (PA), pursuant to the implementing guidelines of Section 106 of the National Historic Preservation Act (see Chapter 4 of this EIR/EIS) found at 36 CFR 800.4(b)(2), which allows for phased identification and evaluation of cultural resources in situations where the identification of historic properties cannot readily take place for a variety of reasons such as the consideration of alternatives that consist “of corridors or large land areas, or where access to properties is restricted...” A PA may also be used according to 36 CFR 800.14(b)(1)(ii), “[w]hen effects on historic properties cannot be fully determined prior to approval of an undertaking.” Given the large land base associated with the NODOS Project, the lack of access to all parcels within the Primary Study Area, and the large number of cultural resources that would ultimately require evaluation for NRHP/CRHR-eligibility, execution of a PA is the most efficient and effective manner to ensure that the lead federal agency would fulfill the requirements of the NHPA, including the identification of historic properties and the resolution of adverse effects to historic properties. Criterion 36 CFR 800.14(b)(1)(i), which refers to effects that are “similar or repetitive...in scope,” and which is appropriate to address reservoir fluctuations at the proposed Sites Reservoir, would also be included in the PA.

Potential impacts to historic properties in the Extended Study Area would similarly be discussed in the PA because individual projects or programs associated with the study area have not yet been determined, and may not be defined for many years in the future. The use of a PA to address future impacts to historic properties in the Extended Study Area is appropriate under several qualifying criteria found under 36 CFR 800.14(b)(1), including: 36 CFR 800.14(b)(1)(i), which refers to effects that “similar or repetitive or are multi-state or regional in scope” such as reservoir fluctuations, as previously mentioned; 36 CFR 800.14(b)(1)(ii), as noted above; 36 CFR 800.14(b)(1)(iii) for “[w]hen nonfederal parties are delegated major decision making responsibilities,” such as at the State or other local governments or water agencies; and 36 CFR 800.14(b)(1)(iv), when “routine management activities are undertaken at Federal installations, facilities, or other land management units” such as San Luis Reservoir.

The PA would involve the U.S. Bureau of Reclamation (Reclamation) as the lead federal agency, the Advisory Council on Historic Preservation, the California State Office of Historic Preservation, DWR, interested Native American tribes, and members of the public. Because DWR would be a participant in the PA, this agreement document would also ensure that the State would fulfill its obligations toward cultural resources pursuant to CEQA.

Prehistoric Resources

Human occupation in the Primary Study Area may extend back as far as 10,000 B.P. or more. Known prehistoric resources in the Primary Study Area include habitation or village sites, temporary campsites, bedrock milling features, lithic scatters, and isolated artifacts, such as projectile points, ground stone implements, cores or core tools, and flakes (White et al., 2009). Previous studies provide strong evidence that prehistoric resources are potentially present at all proposed Project feature locations.

Sites Reservoir Inundation Area, Golden Gate Dam, Sites Dam, Nine Saddle Dams, Recreation Areas, Road Relocations and South Bridge, Sites Electrical Switchyard, Sites Reservoir Inlet/Outlet Structure, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Pumping/Generating Plant, and Field Office Maintenance Yard

The cultural resources inventory of the proposed Sites Reservoir Inundation Area and damsites identified 50 prehistoric sites, 14 of which are multi-component sites that include both prehistoric and historic elements. Site types include, but are not limited to, housepits, middens, bedrock mortar sites, and flaked stone and ground stone scatters. In addition, 100 prehistoric isolated artifacts were recorded, two of which are multi-component. These include flake stone tools, debitage (flaking residue from stone tool manufacture), handstones, millings, pestles, portable and bedrock mortars, battered cobbles, and anvil stones. Prehistoric archaeological resources may exist in portions of the Sites Reservoir Inundation Area and at some of the appurtenant facility locations that remain to be surveyed. These may include resources that are visible, as well as those that are completely buried and, therefore, invisible on the ground surface. Unmarked burials or cemeteries may be similarly present. As a result, areas that have not yet been studied would be surveyed according to the guidelines of the PA prior to Project construction. Furthermore, all prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Holthouse Reservoir Complex and Holthouse Reservoir Electrical Switchyard

The footprint of the existing Funks Reservoir was inventoried and documented by Chartkoff (1969) and West, Levulett, and True (1976) prior to construction and inundation. Three prehistoric resources were identified and recorded during those efforts: CA-COL-233 (previously designated as Funks Creek 1 and Chartkoff-COL-28), CA-COL-242 (previously designated as Funks Creek 2 and Chartkoff-COL-37), and CA-COL-53 (previously designated as Funks Creek 3). Intensive artifact collection and limited trenching were conducted at all three sites, and limited excavation was conducted at CA-COL-242 and CA-COL-53. The studies revealed that the sites were recent prehistoric non-midden surface artifact scatters. Due to the nature of the sites and the low yield of subsurface artifacts obtained through excavation and trenching, it was further determined that the probability of discovering additional subsurface artifacts was very low. The report, therefore, concluded that the sites retained no opportunity to provide additional knowledge to the understanding of history or prehistory. As a result, they were determined not eligible for inclusion in the National Register.

A record search was conducted of the proposed Holthouse Reservoir Complex (i.e., Dam and Reservoir area) by the NWIC. The record search did not identify any previously recorded resources within the dam and reservoir footprint. The search also indicated that the Holthouse Dam and Reservoir, and consequently the Holthouse Reservoir Electrical Switchyard, are entirely within the limits of a survey conducted for the T-C Canal in 1965 (Treganza et al., 1965).

Approximately 348 acres of the Holthouse Reservoir Complex have been surveyed for the proposed Project. One prehistoric isolate, a chert flake, was recorded on the north shore of Funks Reservoir, but no archaeological sites have been found to date. However, archaeological resources may exist in portions of the reservoir that remain to be surveyed, including those that may be completely buried and are, therefore, invisible on the ground surface. Unmarked burials or cemeteries may be similarly present. Those portions of the Holthouse Reservoir Complex that have not yet been studied would be surveyed according to the guidelines of the PA prior to Project construction. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Glenn-Colusa Irrigation District Canal Facilities Modifications

A cultural resources record search of the GCID Canal and associated headworks facilities was conducted by White and Crawford (2003a) at the NWIC and the NEIC of the CHRIS. The records searches identified one previously recorded prehistoric resource, CA-GLE-106, in proximity to the GCID Canal alignment. CA-GLE-106 is a habitation site containing fractured stone and shell fragments. A pedestrian survey of the canal alignment at the locations where facility modifications would occur has not yet been undertaken; therefore archaeological resources may exist, including those may be completely buried and are, therefore, invisible on the ground surface. Unmarked burials or cemeteries may be similarly present. Archaeological survey would be conducted prior to Project construction according to the guidelines of the PA. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Terminal Regulating Reservoir, Terminal Regulating Reservoir Pumping/Generating Plant, Terminal Regulating Reservoir Electrical Switchyard, and Glenn-Colusa Irrigation District Canal Connection to the Terminal Regulating Reservoir

White and Crawford (2003a) conducted a cultural resources records search at the NWIC and NEIC of the CHRIS that included the proposed TRR, the TRR Pumping/Generating Plant, and the GCID Canal Connection to the TRR. The records search consequently also included the locations of the proposed TRR Electrical Switchyard. No prehistoric resources within or near these project features were identified during the records search. As a result, archaeological resources may exist at the locations of these facilities, including those that may be completely buried and are, therefore, invisible on the ground surface. Unmarked burials or cemeteries may be similarly present. A pedestrian survey of all new facility footprints will occur prior to Project construction according to the guidelines of the PA. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Delevan Pipeline, Terminal Regulating Reservoir Pipeline, Terminal Regulating Reservoir Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Transmission Line

A partial survey of the proposed Delevan Pipeline route east of Interstate 5 was conducted by California State University, Chico's ARP (Westwood and White, 2005). No prehistoric resources were identified as a result of the survey. However, archaeological resources may exist in areas that were not surveyed, including those that may be completely buried and are, therefore, invisible on the ground surface. Unmarked burials or cemeteries may be similarly present. Additional survey would be required to inspect the entire pipeline alignment, and for the TRR Pipeline, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Transmission Line prior to Project construction according to the guidelines of the PA. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility

An inventory of the proposed Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility was conducted by California State University, Chico's ARP (Westwood and White, 2005). No prehistoric resources were documented as a result of this inventory. However, a previous cultural resource survey conducted by White (2003) along the Sacramento River resulted in the identification of prehistoric resources approximately 0.25 mile from the proposed intake. Resources observed by White (2003) included chipped stone tools, mortars, pestles, handstones, millings, earthenware, and middens. Although no archaeological resources have been identified at the locations of the Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility, it is possible that such resources may be completely buried and are, therefore, invisible on the ground surface. Unmarked burials or cemeteries may be similarly present. Should prehistoric remains be identified during Project construction, they would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Project Buffer

The archaeological inventory conducted within the Sites Reservoir Survey Area includes virtually all of the area within the proposed Project Buffer. Thirty-three prehistoric archaeological sites, of which nine are multi-component, and 21 prehistoric archaeological isolates, were recorded within the Buffer beyond the footprint of the proposed Sites Reservoir and the appurtenant facilities. The area around the proposed Holthouse Reservoir Complex and acreage west to Sites Reservoir within the Project Buffer has not yet been inventoried for prehistoric resources. An inventory of this Project component would be conducted prior to Project construction according to the guidelines of the PA. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate. The inventories conducted for the Delevan Pipeline Intake/Discharge facilities include all of the area within the Project Buffer around those facilities.

Ethnographic Resources

Information regarding the ethnographic places in the Primary Study Area is provided from existing literature. A detailed inventory of the ethnographic resources in the Primary Study Area will be conducted prior to Project construction according to the guidelines of the PA. Furthermore, ethnographic resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and

mitigation measures would be applied, as appropriate. These studies would be conducted for all elements of the Primary Study Area, as listed below.

The Primary Study Area is contained within the ethnographic territory of two Hill Patwin communities: the *Choo-hel'-mem-sel* and the *Ko'-roo* (Kroeber, 1932; White et al., 2009). The majority of ethnographic resources cluster around the northwest corner of the proposed Sites Reservoir. Ethnographic resources become scarcer in the eastern portions of the Primary Study Area that are in the Sacramento Valley. This is primarily because these lands were historically uninhabitable marshlands. Several ethnographic sites exist, however, near the Sacramento River, in and around the vicinity of the proposed Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility.

Sites Reservoir Inundation Area, Golden Gate Dam, Sites Dam, Nine Saddle Dams, Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, Field Office Maintenance Yard, Recreation Areas, and Road Relocations and South Bridge

According to White et al. (2009), a majority of the proposed Sites Reservoir footprint, including the proposed inundation area, the Sites and Golden Gate damsites along with the nine saddle dam locations, the Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, Field Office Maintenance Yard, the Recreation Areas, and associated Road Relocations and South Bridge site would be located within the ethnographic territory of the *Choo-hel'-mem-sel*. At least seven ethnographic place names are located in the vicinity of the Sites Reservoir footprint. A majority of the ethnographic sites identified are village or rancheria locations that tend to cluster around the proposed reservoir's northwest edge. One of these place names, *Choo'-dah-kut*, has been identified within Antelope Valley near the town of Sites (White et al., 2009).

Holthouse Reservoir Complex and Holthouse Reservoir Electrical Switchyard

The existing Funks Reservoir and the proposed Holthouse Reservoir Complex and Holthouse Reservoir Electrical Switchyard are/would be located within the ethnographic territory of the *Choo-hel'-mem-sel* (Kroeber, 1932; White et al., 2009). No known ethnographic resources are located in the immediate vicinity of Funks Reservoir or the proposed Holthouse Reservoir.

GCID Canal Facilities Modifications

The existing GCID Canal and associated proposed headworks facilities are located within the ethnographic territory of the *Ko'-roo* (Kroeber, 1932; White et al., 2009). No known ethnographic resources are located in the immediate vicinity of the GCID Canal or associated headworks.

