

18. Cultural/Tribal 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.¹ Tribal cultural resources (TCRs), which were established by the State of California under Assembly Bill (AB) 52 and are similar resources that have specific cultural value to Native Americans, are also addressed. Descriptions and maps of these three study areas are provided in Chapter 1 Introduction.

Permits and authorizations for cultural and tribal resources are presented in Chapter 4 Environmental Compliance and Permit Summary. The regulatory setting for cultural resources is presented in Appendix 4A Environmental Compliance.

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 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 culture.”² The archaeologists 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

¹ Traditional cultural properties (TCPs) are a resource type that fall under the purview of the National Register of Historic Places and must be addressed under the National Historic Preservation Act. Tribal cultural resources (TCRs) are similar types of resources established by the State of California under Assembly Bill (AB) 52 as resources that must be addressed under Appendix G of the California Environmental Quality Act (CEQA). The definitions of TCPs and TCRs overlap but are not the same; therefore, a resource that is a TCP may not be a TCR, and vice versa.

² 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.

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 sedentism³ with greater intensification of resource exploitation. This was paired with changes in technology, such as relinquishing the hunting spear for the bow and arrow, and exchanging handstones and millingstones⁴ 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 do not 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 (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 (1994) (the Paleo-Indian Period; the Lower, Middle, and Upper Archaic periods; and Lower and Upper Emergent periods) are applicable to all

³ Sedentism refers to more permanent year-round settlement as opposed to a nomadic existence.

⁴ 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.

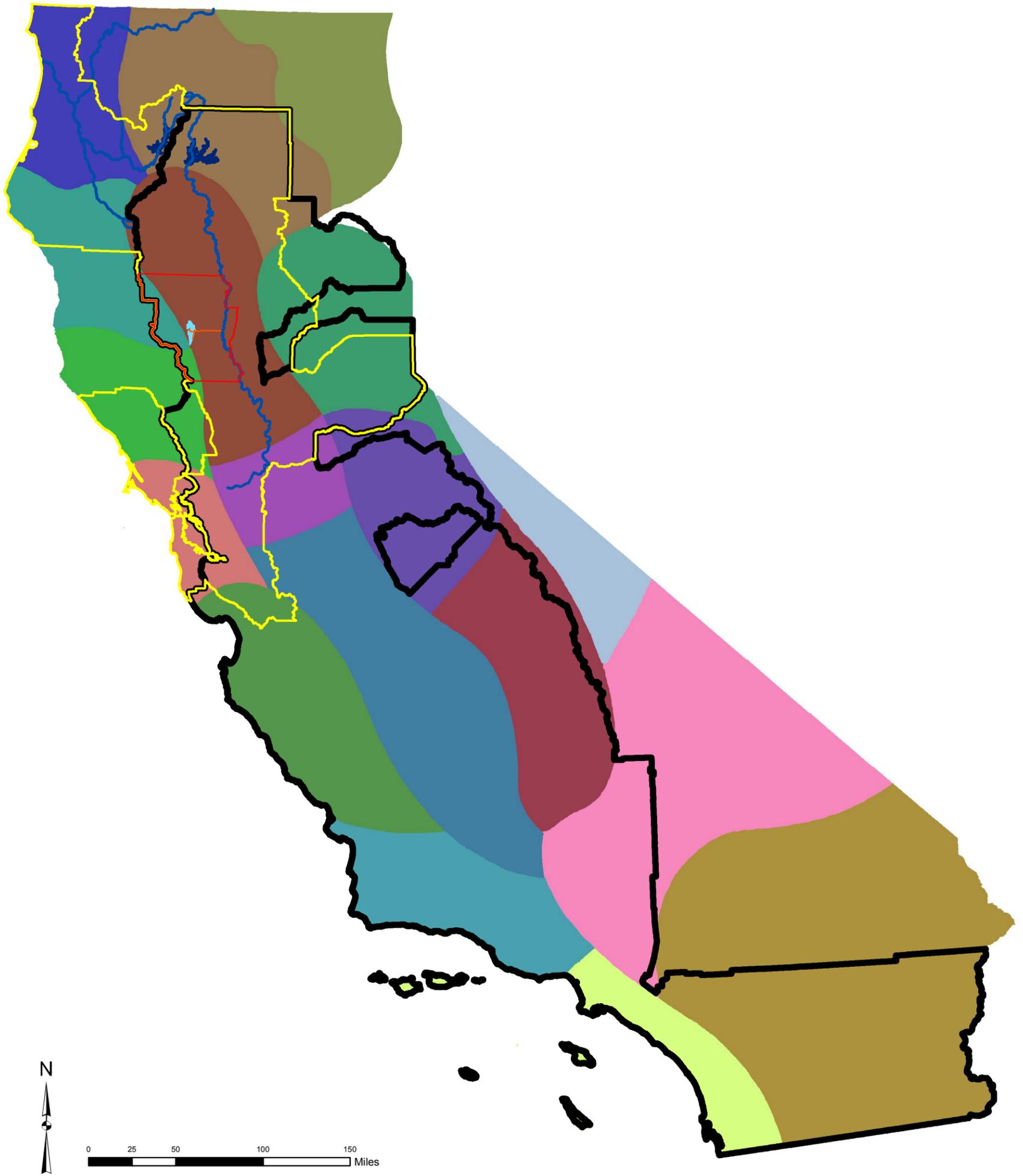


FIGURE 18-1
Archaeological Region and
Subregion Boundaries
Sites Reservoir Project EIR/EIS

This page intentionally left blank.

of the archaeological regions in the Extended Study Area; though to differing degrees. More detailed information about these stages is presented 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.