Terminal Regulating Reservoir, Terminal Regulating Reservoir Pumping/Generating Plant, Terminal Regulating Reservoir Electrical Switchyard, and the Glenn-Colusa Irrigation District Canal Connection to the Terminal Regulating Reservoir

The proposed TRR would be located within the ethnographic territory of the *Ko'-roo* (Kroeber, 1932; White et al., 2009). No known ethnographic resources are located in the immediate vicinity of the proposed TRR, the TRR Pumping/Generating Plant, TRR Electrical Switchyard, or the GCID Canal Connection to the TRR.

Delevan Pipeline, Terminal Regulating Reservoir Pipeline, Terminal Regulating Reservoir Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Transmission Line

The proposed Delevan Pipeline, TRR Pipeline, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Transmission Line would cross the ethnographic territories of both the *Choo-hel'-mem-sel* and the *Ko'-roo* (Kroeber, 1932; White et al., 2009). There are no known ethnographic resources within the immediate vicinity of the Delevan or TRR pipelines, the TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, or the Delevan Transmission Line.

Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility

The proposed Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility would be located within the ethnographic territory of the *Ko'-roo* (Kroeber, 1932; White et al., 2009). The intake structure and discharge facility are located adjacent to the ethnographic village of the *Ts'a*. There are several other ethnographic villages in proximity to those proposed structures, including the *K'etil* to the north and the *YYaitere* to the south.

Project Buffer

The proposed Project Buffer would surround all Project facilities, with the exception of the Delevan Pipeline, Delevan Transmission Line, TRR Pipeline and Road, Delevan Pipeline Electrical Switchyard, TRR to Funks Creek Pipeline, and portions of the other roads. The Project Buffer would, therefore, be located within the ethnographic territories described above for the facilities that it surrounds.

Historic-Era Resources

Historic-era resources occur throughout the Primary Study Area. Historic-era resources within the Primary Study Area may include both archaeological deposits and resources of the built environment. These resources are comprised of town sites, structures, transportation facilities, water conveyance systems, resource extraction facilities (such as quarries), ranches and associated facilities, homesteads, privy pits, and dumps.

Sites Reservoir Inundation Area, Golden Gate Dam, Sites Dam, Nine Saddle Dams, Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, Sites Reservoir Inlet/Outlet Structure, Field Office Maintenance Yard, Recreation Areas, and Road Relocations and South Bridge

The cultural resources inventory identified 34 historic-era archaeological resources within the proposed Sites Reservoir footprint, the damsites, the recreation areas, and the location of the South Bridge; 14 of the sites are multi-component sites that include both prehistoric and historic elements (White et al., 2009). Site types are overwhelmingly related to farming and homesteading and include, but are not limited to, habitation features such as hearths, chimneys, flats, rock alignments, historical debris scatters, and farming equipment. In addition, 118 historic-era isolated artifacts or features were recorded, two of which are multi-component. Most historic-era isolated artifacts, such as fencing or plow blades, relate to ranching or farming activities. Historic-era archaeological resources may exist in portions of the Sites Reservoir inundation area and at some of the appurtenant facility locations that remain to be surveyed. These resources may be visible, or may be completely buried and, therefore, invisible on the ground surface. As a result, areas that have not yet been studied would be surveyed according to the guidelines of the PA prior to Project construction. Furthermore, all historic-era archaeological resources that are

identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

The built environment study (Jimenez, 2013) identified two resources within these portions of the Primary Study Area, as described below:

- The Colusa & Lake Railroad Historic District is located along Stone Corral Creek and is, therefore, located within the footprint of the proposed Sites Dam. The entire length of the District is 1.5 miles, from west of the town of Sites to the east to 0.25 mile beyond the edge of the proposed Project Buffer, although the entire length of the railroad and road is eight miles. This historic district consists of visible remnants of the original wagon road that extended between Maxwell and Sites, and the footprint of the Colusa & Lake Railroad, which has since become Maxwell Sites Road. Both the railroad and the wagon road were constructed in 1886 to support the transfer of people and goods, particularly sandstone from the local quarries, from Sites to Maxwell and Colusa. The two transportation features are intimately linked as they criss-cross numerous times along Stone Corral Creek. The period of significance for the District is 1886 to 1915, from the time of construction until the tracks were removed from the railroad. The District appears eligible for the NRHP under Criterion A for its association with the Colusa & Lake Railroad and the development of the town of Sites. The District is eligible for the CRHR under Criterion 1.
- The Funks Reservoir Farmstead is located in the area of the proposed Sites Reservoir Inlet/Outlet Structure. This farm complex is contained on a 230-acre parcel and is comprised of a number of buildings that date to about 1933. The various structures include a single-family residence, an open-eaved barn, an enclosed pole barn, a shed-roof workshop, a chicken coop, a water tank, and a pumphouse. Although the land once belonged to an early Antelope Valley rancher, the buildings are not associated with him and are not architecturally significant. As a result, the Funks Reservoir Farmstead does not appear eligible for the NRHP or the CRHR.

In addition to the resources described above, other built environment historic-era resources within the reservoir footprint include 19 residential dwellings, 15 ranch compounds, and 27 miscellaneous outbuildings. None of these structures have been formally recorded or evaluated for eligibility to the NRHP or the CRHR for the Project. Recordation and NRHP/CRHR eligibility evaluation of these resources would be required prior to Project construction according to the guidelines of the PA. Furthermore, mitigation measures would be applied, as appropriate.

The proposed Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to the Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and Field Office Maintenance Yard have not yet been inventoried for historic-era archaeological resources. An inventory of these proposed Project components would be conducted prior to Project construction according to the guidelines of the PA. Furthermore, historic-era archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Holthouse Reservoir Complex and Holthouse Reservoir Electrical Switchyard

The footprint of the existing Funks Reservoir was inventoried and documented by Chartkoff (1969) and West et al. (1976) prior to its construction and inundation. One historic-era site, CA-COL-233 (previously designated as Funks Creek 1 and Chartkoff-COL-28), was recorded as a result of those studies. However, when Chartkoff (1969) recorded the site, only the prehistoric component was noted. It was not until

West et al. (1976) recorded the site that the historic-era component was added, although the trinomial still lacks the multicomponent designation. CA-COL-233 consists of a cabin and several associated historic-era items including a sewing machine, stove fragments, several tableware items, remnants of outbuildings, and other miscellaneous items. West et al. (1976) provided a date range of 1890 to 1916 for this site. CA-COL-233 was determined not eligible for inclusion in the National Register.

Approximately 348 acres of the proposed Holthouse Reservoir Complex have been surveyed for historic-era archaeological resources. No historic-era archaeological resources have been found to date, and a record search for the T-C Canal (White and Crawford 2003b) did not identify any previously recorded cultural resources in the vicinity of the existing Funks and proposed Holthouse reservoirs. However, resources may exist in portions of the reservoir complex that remain to be surveyed, including those that may be completely buried and invisible on the ground surface. The only known built environment resources within the Holthouse Reservoir Complex are the T-C Canal, Funks Dam, and the Western Area Power Administration (WAPA) Maxwell-Olinda 500-kV transmission lines. The T-C Canal and Funks Dam, which would be decommissioned within the reservoir footprint, were completed in 1980 and are, therefore, not of sufficient age to be considered for listing on the NRHP/CRHR. However, that portion of the T-C Canal in the Primary Study Area and Funks Dam would be recorded as cultural resources prior to Project construction.

The WAPA Transmission Line consists of two circuits with paralleling lattice steel towers that are aligned on a north-south axis 0.25 mile east of existing Funks Dam and through the proposed Holthouse Reservoir footprint. The towers are part of the 80-mile-long Maxwell-Olinda 500-kV transmission line that connects the Olinda Substation in Tehama County to the Maxwell Substation in Colusa County. The entire WAPA line contains 363 transmission towers. The segment within the Project area is approximately 0.5 mile in length where it crosses the footprint of the Holthouse Reservoir; towers within this section would be moved. The towers and transmission lines were built between 1958 and 1960 as part of a larger circuit. The substations at Olinda and Maxwell were both constructed in 1986 and this transmission line was re-circuited at that time. The WAPA Maxwell-Olinda 500-kV transmission lines have integrity, and even though the resource is part of a larger network of transmission lines and towers built between 1958 and 1960 throughout the western United States, the Olinda and Maxwell substations were not constructed until 1986. Therefore, the existing circuit is not yet over 45 years old, and is not eligible for the NRHP or the CRHR.

A cultural resources inventory of the Holthouse Reservoir Complex, including the location of the Holthouse Reservoir Electrical Switchyard, would be completed prior to Project construction according to the guidelines of the PA. Furthermore, historic-era resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Glenn-Colusa Irrigation District Canal Facilities Modifications

White and Crawford (2003a) conducted an archaeological records search for the GCID Canal at the NWIC and the NEIC of the CHRIS. Eight historic-era resources were identified along or adjacent the entire length of the Canal, including three historic-era town sites, a highway alignment, a California Historic Landmark, two railroad alignments, and the GCID Canal and associated features, itself. Of these eight resources, only the GCID Canal has been formally recorded and is identified by the State trinomial CA-GLE-605H. Only one other historic-era resource has been identified in the Project area in proximity to the GCID Canal Intake and headworks facilities. An additional six historic-era resources (a town site, a

cemetery, a school building, a grange building, a river transportation feature, and a point of historical interest) were identified within one mile of the Canal. An archaeological survey for historic-era resources would be conducted prior to Project construction according to the guidelines of the PA. Furthermore, historic-era archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

The GCID Canal Railroad Siphon, and headworks and prism, were recorded as part of the NODOS built environment study (Jimenez, 2013). It is a circa 1917 engineered structure designed by the Central Irrigation District to convey water via gravitational forces under the railroad bed of the Southern Pacific Railroad. The siphon is constructed of board-formed concrete and is approximately 51 feet wide by 84 feet long with approximately four-foot-high walls. The concrete is buttressed slightly to the railroad bed and has horizontal structural cracks due to water pressure over time. The water level on the east side of the canal is slightly higher than the west side, as it gravitationally siphons water through tilting pipes under the railroad bed. According to GCID District Engineer Ben Pennock, the railroad siphon has not been altered, and is original to circa 1917. The Union Pacific Railroad siphon is significant for its association with the Central Irrigation District and GCID as part of an early irrigation district (Criteria A and 1). The siphon possesses a distinctive type of design and method of construction as an irrigation structure and expresses high artistic values represented in distinguishable characteristics as a feature of the original Central Irrigation Canal as it passes under the Southern Pacific Railroad. The railroad siphon is a unique engineered structure, designed to convey water by gravitational force under an existing railroad bed through pipes, like a straw, and is, therefore, eligible under Criteria C and 3. Thus, the GCID Canal Railroad Siphon appears individually eligible for the NRHP and the CRHR, and is a contributing element to the GCID Canal as a whole (see below).

The GCID Canal headgate structure was constructed around 1941, replacing an earlier headgate that was built as part of the Central Irrigation District in the late 19th century. The existing headgate is located 60 feet south of the original Central Irrigation District headgate. It operates as a narrow two-lane bridge across the canal from County Road 203 to County Road 205. The bridge deck is approximately 19 feet wide by 209 feet long, and is constructed of board-formed concrete; a simple pole railing interconnects with concrete posts. The canal prism was also modified in 1941 to accommodate the new headgate and was extended north to its present confluence with the Sacramento River at that time. Because the headgate is not directly associated with the original Central Irrigation District canal and features, it does not appear to be individually eligible for the NRHP or the CRHR. Also, because it does not date to the period of significance for the GCID Canal (see below), in general, it is not a contributing element to that resource.

Terminal Regulating Reservoir, Terminal Regulating Reservoir Pumping/Generating Plant, Terminal Regulating Reservoir Electrical Switchyard, and Glenn-Colusa Irrigation District Canal Connection to the Terminal Regulating Reservoir

White and Crawford (2003a) conducted an archaeological records search at the NWIC and the NEIC of the CHRIS that included the proposed TRR, the TRR Pumping/Generating Plant, TRR Electrical Switchyard, and the GCID Canal Connection to the TRR. Except for the presence of the GCID Canal, recorded as site CA-GLE-605H, no other historic-era resources within or near these proposed Project features were identified during the records search. The built environment study, however, identified and evaluated three historic-era resources located within the vicinity of these Primary Study Area features (Jimenez, 2013). The resources (the GCID Canal and two farmsteads) are described below:

- The GCID Canal began construction as the Central Irrigation Canal in 1887, and assumed its current name in 1920. The ability of the canal to deliver water to farms along its length of 65 miles contributed significantly to the agricultural development of Glenn and Colusa counties. The GCID Canal was previously evaluated, and it appears to be eligible for listing to the NRHP and CRHR under Criteria A and 1, respectively, due to its association with the Central Irrigation District and the development of irrigation and farming in the Sacramento Valley. It also appears eligible for listing to the NRHP and the CRHR due to its association as an early 20th century engineered system that includes the main canal and associated ditches, which provided water to hundreds of farmsteads in the Sacramento Valley between 1887 to 1920 (Criteria C and 3). The period of significance for the GCID is between 1887 and 1920.
- The McDermott Road Farmstead (1) is located at the northeast corner of McDermott and Equipment roads, directly across the street from the planned TRR. The land was platted in 1912 by the Sacramento Valley Irrigation Company, who purchased the Central Irrigation District, and the property is bordered by lateral canals to the GCID Canal. However, there is no significant connection to the Central Irrigation District and the buildings present on the parcel are relatively modern. As a result, the McDermott Road Farmstead (1) does not appear eligible for either the NRHP or the CRHR.
- The McDermott Road Farmstead (2) is located directly across the street and west of McDermott Road Farmstead (1). This parcel will be directly adjacent to the east levee of the TRR. Like its eastern neighbor, the parcel was platted in 1912 by the Sacramento Valley Irrigation Company and it is bordered by a lateral canal of the GCID Canal. Structures on the farmstead include a 1920 single-family residence with a rear add-on porch and new double-pane vinyl windows, a circa 1952 outbuilding, and a circa 2000 large open hay barn. The residence lacks integrity and is not an exceptional example of an architectural type, and there is no significant connection to the Central Irrigation District; therefore, the McDermott Road Farmstead (2) does not appear NRHP/CRHR-eligible.

An archaeological survey for historic-era resources would be conducted within the Project area for the proposed TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, and the GCID Canal Connection to the TRR prior to construction according to the guidelines of the PA. Furthermore, historic-era archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

Delevan Pipeline, Terminal Regulating Reservoir Pipeline, Terminal Regulating Reservoir Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Transmission Line

A partial archaeological survey of the proposed Delevan Pipeline route east of I-5 was conducted by California State University, Chico's ARP (Westwood and White, 2005). Three historic-era isolated features were identified as a result of the survey. These include a single palm tree stump, a pumping station in an abandoned canal, and an adjacent water control gate located in the abandoned canal. Limited access and poor surface visibility were issues for this proposed Project component, therefore, only a small portion of the Delevan Pipeline was examined. The proposed TRR Pipeline, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Transmission Line have not been inventoried and additional surveys of these facility footprints would be completed prior to Project construction according to the guidelines of the PA. As a result, historic-era archaeological resources may exist in these Project areas that remain to be surveyed, including those resources that may be completely buried and invisible on the

ground surface. Historic-era archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

The NODOS built environment study identified one historic resource within the footprint of the Delevan Pipeline (Jimenez, 2013). This resource, the Colusa Basin Drain (CBD) is a 10- to 20-foot-wide dirt canal. It was initially constructed in 1903 as the result of linear borrow trenches created while building levees in the area. The CBD was completed in 1911 and additions, such as culverts and headgates, were added in 1919 and 1920, probably in conjunction with the GCID and widespread irrigation development in the Sacramento Valley. The CBD, which is 33 miles long, flows through Glenn, Colusa, and Yolo counties; the Primary Study Area includes 1,500 feet of this length. Various portions of the CBD have been recorded in the past and it was evaluated for the NRHP/CRHR in 2007. The CBD appears eligible for listing to the NRHP and the CRHR due to its association with agricultural economy of the region (Criteria A and 1), and for its association for engineering involved in irrigating the Sacramento Valley (Criteria C and 3).

Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility

An archaeological inventory of the proposed locations for the proposed Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility were conducted by California State University, Chico's ARP (Westwood and White, 2005). No historic-era archaeological resources within the vicinity of the proposed facilities were documented as a result of this inventory. However, a cultural resource survey conducted by White (2003) along the Sacramento River resulted in the identification of historic-era resources nearby. Historic-era isolated artifacts or features recorded by White (2003) range from historic foundations to glass debris. It is possible that historic-era archaeological resources may be completely buried and invisible on the ground surface. Should buried historic-era remains be identified during Project construction, they would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

The Sacramento River levee and the Maxwell Irrigation District (MID) Canal, both located within the proposed footprint of the Delevan Pipeline Intake/Discharge Facilities, were recorded and evaluated as part of the built environment study (Jimenez, 2013). The levee is an earthen bermed structure that is approximately 15 feet high, approximately 15 feet wide across the top, and 75 feet wide at its base. The resource may date as early as 1936; however, it likely was constructed sometime between 1947 and 1953. The levee appears eligible for the NRHP/CRHR under Criterion A/1 due to its association with the Sacramento River Flood Protection Project, which stemmed from the Flood Control Act of 1917 and fostered agricultural development of the Sacramento Valley.

The MID Canal is located on the land side of the Sacramento River levee within the proposed footprints of the Delevan Pipeline Intake and Discharge facilities. It consists of a concrete-lined canal that parallels the toe of the levee and an abandoned pumphouse directly adjacent to the levee. As an involved irrigation system, the MID Canal was first formed in 1918. This portion of the canal was developed between 1947 and 1953, probably after the development of the Sacramento River levee. Although the MID Canal is over 45 years old, the portion of the canal and its associated features in the vicinity of the Delevan Pipeline Intake and Discharge facilities has limited history, and does not appear to be associated with an early part of the 1918 MID Canal. As a result, the MID Canal within the proposed footprint of the Delevan Pipeline Intake and Discharge Facilities does not appear eligible for the NRHP or the CRHR.

Project Buffer

The archaeological inventory within Sites Reservoir Survey Area includes virtually all of the area within the proposed Project Buffer. Seventeen historic-era archaeological sites (nine multi-component) were recorded within the Project Buffer beyond the footprint of the proposed Sites Reservoir and the appurtenant facilities, along with 20 historic-era archaeological isolates. The area around the proposed Holthouse Reservoir Complex, and acreage west to the Sites Reservoir within the Project Buffer, have not yet been inventoried for historic-era archaeological resources. An inventory of this Project component would be conducted prior to Project construction according to the guidelines of the PA. Furthermore, historic-era archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate. The inventories conducted for the proposed Delevan Pipeline Intake/Discharge Facilities include all of the area within the Project Buffer around those facilities.

The built environment inventory includes the Project Buffer around the proposed Sites Reservoir footprint. Four built environment resources that are not related to the other facility development have been identified, recorded, and evaluated for the NRHP/CRHP within the Buffer outside of the Sites Reservoir Inundation Area. These resources include three farmsteads and one quarry district, as presented below:

- Huffmaster Road Farmstead (1) contains two early 1960s ranch-style houses on a single parcel at the very south end of Antelope Valley within the Project Buffer. A number of outbuildings on the property appear to date to the mid-1900s, none of which are excellent examples of architecture. Huffmaster Road Farmstead (1) does not appear to meet any of the eligibility criteria for listing on the NRHP or the CRHR.
- Huffmaster Road Farmstead (2) is located in the southeast corner of Antelope Valley. Portions of the ranch that do not contain buildings would be inundated by the proposed Sites Reservoir. The property contains a residence from the early 2000s, a circa 1970 workshop, and a wooden barn from the 1920s. The parcel has been farmed since the 1860s, but there are no remaining extant structures that reflect the earliest days of the ranch, and the barn does not reflect an exceptional architectural style. As a result, Huffmaster Road Farmstead (2) does not appear eligible for listing on the NRHP or the CRHR.
- The County Road 69 Farmstead is situated at the north end of Antelope Valley in Glenn County. The property is a vernacular farmstead and an active cattle ranch that includes a single-family farmhouse, a bunkhouse, and two joining sheds that were all built around 1938. A nearby lambing barn and three separate pole barns were constructed in 1967. The farmstead has various features that are less than 45 years old, such as a 1973 double-wide mobilehome with carport, a metal shed/bathroom, and numerous auxiliary structures, such as silos, dog kennels, and corrals. Many of the 1938 buildings have been altered with the addition of aluminum sliding glass windows and T-111 plywood siding. Historically, the farmstead was a sheep farm that was converted to a cattle ranch after it was purchased by the current property owner sometime around 1982. Although many of the ranch buildings are over 45 years old, the County Road 69 Farmstead does not appear to meet any of the eligibility criteria for listing on the NRHP/CRHR.
- The Stone Corral Creek Quarries Historic District consists of two historic sandstone quarries located on the east-facing slope of Logan Ridge, and on both sides of Stone Corral Creek and Maxwell Sites Road. The Knowles Quarry, located north of Stone Corral Creek and Maxwell Sites Road, was the first quarry in the area. The quarry was developed by pioneer John Sites in 1887-1888 as the Sites

Sandstone Company. The McGilvray Quarry known, also as the Thompson Quarry, was first opened in 1897 and is located south of the Knowles Quarry, and south of Stone Corral Creek and Maxwell Sites Road; McGilvray purchased the property in 1900. Both quarries were major suppliers of stone for the rebuilding of San Francisco after the 1906 earthquake. They both also closed in 1914, and all equipment was liquidated in 1915. The McGilvray Quarry reopened for a time in 1925, and again in 1957. The Knowles Quarry has recently re-opened. Both quarries are defined by their geology and have steep sandstone cliffs that demonstrate past mining activities, such as visible markings of delaminated sandstone and drill holes.

- The McGilvray Quarry no longer contains any standing structures and has been recorded as an archaeological site (CA-COL-182) with at least five features that reflect past mining activities. The Knowles Quarry was recorded as part of the NODOS built environment study (Jimenez, 2013). This quarry contains several modular outbuildings that are not related to its historic past. However, both quarries are defined by their geology and have steep sandstone cliffs that demonstrate past mining activities, such as visible markings of delaminated sandstone and drill holes, and the general area has retained its integrity of location, setting, feeling and association in the rural setting along Stone Corral Creek. These characteristics lend to the delineation of the Stone Corral Creek Quarries Historic District. The quarries are also linked by having operated simultaneously for 17 years and shipped sandstone via the C&LRR. They provided sandstone for the construction of landmark buildings in San Francisco from before the 1906 earthquake (e.g., the Union Depot, the Ferry Building, the St. Francis Hotel, and the James Flood Building), and were significant in the rebuilding of the city post-1906 (e.g., the Gunst Building, three Home Telephone buildings, the W.F. Wood Building, and the Sherith Israel Synagogue). Furthermore, Knowles and McGilvray, both owners of Bay Area stone companies, worked closely with notable architects of the time and successfully marketed Colusa sandstone in San Francisco. McGilvray was also instrumental in the construction of San Francisco City Hall, became president of the San Francisco Builders Exchange, and was Commissioner of the Board of Public Works for the city. Knowles and McGilvray later partnered in granite quarrying in Madera County. Thus the Stone Corral Creek Quarries Historic District appears eligible for the NRHP/CRHR under Criteria A and 1 for its contribution to early mining history in the Antelope Valley and to the pre- and post-1906 earthquake construction of significant structural landmarks in San Francisco, and under Criteria B and 2 for its association with Knowles and McGilvray. Although not yet demonstrated, the District may be eligible under Criteria D and 4 for the information regarding sandstone mining technology and mining life that might be contained in archaeological deposits at the quarry sites.

Traditional Cultural Properties

TCPs within the Primary Study Area may include sites, locations, or features that are associated with the cultural practices or beliefs of a living community that are rooted in that community's history, and are essential to maintaining the continuing cultural identity of the community. TCPs are most often associated with Native American practices and beliefs, however, other communities or cultural groups may acknowledge similar properties. TCPs include sites that are an integral aspect of cultural practices or beliefs, or areas where natural materials are gathered to enhance the continuity of cultural traditions, such as basket making supplies.