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 in Sections 18.2.2 and 18.2.3, respectively) are depicted on 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 Californios.⁵ Several Mexican-era land grants were issued in quick succession, beginning in 1844, in territory now in Tehama, Butte, Glenn, and Colusa counties. Many of these land grants were settled by some of the important explorers in the early days of California, such as John Bidwell, Peter Lassen, William Ide, and Thomas Larkin.

Many governments ruled or vied for power over California during the Mexican Period. 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).

During the California Gold Rush, newly-arrived immigrants found the climate of the Central Valley amenable to farming and intensive dry farming, particularly wheat, and cattle-ranching quickly became profitable for those who turned to agriculture. However, the seasonable supply of water, particularly in San Joaquin Valley, restricted growth of the industry. The State of California, as early as the 1870s, began to plan and design a system to move water from the north part of the State to other regions that did not have a reliable year-round water supply. The proposed system of canals and reservoirs throughout the State became known as the Central Valley Project (CVP) and was finally approved by the State in 1933. However, because of a lack of funds during the depression years, the plan was ultimately submitted to the federal government, and the first elements of the CVP including Shasta Dam, the Delta-Mendota Canal, Friant Dam, the Friant-Kern Canal, and the Contra Costa Canal were authorized in 1935. The Bureau of Reclamation (Reclamation) was assigned responsibility for constructing and operating the CVP (JRP, 2000).

Shasta Dam, at the headwaters of the Sacramento River, was completed in 1945. The Friant Dam, on the San Joaquin River, was completed in 1942. These were the linchpins of the CVP that would supply water for the seasonally parched Central Valley. Controlling water from these two vast watersheds not only allowed for more reliable water for farmers, it also provided water for municipalities and greatly reduced problems of flooding; power generation facilities were also constructed as part of the dams. These factors supported tremendous population growth as well as agricultural and industrial expansion within the state.

⁵ 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).



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
Sites Reservoir Project EIR/EIS

This page intentionally left blank.

An increased demand for water came along with this growth, particularly after World War II. This resulted in construction of additional reservoirs, most notably at Whiskeytown, Folsom, and San Luis, and associated canals to transfer the water (Bailey, 2007)

The CVP supplied water for a large part of the State, but it did not extend to the southern part of the San Joaquin Valley or over the Tehachapi Mountains into the Los Angeles Basin and other parts of Southern California where population and development boomed in the years following World War II. This, along with devastating floods along the Feather River in 1955, prompted the State Legislature to expand earlier water distribution plans and formulate the State Water Project (SWP). Put to voters in 1960, the SWP narrowly won approval. Led by the California Department of Water Resources (DWR), three small dams were built at the headwaters of the Feather River, high in the Sierra Nevada Mountains, and Oroville Dam was constructed in the foothills of Butte County. Controlled releases send water down the Feather and Sacramento rivers to the Sacramento-San Joaquin Delta where it is pumped into the California Aqueduct and transported through the San Joaquin Valley, over the Tehachapi Mountains, and stored at reservoirs in Southern California (JRP, 2000).

Although a myriad of small water agencies throughout Central California have developed water systems of their own, without the CVP and SWP, California would likely not have evolved into what today is one of the economic powerhouses in the world. Development of the State's water resources supported vast agricultural and industrial growth, which, allowed for increases in population and spurred economic change and technological innovation.

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. Historic-era resources within the Extended Study Area may include town sites, homesteads, ranches, privy pits, dumps, mining remains, transportation facilities, dams, 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/Tribal Cultural Resources and Assembly Bill 52

TCPs are tangible locations that are important to the cultural continuity of a community and have been important for more than 50 years; TCPs also meet the criteria for eligibility for listing in the National Register of Historic Places (NRHP). TCPs can be archaeological or built environment resources, or they can be features of the natural landscape. TCPs are most often associated with Native American practices and beliefs; however, other communities or cultural groups may acknowledge similar properties.

AB 52 was approved by the California legislature in September 2014 and went effect on January 1, 2015. This bill requires that state lead agencies consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if so requested by the tribe. The bill, chaptered in CEQA Section 21084.2, specifies that a project that may cause a substantial adverse change in the significance of a TCR might have a significant effect on the environment. Defined in CEQA Section 21074, TCRs are specific to Native American cultures and beliefs and include sites features, places, cultural landscapes, sacred places, and objects of cultural value. TCRs must meet the eligibility criteria for inclusion in the California Register of Historical Resources (CRHR) and must be included in a local register. In addition, TCRs must be designated as a unique archaeological resource or otherwise determined to be potentially significant by the CEQA lead agency. TCPs and TCRs 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 that are essential in maintaining the continuing cultural identity of the community.