Currently, no TCPs have been identified within the Primary Study Area. A detailed report on the TCPs within the Primary Study Area will be completed prior to Project construction according to the guidelines

of the PA. Furthermore, potential TCP resources that are identified would be evaluated for NRHP/CRHR eligibility pursuant to the PA protocols, and mitigation measures would be applied, as appropriate.

18.3 Environmental Impacts/Environmental Consequences

18.3.1 Regulatory Setting

Cultural resources are regulated at the federal, State, and local levels. Provided below is a list of the applicable cultural resource regulations. These regulations are discussed in detail in Chapter 4 Environmental Compliance and Permit Summary of this EIR/EIS.

18.3.1.1 Federal Plans, Policies, and Regulations

- Antiquities Act of 1906
- Archaeological Resources Protection Act
- National Historic Preservation Act of 1966
- National Register of Historic Places
- Protection of Historic Properties (USC 36 CFR part 800)
- Native American Graves Protection and Repatriation Act

18.3.1.2 State Plans, Policies, and Regulations

- California Environmental Quality Act
- California Public Resources Code §5097.5
- California Register of Historical Resources
- California Native American Historic Resource Protection Act
- California Public Resources Code §5024.1
- California Public Resources Code §5097.9 to §5097.991
- California Health and Safety Code §7050.5: Disturbance of Human Remains
- Sections 8010–8011 of the California Health and Safety Code: California Native American Graves Protection and Repatriation Act

18.3.1.3 Regional and Local Plans, Policies, and Regulations

- Glenn County General Plan
- Colusa County General Plan

Cultural resources that are eligible for listing on the CRHR are collectively referred to as “historical resources,” while those eligible for the NRHP are identified as “historic properties.” Because the eligibility criteria are essentially the same and all resources eligible for the NRHP are also eligible for the CRHR, the term “historical resources” is used in this chapter to refer to cultural resources that have been determined eligible for the CRHP, the NRHP, or both.

18.3.2 Evaluation Criteria and Significance Thresholds

Significance criteria represent the thresholds that were used to identify whether an impact would be significant. Appendix G of the *CEQA Guidelines* suggests the following evaluation criteria for cultural resources:

Would the Project:

- Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?
- Disturb any human remains, including those interred outside of formal cemeteries?

The evaluation criteria used for this impact analysis represent a combination of the Appendix G criteria and professional judgment that considers current regulations, standards, and/or consultation with agencies, knowledge of the area, and the context and intensity of the environmental effects, as required pursuant to NEPA. For the purposes of this analysis, an alternative would result in a significant impact if it would result in any of the following:

- A substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.
- A substantial adverse change in the significance of a historical resource of the built environment as defined in §15064.5.
- Disturb a Traditional Cultural Property.
- Disturb any human remains, including those interred outside of formal cemeteries.

18.3.3 Impact Assessment Assumptions and Methodology

18.3.3.1 Assumptions

The following assumptions were made regarding Project-related construction, operation, and maintenance impacts to cultural resources:

- Direct Project-related construction, operation, and maintenance activities would occur in the Primary Study Area.
- Direct Project-related operational activities would occur in the Secondary Study Area.
- The only direct Project-related construction activity that would occur in the Secondary Study Area is the installation of an additional pump into an existing bay at the Red Bluff Pumping Plant.
- The only direct Project-related maintenance activity that would occur in the Secondary Study Area is the sediment removal and disposal at the two intake locations (i.e., GCID Canal Intake and Red Bluff Pumping Plant).
- No direct Project-related construction or maintenance activities would occur in the Extended Study Area.
- Direct Project-related operational effects that would occur in the Extended Study Area are related to San Luis Reservoir operation; increased reliability of water to supply to agricultural, municipal, and industrial water users; and the provision of an alternate Level 4 wildlife refuge water supply. Indirect effects to the operation of certain facilities that are located in the Extended Study Area, and indirect effects to the consequent water deliveries made by those facilities, would occur as a result of implementing the alternatives.

- The existing bank protection located upstream of the proposed Delevan Pipeline Intake/Discharge facilities would continue to be maintained and remain functional.
- No additional channel stabilization, grade control measures, or dredging in the Sacramento River at or upstream of the Delevan Pipeline Intake or Discharge Facilities would be required.
- Project construction, operation, and/or maintenance impacts can be direct, indirect, or cumulative. Direct impact examples include destruction of a NRHP/CRHR-eligible building or structure, or mechanical trenching through a significant archaeological site. An example of an indirect impact is providing increased access to an area that contains significant resources that may be subject to looting or vandalism.
- Construction of Project facilities has the potential to impact prehistoric and historic-era archaeological sites that are eligible for listing on the CRHR and the NRHP. This includes not-yet-identified archaeological sites that are buried and cannot be observed on the ground surface. Project construction activities that could disturb such resources would include, but not be limited to, ground-disturbing activities, such as clearing and grubbing, excavation, pipeline installation, backfilling, road and parking lot construction, well drilling, installation of amenities, inundation, and site revegetation.
- The built environment includes buildings and other structures, such as bridges and pumping facilities, and features like roads, canals, ditches, levees, and power lines. Any of these types of resources has the potential to meet the eligibility criteria for listing on the NRHP and the CRHR. Project construction activities could cause the demolition of eligible resources reflecting the built environment. Furthermore, construction or maintenance activities could modify elements that contribute to the eligibility of a particular resource.
- TCPs are tangible locations that are important to the cultural continuity of a community and have been important for more than 50 years, and also meet the criteria for eligibility for listing in the CRHR and the NRHP. TCPs can be archaeological or built environment resources, or they can be features of the natural landscape. Project construction activities that disturb the ground, such as clearing and grubbing, excavation, backfilling, road and parking lot construction, well drilling, installation of amenities, inundation, and site revegetation may impact TCPs. Similarly, demolition or modification of built environment resources may affect TCPs of that nature.
- Cemeteries are often marked by fencing or grave markers, or both. They may also be unmarked. Cemeteries are generally not considered eligible for listing on the CRHR or NRHP because it is often difficult to objectively apply the eligibility criteria without imbuing sentiment or “a sense of reverence” (Potter and Boland, 1992). However, some cemeteries can be considered for listing if one or more of the eligibility criteria, along with special criteria considerations, are met. Eligibility criteria considered for the listing of cemeteries are the same as those considered for any property. Project ground-disturbing activities, such as clearing and grubbing, excavation, backfilling, well drilling, road and parking lot construction, installation of pipelines and amenities, inundation, and site revegetation may impact cemeteries and burial places, both marked and unmarked, that meet the eligibility criteria for inclusion in the CRHR and the NRHP.

18.3.3.2 Methodology

The methodologies used to identify the range of cultural resources that could be potentially affected in the Primary Study Area are described in Section 18.2.1.3. Methods included a record search at the NWIC and

the NEIC of the CHRIS, extensive archaeological survey of the Primary Study Area, and an inventory and evaluation of built environment resources located outside of the proposed Sites Reservoir Inundation Area.

The results of the cultural resources studies were compared with footprints of proposed Project facilities. This comparison identified the number of known archaeological sites and built environment resources that would be affected by the Project. Because their NRHP/CRHR eligibility has not yet been determined, the impact assessment for these resources assumes that at least some of the sites will be eligible. Built environment resource impact assessments were made for those resources that had been evaluated for the NRHP and the CRHR.

18.3.4 Topics Eliminated from Further Analytical Consideration

No Project facilities or topics that are included in the significance criteria listed above were eliminated from further consideration in this chapter.

18.3.5 Impacts Associated with the No Project/No Action Alternative

18.3.5.1 Extended, Secondary, and Primary Study Areas – No Project/No Action Alternative

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, Wildlife Refuge Water Use, and Trinity Lake, Lewiston Lake, Trinity River, Klamath River downstream of the Trinity River, Whiskeytown Lake, Spring Creek, Shasta Lake, Sacramento River, Keswick Reservoir, Clear Creek, Lake Oroville, Thermalito Complex, Feather River, Sutter Bypass, Yolo Bypass, Folsom Lake, Lake Natoma, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

The No Project/No Action Alternative assumes implementation of projects and programs being constructed, or those that have gained approval, as of June 2009. The impacts of these projects have already been evaluated on a project-by-project basis, pursuant to CEQA and/or NEPA, and their potential for impacts to historical resources has been addressed in those environmental documents. Therefore, **there would not be a substantial adverse effect** on historical resources or historic properties that are archaeological sites, when compared to Existing Conditions.

Modeling results indicate that implementation of the No Project/No Action alternative would result in negligible or minor changes to water level fluctuations currently experienced in San Luis Reservoir, Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake; it is expected that Lewiston Lake, Whiskeytown Lake, Keswick Reservoir, the Thermalito Complex, and Lake Natoma would continue to operate as regulating reservoirs, and therefore, continue to experience water level fluctuations. Modeling results indicate changes in the flow regimes of the rivers, creeks, and bypasses, and changes in inflow to the bays included in the Secondary Study Area ranging from negligible to noticeably increased or decreased. Regardless of the level of change, even minor water level fluctuations and flow regime changes have the potential to impact significant archaeological sites, and complete assessment of the effects of reservoir fluctuations and flow regime changes on cultural resources has never been conducted. However, because current operations were established prior to the passing of laws (e.g., NHPA) and their

implementing regulations that protect cultural resources, **there would not be a substantial adverse effect** on NRHP/CRHR-eligible archaeological resources by the continued operation of these reservoirs and streams, when compared to Existing Conditions.

Population growth is expected to continue in California regardless of water availability. Development in local communities is addressed on a project-by-project basis at the local level. As a result, **there would not be a substantial adverse effect** on NRHP/CRHR-eligible to archaeological resources associated with population growth if the No Project/No Action Alternative is implemented, when compared to Existing Conditions.

Because ground-disturbing activities associated with the Project would not occur if the No Project/No Action Alternative is implemented, archaeological resources would not be directly affected, and **there would not be a substantial adverse effect** associated with the Project in the three study areas, when compared to Existing Conditions.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

Refer to the **Impact Cul-1** discussion. It would also apply to historical resources of the built environment.

Impact Cul-3: Disturb a Traditional Cultural Property

Refer to the **Impact Cul-1** discussion. It would also apply to TCPs.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion. It would also apply to finds of human remains.

18.3.6 Impacts Associated with Alternative A

18.3.6.1 Extended Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, and Wildlife Refuge Water Use

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

No impact on archaeological resources would occur due to Project construction because no Project facilities would be constructed in the Extended Study Area. Water level fluctuations associated with changes in water deliveries to agricultural, municipal, industrial, and wildlife refuge users have the potential to impact significant archaeological sites, and because complete assessment of the effects of water level fluctuations on cultural resources has never been conducted, it is possible that there could be a **potentially significant impact** to archaeological resources that are historical resources or historic properties by the continued operation of those areas, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

Changes in system operation due to the Project, resulting in increased reliability to agricultural and municipal, and industrial water users, and an alternate supply to wildlife refuge users, would have no impact on built environmental features that currently exist. In addition, there are no built environment features located within the managed wetlands of the wildlife refuges. Therefore, **no impact** on historical resources or historic properties of the built environment would occur, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-3: Disturb a Traditional Cultural Property

Refer to the **Impact Cul-1** discussion. It would also apply to TCPs.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion. It would also apply to finds of human remains.

San Luis Reservoir

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Fluctuating water elevations have been a part of annual operations at San Luis Reservoir since the facility began operating in the late 1960s. A complete assessment of the effects of reservoir fluctuations on cultural resources has never been conducted because the facility was constructed prior to development of the implementing regulations for Section 106 of the NHPA, and Reclamation is not required to conduct such an assessment pursuant to the existing reservoir operations standards. Both prehistoric and historic-era archaeological resources are known to exist within the reservoir footprint, but comprehensive studies have not been undertaken and the total number of resources present is unknown, nor have ethnographic studies occurred. Increased surface water level fluctuations and more severe drawdowns at the San Luis Reservoir have the potential to impact known and unknown archaeological resources. Furthermore, assuming the reoperation of the reservoirs constitute an undertaking pursuant to Section 3017 of the NHPA, compliance with Section 106 would be required. Therefore, Alternative A operations could result in a **potentially significant impact** to archaeological resources as defined in §15064.5, when compared to Existing Conditions and the No Project/No Action Alternative. Construction and maintenance activities would not occur as a result of this project component, and therefore, would have **no impact** on NRHP/CRHR-eligible archaeological sites, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

No built environment resources are known to remain within the reservoir footprint; therefore, there would be no impact to NRHP/CRHR-eligible, historic-era built environment resources as the result of increased surface water level fluctuations and more severe drawdowns at the San Luis Reservoir, when compared to Existing Conditions and the No Project/No Action Alternative. In addition, no Project construction or maintenance activities would occur within the reservoir; therefore, **no impact** on historic-era built environment structures would occur, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-3: Disturb a Traditional Cultural Property

No TCPs are currently known to exist around San Luis Reservoir. However, operations of Alternative A could have a **potentially significant impact** to TCPs, when compared to Existing Conditions and the No Project/No Action Alternative, if they are found at the reservoir. It is anticipated that there will be **no impact** to TCPs from construction and maintenance activities, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion for San Luis Reservoir. Both prehistoric and historic-era archaeological resources are known to exist within the reservoir pool, but comprehensive studies have not been undertaken; as a result, it is not known if any cemeteries exist within the reservoir pool. Increased surface water level fluctuations and more severe drawdowns at the San Luis Reservoir have the potential to cause erosion and expose burial locations. Implementation of Alternative A may, therefore, result in a **potentially significant impact** to human remains at San Luis Reservoir, when compared to Existing Conditions and the No Project/No Action Alternative.

18.3.6.2 Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Trinity Lake, Lewiston Lake, Trinity River, Klamath River downstream of the Trinity River, Whiskeytown Lake, Spring Creek, Shasta Lake, Sacramento River, Keswick Reservoir, Clear Creek, Lake Oroville, Thermalito Complex, Feather River, Sutter Bypass, Yolo Bypass, Folsom Lake, Lake Natoma, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

The minimal Project construction identified for the Secondary Study Area would be limited to the installation of a pump into an existing feature of the built environment at the Red Bluff Pumping Plant, where no ground disturbance is expected to occur. Therefore, compared to Existing Conditions and the No Project/No Action Alternative, there would be **no impact** to significant archaeological resources that are historical resources or historic properties as the result of construction activities in the Secondary Study Area, when compared to Existing Conditions and the No Project/No Action Alternative. There would also be **no impact** to NRHP/CRHR-eligible archaeological resources from changes in operations because no ground disturbance is expected to occur during that Project phase, when compared to Existing Conditions and the No Project/No Action Alternative.

Operational modifications would occur at Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake within the Secondary Study Area to achieve the benefits associated with the Project, and would primarily include the retention of water in these reservoirs during drought years while water is released from Sites Reservoir. Overall, however, reservoir fluctuations would be reduced, and therefore, would not exceed those that occur during current operations. A comprehensive archaeological survey was conducted within the fluctuation zone at Lake Oroville, and over 400 archaeological resources were recorded (Walker and Delacorte, 2010). Similarly, an ethnographic study was conducted of the Lake Oroville area and nearly 60 resources important to the local Maidu community were identified within the footprint of the reservoir

(McCarthy, 2004); many of these resources appear eligible for the NRHP as contributors to two TCP complexes that include portions of the reservoir area (McCarthy, 2009).

Similar to San Luis Reservoir, a complete assessment of the effects of reservoir fluctuations on cultural resources has never been conducted at Trinity, Shasta, and Folsom lakes because the facilities were constructed prior to development of the implementing regulations for Section 106 of the NHPA, and Reclamation is not required to conduct such an assessment pursuant to the existing reservoir operations standards. Both prehistoric and historic-era archaeological resources are known to exist within the reservoir footprints, but comprehensive studies have not been undertaken and the total number of resources present is unknown, nor have ethnographic studies occurred. However, drawdowns are not anticipated to exceed those that currently take place, and reservoir fluctuations would be reduced.

In addition, it is expected that Lewiston Lake, Whiskeytown Lake, Keswick Reservoir, the Thermalito Complex, and Lake Natoma would continue to operate as regulating reservoirs and would, therefore, continue to experience water level fluctuations. Modeling results indicate changes in the flow regimes of the rivers, creeks, and bypasses, and changes in inflow to the bays included in the Secondary Study Area ranging from negligible to noticeably increased or decreased. These minor water level fluctuations and flow regime changes would fall within the historic range of operations for these regulating reservoirs. Therefore, Alternative A operations would result in a **less-than-significant impact** to archaeological resources as defined in §15064.5 and TCPs, when compared to Existing Conditions and the No Project/No Action Alternative.

Maintenance activities related to the Secondary Study Area would involve the removal of sediment from the existing two intake locations (i.e., GCID Canal Intake and Red Bluff Pumping Plant). Removed sediment would be placed in areas previously used for the deposit of fill materials. Maintenance activities would, therefore, have **no impact** to significant archaeological resources pursuant to §15064.5 for the Secondary Study Area, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

Direct Project-related construction for the Secondary Study Area would be limited to the installation of an additional pump into an existing bay at the RBPP. The T-C Canal Intake at the pumping plant was constructed in the late 1960s and has been continually modified and maintained over the years. Although the intake does not meet the 50-year-old requirement necessary to be considered a historical resource, the intake would need to be recorded as a built environment feature. There would be **no impact** to built environment resources that are eligible to the CRHR or the NRHP as the result of construction, operation, and maintenance activities for the Secondary Study Area, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-3: Disturb a Traditional Cultural Property

Refer to the **Impact Cul-1** discussion. It would also apply to TCPs.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion. It would also apply to finds of human remains.

18.3.6.3 Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Sites Reservoir Inundation Area and Sites Reservoir Dams

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Construction of the proposed Sites Reservoir and dams would impact 57 known archaeological sites and 197 archaeological isolates, primarily through clearing and grubbing, and filling the reservoir. Portions of the reservoir footprint have not been surveyed due to lack of access, and those acres would require survey prior to construction; therefore, additional archaeological sites may be identified. There is also a possibility that archaeological resources that are not visible on the ground surface may be uncovered during Project construction. None of the recorded sites have yet been evaluated for eligibility to the CRHR or the NRHP. Until these studies are completed, it is expected that the construction, operation, and maintenance of the 1.27-MAF Sites Reservoir, the Golden Gate and Sites dams, and the seven saddle dams would result in a **potentially significant impact** on archaeological sites pursuant to §15064.5, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

Nineteen residential dwellings, 15 ranch compounds, and 27 miscellaneous outbuildings are located within the proposed footprint of the Sites Reservoir and dams. None of these structures have been formally recorded or evaluated for eligibility to the CRHR or the NRHP.

Maxwell Sites and Sites Lodoga roads have existed for well over 100 years, and Huffmaster and Peterson roads may be of similar age. All of these roads would be at least partially inundated by development of Sites Reservoir. The age of the roads qualifies them as cultural resources that require evaluation for eligibility to the NRHP and the CRHR; these evaluations have not yet occurred. If any of the buildings or roads within the 1.27-MAF Sites Reservoir and associated dams footprint are determined to be eligible for listing in the NRHP or the CRHR, inundation could have a **potentially significant impact** on built environment resources pursuant to §15064.5, when compared to Existing Conditions and the No Project/No Action Alternative. Because all structures would be removed from the Sites Reservoir footprint, **no impact** on NRHP/CRHR-eligible, built environment resources would occur during Project operation and maintenance activities, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-3: Disturb a Traditional Cultural Property

No TCPs have been identified within the proposed Sites Reservoir and dam areas, to date; however, ethnographic studies have not yet been undertaken. The construction, operation, and maintenance of the 1.27-MAF Sites Reservoir and dams could result in a **potentially significant impact** to TCPs, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Two cemeteries are known to exist within the inundation area of the proposed Sites Reservoir. Evidence also indicates that there are likely unmarked cemeteries or burial places associated with Native American sites (prehistoric, ethnohistoric, and historic-era) within the reservoir area (White et al., 2009). As a result, the filling of Sites Reservoir and its operation and maintenance may have a **potentially significant**

impact on cemeteries that are historical resources, when compared to Existing Conditions and the No Project/No Action Alternative.

Recreation Areas

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Each of the five proposed recreation areas was included in the Sites Reservoir archaeological survey area (White et al., 2009), but two archaeological sites were identified at only the Peninsula Hills Recreation Area. However, buried archaeological remains may be present at any of the five recreation areas, when compared to Existing Conditions or the No Project/No Action Alternative. The known sites have not yet been evaluated for eligibility to the CRHR or the NRHP. The construction, operation, and maintenance of the recreation areas may result in a **potentially significant impact** to significant archaeological resources that are eligible for the CRHR or the NRHP, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as defined in §15064.5

No resources of the built environment are present at any of the five proposed recreation locations; therefore, Project construction, operation, and maintenance would have **no impact** to historical resources or historic properties of the built environment as defined in §15064.5, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-3: Disturb a Traditional Cultural Property

No TCPs are known to exist at any of the proposed recreation areas; however, ethnographic studies have not yet been undertaken. The construction, operation, and maintenance of the recreation areas could result in a **potentially significant impact** on TCPs, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Formal cemeteries are not present at any of the five proposed recreation areas. It is possible, however, that unmarked cemeteries or burial locations may be present. As a result, the construction, operation, and maintenance of the recreation areas may result in a **potentially significant impact** to human remains, when compared to Existing Conditions and the No Project/No Action Alternative.

Road Relocations and South Bridge

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Construction of 46 miles of new public and private access roads (including associated detours and construction roads and all appurtenant features, such as culverts, fences, and guardrails) and the proposed South Bridge have the potential to impact nine known archaeological sites, none of which have been evaluated for eligibility to the CRHR or the NRHP. An additional four sites are located in proximity to the road footprints and have the potential for being impacted during construction activities. Unknown buried archaeological sites may also be present. Furthermore, the proposed asphalt batch plant location

adjacent the proposed Field Office Maintenance Yard has not yet been surveyed; its construction may impact significant archaeological resources.

None of the known archaeological sites have been evaluated for eligibility to the CRHR or the NRHP; thus, when compared to Existing Conditions or the No Project/No Action Alternative, Project construction for proposed road relocations (including the asphalt batch plant) and South Bridge may have a **potentially significant impact** on archaeological resources as defined in §15064.5. Operation and maintenance of the new roads would have **no impact** to NRHP/CRHR-eligible archaeological sites, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

Built environment resources are not located within the footprint of the proposed road relocations; therefore, there would be **no impact** to historical resources or historic properties of the built environment, when compared to Existing Conditions and the No Project/No Action Alternative, due to road relocations or the construction, operation, or maintenance of South Bridge.

Impact Cul-3: Disturb a Traditional Cultural Property

Ethnographic studies have not been conducted for the proposed Project, so it is not known if TCPs are located along proposed routes for the road relocations or for South Bridge. Until those studies are complete, the construction, operation, and maintenance of the new roads may have a **potentially significant impact** on TCPs, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

No marked cemeteries are located within the footprints of the proposed road relocations or for South Bridge. It is possible, however, that currently undetected buried human remains are present along the routes; therefore, construction, operation, and maintenance of the new roads could have a **potentially significant impact** on human remains, when compared to Existing Conditions and the No Project/No Action Alternative.

Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and Field Office Maintenance Yard

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

The proposed Sites Pumping/Generating Plant and the Sites Reservoir Inlet/Outlet Structure locations, the Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, the Sites Electrical Switchyard, and the Field Office Maintenance Yard locations have not been surveyed and may contain archaeological sites. Buried archaeological deposits may be present at any of these locations. Therefore, a **potentially significant impact** to archaeological sites that are historical resources or historic properties may result during construction of these facilities, when compared to Existing Conditions or the No Project/No Action Alternative. Operation and maintenance of the Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir

Inlet/Outlet Structure, Sites Electrical Switchyard, and Field Office Maintenance Yard would have **no impact** on significant NRHP/CRHR-eligible archaeological resources, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

One resource of the built environment, the Funks Reservoir Farmstead, is located, in the vicinity of the proposed Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, the Sites Electrical Switchyard, and the Field Office Maintenance Yard. This resource was evaluated and does not appear to be eligible for listing on the NRHP/CRHR. As a result, construction of these facilities would have **no impact** to historical resources or historic properties of the built environment pursuant to §15064.5, when compared to Existing Conditions and the No Project/No Action Alternative. Because there are no NRHP/CRHR-eligible built environment resources in the vicinity, operation and maintenance of the Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and Field Office Maintenance Yard would have **no impact** on built environment resources, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-3: Disturb a Traditional Cultural Property

No TCPs have been identified within the proposed Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, the Sites Electrical Switchyard, and the Field Office Maintenance Yard to date; however, ethnographic studies have not yet been undertaken. The construction, operation, and maintenance of these facilities could result in a **potentially significant impact** to TCPs, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Formal cemeteries are not present within the footprints of the proposed Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and the Field Office Maintenance Yard; however, the possible presence of unmarked burial locations cannot be discounted. The construction of these facilities could have a **potentially significant impact** on unmarked human remains, when compared to Existing Conditions and the No Project/No Action Alternative. Operation and maintenance of the Sites Pumping/Generating Plant, Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, and Field Office Maintenance Yard would have **no impact** on human remains, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Holthouse Reservoir Complex and Holthouse Reservoir Electrical Switchyard

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

A record search was recently conducted of the proposed Holthouse Reservoir Complex area, which includes the location of the Holthouse Reservoir Electrical Switchyard, by the NWIC of the CHRIS at Sonoma State University. The record search did not identify any previously recorded resources within the Holthouse Dam and Reservoir footprint, but it indicated that the Holthouse Reservoir Complex is entirely within the limits of a survey conducted for the T-C Canal in 1965 (Treganza et al., 1965).

The footprint of the existing Funks Reservoir was inventoried and documented by Chartkoff (1969) and West et al. (1976) prior to construction and filling of the reservoir. Three prehistoric and one historic-era archaeological sites were identified and recorded during those efforts: CA-COL-233 (previously designated as Funks Creek 1 and Chartkoff-COL-28), CA COL-242 (previously designated as Funks Creek 2 and Chartkoff-COL-37), CA COL 53 (previously designated as Funks Creek 3), and CA-COL-27H (previously designated 4-Col-27).

Intensive artifact collection and limited trenching were conducted at the three prehistoric sites at Funks Reservoir, and additional excavation was conducted at CA-COL-242 and CA-COL-53. The studies revealed that the sites were recent prehistoric non-midden surface artifact scatters. Due to the nature of the sites and the low yield of subsurface artifacts obtained through excavation and trenching, it was determined that the probability of discovering additional subsurface artifacts was very low. It was concluded that the sites retained no opportunity to provide additional knowledge to the understanding of history or prehistory, and, as a result, they were determined not eligible for inclusion in the NRHP. These sites are, therefore, similarly ineligible to the CRHR.

CA-COL-27H was a cabin with several historic-era items, including a sewing machine, stove fragments, tableware and other miscellaneous household items, and remnants of outbuildings. The site reflected occupation between 1890 and 1916. An evaluation by West et al. (1976) determined that the site was not eligible for inclusion in the NRHP. The cabin no longer exists.

Initial surveys of the Holthouse Reservoir Complex have failed to identify any archaeological resources. However, sites may exist in portions of the facility footprint that remain to be surveyed, or may be completely buried and invisible on the ground surface. As a result, construction and operation of the Holthouse Reservoir Complex and the Holthouse Reservoir Electrical Switchyard, when compared to Existing Conditions or the No Project/No Action Alternative, could have a **potentially significant impact** to archaeological sites pursuant to §15064.5.

Although known archaeological sites within the Funks Reservoir have been determined ineligible for the CRHR and the NRHP, there is the potential for uncovering buried archaeological remains during the dredging of Funks Reservoir to return it to design capacity. Thus, the dredging activities could have a **potentially significant impact** to NRHP/CRHR-eligible archaeological deposits, when compared to Existing Conditions and the No Project/No Action Alternative, because dredging could occur deeper than planned. Operation and maintenance activities at the Holthouse Reservoir Complex (including Funks Reservoir) could result in a **potentially significant impact** to archaeological resources that are eligible for the CRHR or the NRHP, when compared to Existing Conditions and the No Project/No Action Alternative, because dredging that may occur in the future could occur deeper than planned, exposing or damaging currently buried archaeological deposits.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

The built environment resources within the proposed Holthouse Reservoir Complex are the T-C Canal, Funks Dam, and the WAPA Maxwell-Olinda 500-kV overhead transmission line, all of which would be decommissioned within the Holthouse Reservoir footprint. The T-C Canal and Funks Dam are not yet 50 years old (and, therefore, not old enough to be considered eligible for the NRHP), but they should be recorded as cultural resources because it will be important to have a record of their locations. Initial construction of the WAPA Transmission Line occurred over 50 years ago; however, the substations at either end of the circuit were not built until 1986. Therefore, the resource does not meet the age criterion for NRHP/CRHR eligibility. The construction, operation, and maintenance of the Holthouse Reservoir Complex and Holthouse Reservoir Electrical Switchyard would, therefore, have **no impact** on built environment historical resources or historic properties, when compared to Existing Conditions and the No Project/No Action Alternative.

Built environment resources are not present within the Funks Reservoir footprint; therefore, the dredging of the reservoir, along with operation and maintenance activities, would have **no impact** on built environment historical resources or historic properties, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-3: Disturb a Traditional Cultural Property

Ethnographic studies have not been conducted for the proposed Project, so it is not known if TCPs are located within the proposed Holthouse Reservoir Complex (including Funks Reservoir). Until those studies are complete, the construction, operation, and maintenance of these new facilities may have a **potentially significant impact** on TCPs, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

There are no formal cemeteries within the footprint of the proposed Holthouse Reservoir Complex (including Funks Reservoir and the Holthouse Electrical Switchyard). It is possible, however, that unmarked burials are present. Therefore, construction, operation, and maintenance of the Holthouse Reservoir Complex, including dredging of the existing Funks Reservoir, could have a **potentially significant impact** on human remains, when compared to Existing Conditions and the No Project/No Action Alternative.

GCID Canal Facilities Modifications

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

White and Crawford (2003a) conducted a record search of the GCID Canal in 2003. The record search identified one prehistoric archaeological site located in proximity to the proposed GCID Canal Facilities Modifications, but no field investigation has been done to verify the site location and to determine whether the Project would impact the resource. It is also possible that buried archaeological sites could be adversely affected by Project activities in the area. Archaeological resources, as defined in §15064.5, could be subject to a **potentially significant impact** from Project construction, when compared to Existing Conditions or the No Project/No Action Alternative. **No impact** would likely occur to NRHP/CRHR-eligible archaeological sites as the result of operation and maintenance activities, when

compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

Built environment resources associated with the proposed GCID Canal Facilities Modifications include the GCID Canal prism, along with the existing appurtenant features (refer to Chapter 3 Description of the Proposed Project/Proposed Action and Alternatives). Most of these features would remain intact, but the California Northern Railroad Siphon structure at Mile 26.6 would be replaced, as would the 1941 headgate located near the GCID pumping station. The siphon and headgate and canal prism were evaluated for NRHP/CRHR eligibility. The siphon was built in 1917 as part of the original Central Irrigation Canal and is a unique structure designed to move canal water underneath the railroad bridge. The siphon, therefore, appears to be individually eligible for the NRHP/CRHR and is a contributing element to the GCID Canal as a whole. On the other hand, the headgate was constructed in 1941 and the adjacent canal prism was modified at the same time. These actions occurred outside of the period of significance for the GCID Canal, and because the headgate and canal prism are not significant engineering structures, the headgate and prism at this location are not considered eligible for the NRHP/CRHR either individually or as part of the GCID Canal proper. Because the California Northern Railroad Siphon appears eligible for inclusion to the NRHP and the CRHR, Project construction would have a **potentially significant impact** on historical resources or historic properties of the built environment, when compared to Existing Conditions and the No Project/No Action Alternative. Operation and maintenance would have **no impact** on these same resources, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-3: Disturb a Traditional Cultural Property

Proposed Project construction would be concentrated within the GCID Canal, with an additional 50-foot buffer to each side. The Canal is not a TCP; therefore, there would be **no impact** to TCPs during construction, operation, and maintenance, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Formal cemeteries do not exist within the proposed GCID Canal Facilities Modifications footprint. However, it is remotely possible that unrecorded burials may be located within the 50-foot construction buffer, and that Project construction would have a **potentially significant impact** on human remains, when compared to Existing Conditions and the No Project/No Action Alternative. Operation and maintenance activities would have **no impact** on human remains, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Terminal Regulating Reservoir, Terminal Regulating Reservoir Pumping/Generating Plant, Terminal Regulating Reservoir Electrical Switchyard, Glenn-Colusa Irrigation District Canal Connection to the Terminal Regulating Reservoir, Delevan Transmission Line, Delevan Pipeline, Terminal Regulating Reservoir Pipeline, Terminal Regulating Reservoir Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Pipeline Intake Facilities

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

An archaeological study for the proposed Delevan Pipeline and Delevan Pipeline Intake Facilities involved a record search and a partial field inventory of the facility footprints east of I-5 (Westwood and White, 2005). Three isolated historic-era features were recorded: ISO-030-A (a palm tree stump); ISO-031-A (remnants of a pumping station in an abandoned canal); and immediately adjacent, ISO-032-A (a water outlet and control gate). The record search included the areas covered by the TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, GCID Canal Connection to the TRR, Delevan Transmission Line, Delevan Pipeline, TRR Pipeline, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Pipeline Intake Facilities. No previously recorded archaeological resources were identified in the facility footprints by the search. Along with all of the Delevan Pipeline west of I-5 (and some portions of the Delevan Pipeline east of the freeway), none of these latter facilities have been subject to archaeological survey. The lack of surveys, together with the potential for buried sites, indicates that Project construction could result in a **potentially significant impact** to archaeological resources pursuant to §15064.5, when compared to Existing Conditions or the No Project/No Action Alternative. Operation and maintenance of these facilities would have **no impact** on historical resources or historic properties that are archaeological sites, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5

In addition to the two historic-era isolates noted above (ISO-031-A and ISO-032-A), built environment resources within or adjacent to the footprints of the proposed TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, GCID Canal Connection to the TRR, Delevan Transmission Line, Delevan Pipeline, TRR Pipeline, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Pipeline Intake Facilities include a portion of the GCID Canal, two McDermott Road farmsteads, the CBD, the Sacramento River levee, and the MID Canal. Isolates are generally not considered potentially eligible resources due to their limited ability to fulfill the NRHP/CRHR eligibility criteria. An evaluation of the GCID Canal and the CBD suggests that the resources are eligible for the NRHP and the CRHP under Criteria A and C, and 1 and 3, respectively. The Sacramento River levee similarly appears eligible for the NRHP/CRHR under criteria A/1. Conversely, neither of the McDermott Road farmsteads appears to meet the eligibility criteria because the buildings present either do not meet the age criteria for eligibility consideration, or they lack integrity and are not exceptional examples of an architectural type. The MID Canal also does not appear to be an eligible resource. The presence of the GCID Canal, the CBD, and the Sacramento River levee indicates that Project construction may have a **potentially significant impact** on a historical resource or historic property of the built environment, when compared to Existing Conditions and the No Project/No Action Alternative. Operation and maintenance activities associated with these facilities would have **no impact** on NRHP/CRHR-eligible built environment

resources, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-3: Disturb a Traditional Cultural Property

It has not yet been determined if TCPs are within the proposed TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, GCID Canal Connection to the TRR, Delevan Transmission Line, Delevan Pipeline, TRR Pipeline, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Pipeline Intake Facilities areas. Therefore, it is possible that construction, activities could have a **potentially significant impact** to TCPs, when compared to Existing Conditions and the No Project/No Action Alternative. Operation and maintenance tasks would have **no impact** to TCPs, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

There are no formal cemeteries within the footprints for these proposed facilities, but the presence of unrecorded burials is possible. As a result, construction of the TRR, TRR Pumping/Generating Plant, TRR Electrical Switchyard, GCID Canal Connection to the TRR, Delevan Transmission Line, Delevan Pipeline, TRR Pipeline, TRR Pipeline Road, Delevan Pipeline Electrical Switchyard, and Delevan Pipeline Intake Facilities could have a **potentially significant impact** on human remains, when compared to Existing Conditions and the No Project/No Action Alternative. There would be **no impact** to human remains due to operation and maintenance activities, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Project Buffer

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Most of the proposed Project Buffer was included in the Sites Reservoir archaeological survey area (White et al., 2009). Twenty-eight known archaeological sites and 33 archaeological isolates have been recorded within the Project Buffer and outside of the construction elements described above. Portions of the Project Buffer have not been surveyed due to late identification of this project feature. It is, therefore, possible that other archeological sites, in addition to buried archaeological remains, may be present within this area. Activities within the Project Buffer could include fence construction or creation of mitigation lands. The presence of known sites and lack of complete surveys, combined with the possibility of ground-disturbing construction, operation, or maintenance activities, indicates the possibility of a **potentially significant impact** to significant archaeological resources that are eligible for the CRHR or the NRHP, when compared to Existing Conditions or the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as defined in §15064.5

The built environment study identified four resources within the proposed Project Buffer: Huffmaster Road Farmstead (1), Huffmaster Road Farmstead (2), County Road 69 Farmstead, and the Stone Corral Creek Quarries Historic District. The Stone Corral Creek Quarries Historic District appears to be NRHP/CRHR-eligible for its contribution to the early mining history of Antelope Valley and the construction of significant landmark buildings in San Francisco, and for its association with prominent

Bay Area business men. None of the three farmsteads appears eligible for the NRHP or the CRHR because the buildings they contain are not old enough to be considered for NRHP/CRHR eligibility, or lack integrity and are not exceptional examples of an architectural style. The presence of the Stone Corral Creek Quarries Historic District suggests that the Project Buffer could have a **potentially significant impact** on built environment resources pursuant to §15064.5, when compared to Existing Conditions and the No Project/No Action Alternative. There would be **no impact** on the NRHP/CRHR-eligible built environment resources from operation and maintenance activities, when compared to Existing Conditions and the No Project/No Action Alternative, because any impacts to those resources would have been mitigated during construction.

Impact Cul-3: Disturb a Traditional Cultural Property

Ethnographic studies have not been conducted for this proposed Project feature, so it is not known if TCPs are located within the proposed Project Buffer. Until those studies are complete, any ground-disturbing construction, operation, or maintenance activities may have a **potentially significant impact** on TCPs, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Formal cemeteries are not present within the proposed Project Buffer. It is possible, however, that unmarked cemeteries or burial locations may be present. As a result, any ground-disturbing construction, operation, or maintenance activities within the Proposed Take Line may result in a **potentially significant impact** to human remains, when compared to Existing Conditions and the No Project/No Action Alternative.

18.3.7 Impacts Associated with Alternative B

18.3.7.1 Extended and Secondary Study Areas – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B, as they relate to archaeological resources (**Impact Cul-1**), historic-era resources of the built environment (**Impact Cul-2**), TCPs (**Impact Cul-3**), and human remains (**Impact Cul-4**), would be the same as described for Alternative A for the Extended and Secondary study areas.

18.3.7.2 Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

The following Primary Study Area Project facilities are included in both Alternatives A and B. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to cultural resources:

- Recreation Areas
- Sites Pumping/Generating Plant
- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard

- Holthouse Reservoir Complex
- Holthouse Reservoir Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR
- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

The boundary of the Project Buffer would be the same for Alternatives A and B, but because the footprints of some of the Project facilities that are surrounded by the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative A. It would, therefore, have the same impact on archaeological resources (**Impact Cul-1**), historic-era resources of the built environment (**Impact Cul-2**), TCPs (**Impact Cul-3**), and human remains (**Impact Cul-4**) as described for Alternative A.

The major differences between Alternatives B and A are related to the increased size of the Sites Reservoir with Alternative B. The increase in reservoir size necessitates the addition of two saddle dams and the movement of various project components. In addition, Alternative B replaces the Delevan Pipeline Intake Facilities with the Delevan Pipeline Discharge Facility, and shortens the Delevan Transmission Line. The Alternative B facilities' construction impacts on cultural resources that would differ from those described for Alternative A are discussed below.

Sites Reservoir Inundation Area (1.81 MAF) and Sites Reservoir Dams

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Construction of a 1.81-MAF Sites Reservoir, the Golden Gate and Sites dams, and nine saddle dams would have similar impacts on archaeological resources; the primary difference would be that 70 known archaeological sites have been recorded within the footprint of these larger facilities, rather than the 57 resources affected by Alternative A. Similarly, 230 archaeological isolates are within the footprint of the larger reservoir. As a result, Alternative B would have a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as defined in §15064.5

Refer to the **Impact Cul-1** discussion. That discussion also applies to historic-era resources of the built environment.

Impact Cul-3: Disturb a Traditional Cultural Property

Refer to the **Impact Cul-1** discussion. That discussion also applies to TCPs.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion. That discussion also applies to human remains.

Road Relocations and South Bridge

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Effects on archaeological resources from construction associated with road relocations and the South Bridge for Alternative B would be similar to the impacts described for Alternative A. However, excavations for this alternative would differ from Alternative A. The lengths of the saddle dam access roads would be reduced for Alternative B because the dams would be larger and would be located closer to the main roads. This would, therefore, reduce the potential impacts on archaeological resources in those areas. However, an extension of an access road would be constructed for Alternative B to provide access from Saddle Dam 3 to Saddle Dams 1 and 2, which has the potential to impact archaeological resources that would not be affected by Alternative A. Alternative B would have a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as defined in §15064.5

Refer to the **Impact Cul-1** discussion. That discussion also applies to historic-era resources of the built environment.

Impact Cul-3: Disturb a Traditional Cultural Property

Refer to the **Impact Cul-1** discussion. That discussion also applies to TCPs.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion. That discussion also applies to human remains.

Delevan Transmission Line

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

The proposed Delevan Transmission Line from the Sites Electrical Switchyard to its connection with the existing WAPA or PG&E transmission lines would be shorter than the transmission line included in Alternative A. This reduced length would potentially result in impacts to fewer archaeological resources, historic-era resources of the built environment, TCPs, and human remains, but would still result in a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, historic-era resources of the built environment, TCPs, and human remains, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as defined in §15064.5

Refer to the **Impact Cul-1** discussion. That discussion also applies to historic-era resources of the built environment.

Impact Cul-3: Disturb a Traditional Cultural Property

Refer to the **Impact Cul-1** discussion. That discussion also applies to TCPs.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion. That discussion also applies to human remains.

Delevan Pipeline Discharge Facility

Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5

Impacts to NRHP/CRHR-eligible archaeological resources, historic-era resources of the built environment, TCPs, and human remains would be similar to those discussed for Alternative A. However, the smaller size of this facility, when compared to the Delevan Pipeline Intake Facilities that are included in Alternative A, could potentially lessen the number of archaeological resources, historic-era resources of the built environment, TCPs, and human remains that would be affected. Despite the reduced potential effect, construction of this facility would still result in a **potentially significant impact** on historical resources and historic properties.

Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as defined in §15064.5

Refer to the **Impact Cul-1** discussion. That discussion also applies to historic-era resources of the built environment.

Impact Cul-3: Disturb a Traditional Cultural Property

Refer to the **Impact Cul-1** discussion. That discussion also applies to TCPs.

Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries

Refer to the **Impact Cul-1** discussion. That discussion also applies to human remains.

18.3.8 Impacts Associated with Alternative C

18.3.8.1 Extended and Secondary Study Areas – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C, as they relate to archaeological resources (**Impact Cul-1**), historic-era resources of the built environment (**Impact Cul-2**), TCPs (**Impact Cul-3**), and human remains (**Impact Cul-4**) would be the same as described for Alternative A for the Extended and Secondary study areas.

18.3.8.2 Primary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

The following Primary Study Area Project facilities are included in Alternatives A, B, and C. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to cultural resources:

- Recreation Areas
- Sites Pumping/Generating Plant
- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard
- Holthouse Reservoir Complex
- Holthouse Reservoir Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR
- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

The boundary of the Project Buffer would be the same for all three alternatives, but because the footprints of some of the Project facilities that are surrounded by the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative A.

The Alternative C design of the Delevan Pipeline Intake Facilities and Delevan Transmission Line is the same as described for Alternative A. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to cultural resources as described for Alternative A.

The Alternative C design for the Sites Reservoir Inundation Area and Dams and Road Relocations and South Bridge would be the same as described for Alternative B. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to cultural resources as described for Alternative B.

18.4 Mitigation Measures

Mitigation measures are provided below and summarized in Table 18-2 for the impacts that have been identified as significant or potentially significant.

**Table 18-2
Summary of Mitigation Measures for
NODOS Project Impacts to Cultural Resources**

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5	All Primary Study Area Project Facilities	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts to Historical Resources/Historic Properties	No Impact
	Sites Reservoir, San Luis Reservoir, and Agricultural, Municipal, Industrial, and Wildlife Refuge Water Use	Potentially Significant	Mitigation Measure Cul-1b: Conduct Archaeological Data Recovery Mitigation Measure Cul-1c: Immediately Halt Construction if Cultural Resources are Discovered and Implement an Accidental Discovery Plan Mitigation Measure Cul-1d: Protection of Archaeological Sites by Capping Mitigation Measure Cul-1e: Develop Agreement Documents to Address Potential Future Operational Impacts to Cultural Resources	Less than Significant Less than Significant Less than Significant Less than Significant or Significant and Unavoidable
Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment as Defined in §15064.5	Sites Reservoir Inundation Area, GCID Canal Facilities Modifications, TRR and associated TRR Facilities, Delevan Pipeline, Delevan Pipeline Intake/Discharge Facilities, and Project Buffer	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts to Historical Resources	No Impact
			Mitigation Measure Cul-2a: Follow the Secretary of the Interior's Standards for the Treatment of Historical Resources/Historic Properties Mitigation Measure Cul-2b: Record Built Environment Resources to Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) Standards	Less than Significant Significant and Unavoidable if eligible for CRHR or NRHP listing

PRELIMINARY – SUBJECT TO CHANGE

**Table 18-2
Summary of Mitigation Measures for
NODOS Project Impacts to Cultural Resources**

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Cul-3: Disturb a Traditional Cultural Property	San Luis Reservoir and Agricultural, Municipal, Industrial, and Wildlife Refuge Water Use	Potentially Significant	Mitigation Measure Cul-1e: Develop Agreement Documents to Address Potential Future Operational Impacts to Cultural Resources	Less than Significant or Significant and Unavoidable
	All Primary Study Area Project Facilities except for the GCID Canal Facilities Modifications	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts to Historical Resources	No Impact
			Mitigation Measure Cul-3: Consult with Native American Communities regarding How to Mitigate for Impacts to TCPs	Less than Significant; or Significant and Unavoidable for some categories of TCPs
Impact Cul-4: Disturb Human Remains, including those Interred Outside of Formal Cemeteries	San Luis Reservoir and Agricultural, Municipal, Industrial, and Wildlife Refuge Water Use	Potentially Significant	Mitigation Measure Cul-1e: Develop Agreement Documents to Address Potential Future Operational Impacts to Cultural Resources	Less than Significant or Significant and Unavoidable
	All Primary Study Area Project Facilities	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts to Historical Resources	No Impact
			Mitigation Measure Cul-4a: Relocation of Known Cemeteries	Less than Significant
			Mitigation Measure Cul-4b: Immediately Halt Construction if Human Remains are Discovered and Implement a Burial Treatment Plan	Less than Significant

Note:

LOS = Level of Significance

Mitigation Measure Cul-1a: Avoid Impacts to Historical Resources/Historic Properties

If feasible, impacts to identified historical resources/historic properties, including prehistoric and historic-era archaeological sites, buildings and structures, TCPs, and human remains shall be avoided. Methods of avoidance may include, but are not limited to, Project re-design, or, when appropriate, deeding the site into a permanent conservation easement; incorporation of sites into parks, greenspace, or other open space; and protection measures, such as fencing.

Mitigation Measure Cul-1b: Conduct Archaeological Data Recovery

If it is infeasible to avoid impacts to archaeological sites that have been determined to be eligible for listing on the CRHR or the NRHP, additional research including, but not necessarily limited to, archaeological excavation shall be conducted. This work shall be directed by a qualified archaeologist who meets the U.S. Secretary of Interior's professional standards, and shall include preparation of a research design; additional archival and historical research to supplement the research design, when appropriate; archaeological excavation; analysis of artifacts, features, and other attributes of the resource; and preparation of a technical report documenting the methods and results of the investigation in accordance with the California Office of Historic Preservation Guidelines for Archaeological Research Design (1991). The purpose of this work is to recover a sufficient quantity of data to compensate for damage to or destruction of a resource that is eligible for the CRHR pursuant to criterion 4 of CCR 4852(b) or the NRHP pursuant to 36 CFR 60.4(d). The procedures to be used in this data recovery program shall be determined in consultation with responsible agencies and interested parties such as Native American tribes, as appropriate, within the parameters of the PA.

Mitigation Measure Cul-1c: Immediately Halt Construction if Cultural Resources are Discovered, and Implement an Accidental Discovery Plan

Not all cultural resources are visible on the ground surface. Protocols for addressing the accidental discovery of archaeological resources that are not visible on the ground surface during Project construction will be outlined in an Accidental Discovery Plan, as directed by the PA. If any cultural resources, such as structural features, unusual amounts of bone or shell, flaked or ground stone artifacts, historic-era artifacts, human remains, or architectural remains are encountered during any Project construction activities, work shall be suspended immediately at the location of the find and within an appropriate radius, with a minimum of 50 feet. A qualified archaeologist shall conduct a field investigation of the specific site and recommend mitigation deemed necessary for the protection or recovery of any cultural resource concluded by the archaeologist to represent a historical resource or unique archaeological resource. Mitigation measures shall be developed in consultation with responsible agencies and, as appropriate, interested parties such as Native American tribes. Implementation of the approved mitigation would be required before resuming construction activities at the archaeological site. All of the activities identified above shall be detailed in an Accidental Discovery Plan developed prior to construction so that all parties are aware of the actions required if buried archaeological resources are uncovered during Project construction. Discoveries of human remains shall be treated as described below for Mitigation Measure Cul-4b.

Mitigation Measure Cul-1d: Protection of Archaeological Sites by Capping

Capping archaeological sites that are considered historical resources with soil, gravels, rock, or specific kinds of vegetation can be a viable way to protect the deposits under some circumstances. For example, sites subject to inundation and water level fluctuations may be protected from erosion by applying a layer of gravel/rock (rip-rap), soil, cloth, or some combination of treatments. In such circumstances, regular monitoring would be required to evaluate the efficacy of the mitigation, and to identify if and when it is necessary to refresh the protection. A layer of soil, i.e., sterile fill, might also be placed over a site where construction of a building was planned, such that all construction disturbance would occur in the fill material. Planting vegetation, such as poison oak, wild rose, or blackberry brambles, over the top of a site is a useful deterrent for areas subject to looting.

Mitigation Measure Cul-1e: Develop Agreement Documents to Address Potential Future Operational Impacts to Cultural Resources

Protocols for addressing potential future operations impacts at Sites Reservoir and at existing facilities within the Extended Study Area shall be addressed in the PA. This may include preparation of Memoranda of Agreement for specific facilities and/or development of a Cultural Resources Management Plan, depending on the lead agency in charge of the facility. Management of historical resources/historic properties under such agreement documents might include standard measures for identification of historical resources/historic properties where needed, assessment of project impacts, and application of specific mitigation measures, as well as protocols for resource monitoring or stabilization techniques. Such agreement documents shall be developed in consultation with responsible agencies and interested parties, such as Native American tribes, as appropriate, within the parameters of the PA.

Mitigation Measure Cul-2a: Follow the Secretary of the Interior's Standards for the Treatment of Historical Resources/Historic Properties

Because construction of Project facilities has the potential to modify buildings or structures that are considered historical resources/historic properties, any alterations, including relocation, to historic buildings or structures shall conform to the Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (1995).

Mitigation Measure Cul-2b: Record Built Environment Resources to Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) Standards

If avoidance or relocation of a building or structure that is considered eligible for the CRHR or NRHP is not feasible, and the resource must be demolished, a qualified architectural historian who meets the U.S. Secretary of Interior's professional standards shall be retained to document the impacted historical architectural resource to Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) specifications. HABS and HAER documentation packages shall be entered into the Library of Congress as well as the NWIC or NEIC of the CHRIS.

Mitigation Measure Cul-3: Consult with Native American Communities regarding How to Mitigate for Impacts to TCPs

TCPs are often locations on the landscape that have sacred or other special meaning to Native American communities. Associated characteristics, such as an archaeological deposit, are not always present. Early and meaningful consultation with Native American communities shall occur to identify ways to mitigate impacts to TCPs. Interpretive programs, establishing or enhancing locations for traditional plants, or a visitor's center, are examples of ways to address these important issues. Consultation with Native American communities shall occur.

Mitigation Measure Cul-4a: Relocation of Known Cemeteries

Consultation shall occur with the entity (County, City, private) that has jurisdiction over the cemetery, and interested parties as appropriate, to identify a satisfactory place that is protected from future disturbance for the relocation of human remains. Similarly, if Native American burials are known to exist in an archaeological site, the Project proponent shall work with the appropriate tribe to identify a satisfactory location for re-interment of burials in a protected location.

Mitigation Measure Cul-4b: Immediately Halt Construction if Human Remains are Discovered, and Implement a Burial Treatment Plan

Project construction activities have the potential to have unanticipated significant impacts to buried human remains where there is no surface indication of their presence. In these circumstances, the requirements of California Health and Human Safety Code 7050.5 must be followed. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the potentially damaging excavation must halt in the area of the remains and the local County Coroner must be notified. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the Coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). Pursuant to the provisions of California Public Resources Code Section 5097.98, the NAHC shall identify a Most Likely Descendent (MLD). The MLD designated by the NAHC shall have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods. All of the activities identified above shall be detailed in a Burial Treatment Plan, as directed by the PA, and developed in consultation with local Native American tribes prior to Project construction so that all parties are aware of the actions required if buried human remains are uncovered during Project construction.

Implementation of **Mitigation Measures Cul-1a, Cul-1b, Cul-1c, Cul-1d, Cul-1e, Cul-2a, Cul-2b, Cul-3, Cul-4a, and Cul-4b** would reduce the level of significance of Project impacts to **no impact or less than significant**, or some could remain **potentially significant and unavoidable**.

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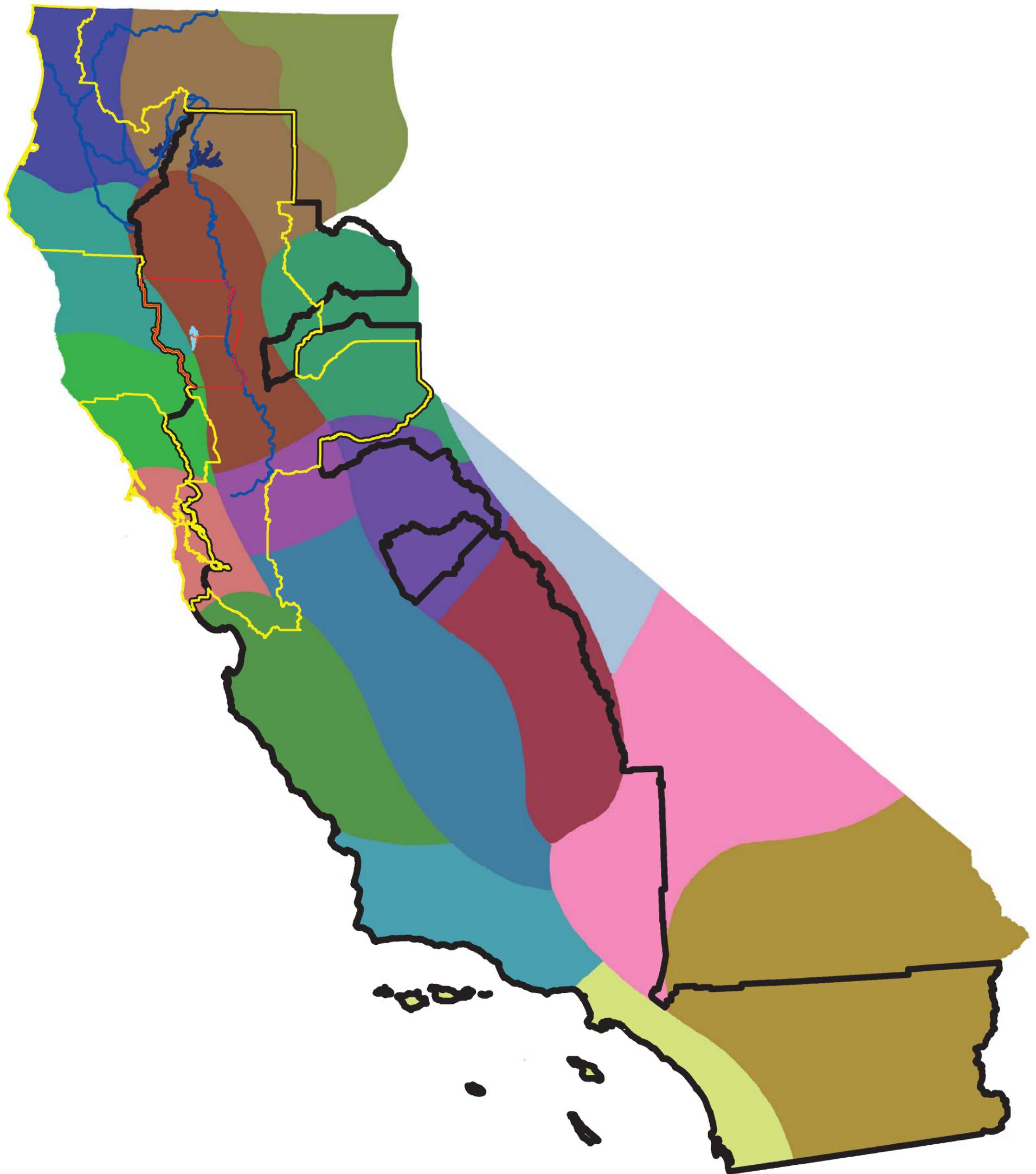
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Figures



Legend

- Delevan Transmission Line
- Sites Reservoir
- Extended Study Area Boundary
- Secondary Study Area Boundary
- Primary Study Area Boundary
- Rivers
- Lakes

ARCHAEOLOGICAL REGION/Subregion

- | | |
|--|---|
| CENTRAL COAST | NORTH COAST/Russian River/Clear Lake |
| CENTRAL VALLEY/Delta | NORTHEASTERN/Cascade |
| CENTRAL VALLEY/Sacramento Valley | NORTHEASTERN/Plateau |
| CENTRAL VALLEY/San Joaquin Valley | SAN FRANCISCO BAY |
| DESERT/Colorado River | SIERRA NEVADA/Central Sierra |
| DESERT/Southwestern Great Basin | SIERRA NEVADA/Northern Sierra |
| DESERT/Western Great Basin | SIERRA NEVADA/Southern Sierra |
| NORTH COAST/Eel River | SOUTHERN COAST/San Diego |
| NORTH COAST/Northwest Coast | SOUTHERN COAST/Santa Barbara |

FIGURE 18-1
Archaeological Region and
Subregion Boundaries
North-of-the-Delta Offstream Storage Project





- Legend**
- Delevan Transmission Line
 - Extended Study Area Boundary
 - Secondary Study Area Boundary
 - Primary Study Area Boundary
 - Rivers
 - Lakes
 - Sites Reservoir

FIGURE 18-2
Native American Tribal Land Boundaries
North-of-the-Delta Offstream Storage Project