TCPs and TCRs may occur in any location or setting where traditional activities or events occurred. Similar to the archaeological and ethnographic resources listed previously, TCPs/TCRs 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 similar 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 similar 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, dams, 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 and Tribal Cultural Resources

Similar to the Extended Study Area, TCPs and TCRs 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. Although TCPs may include places important to any community, TCRs are places specifically important to Native Americans. TCPs and TCRs may occur anywhere, but are likely to be located in proximity to prehistoric and ethnographic resources. TCPs and TCRs 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 (1994) that was provided earlier in this chapter. White et al. (2009), as presented in the following sections, 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 unifacial⁶ 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

⁶ Unifacial tools demonstrate manufacturing methods (e.g., flaking) on one face or side; alternately bifacial tools are worked on two faces or sides.

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 anadromous fisheries also occurred. The archetypal⁷ 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, atlatl⁸ 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, cairns,⁹ and graves. Complete house floors suggest that large pole-framed houses between 12 and

⁷ 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.

⁸ 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.

⁹ Cairns are piles of stones, usually to mark specific locations.

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 [TRR] Complex), might be expected 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, Maidu, 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 Tehama-Colusa Canal and a section of the GCID Main Canal in Glenn County that are on lands affiliated with the Nomlaki, and a small portion of the GCID Main 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 from Oroville to downstream from 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 and are represented by the Cachil Dehe Band of Wintun Indians, Yocha Dehe Wintun Nation, Kletsel (Cortina) Band of Wintun Indians, Grindstone Indian Rancheria of Wintun-Wailaki Indians, Paskenta Band of Nomelaki Indians, Mechoopda Indian Tribe of Chico Rancheria, and the Estom Yumeka Maidu Tribe of the Enterprise Rancheria. All of these Native American communities 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 3 to 4 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 1,000 farms dominating the economy. Major commodities include rice, wheat, hay, almonds, walnuts, corn, oranges, prunes, milk products, and livestock (Glenn County Court, 2011).

Water Conveyance

The importance of the large water systems in California, the CVP and SWP, was previously discussed. The Tehama-Colusa Canal, which is a component of the CVP, passes through the Primary Study Area. Completed in 1980, the canal extends nearly 111 miles from the Red Bluff Diversion Dam on the Sacramento River, south through Tehama, Glen, and Colusa counties, terminating in Yolo County near Dunnigan. Funks Dam and Reservoir, which is located along the Tehama-Colusa Canal and is also in the Primary Study Area, helps to regulate canal flows (Bailey, 2007).

Numerous water districts exist within and near the Primary Study Area. The water districts have hundreds of miles of ditches and canals to irrigate the fields and orchards in the Sacramento Valley. The development of water systems was important in Glenn and Colusa counties as early as the 1850s, when William S. Green promoted construction of a central canal to irrigate land during months of drought. By the 1880s, farmers began a more concerted effort to construct a canal that would divert water from the Sacramento River to farms on the west side of the valley, although not all landowners were convinced of the need for a canal. Passage of the Wright Irrigation District Act of 1887 encouraged the formation of irrigation districts (Jimenez, 2013). Shortly thereafter, the Central Irrigation District, which eventually became the Glenn-Colusa Irrigation District, was founded and a series of canals ditches, siphons, and pumping stations were constructed by 1910. The Glenn-Colusa Canal was built in pieces, because construction was often delayed because of funding issues. The canal was completed in 1920 and currently 65 miles long; it begins north of Hamilton on the Sacramento River and extends south through Glenn and Colusa counties, eventually draining into the Colusa Basin south of Williams.

18.2.3.4 Cultural Resources

Methodology

A records search for the Primary Study Area was conducted at the Northwest Information Center (NWIC) at California State University, Sonoma and the Northeast Information Center (NEIC) at California State University, Chico, of the California Historical Resources Information System (CHRIS). The purpose of the records search was to identify the presence of previously recorded cultural resources within the Primary Study Area and to determine whether portions of the Primary Study Area have been previously surveyed for cultural resources. Archival research of historical records at various repositories was conducted, and consultation with Native American tribes and other knowledgeable individuals has been initiated.

The cultural resources studies for the Project focused on the Primary Study Area, because this is the area where project construction will take place and will have the most potential for impacts on cultural resources. 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, most of the Recreational Area locations, and most of 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 (DPR) forms (Form 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).¹⁰ Furthermore, the ARP conducted a partial archaeological inventory of the proposed Delevan Pipeline, and Delevan Pipeline Intake/Discharge Facilities (Westwood and White, 2005). Because the survey areas included a buffer around these facilities, virtually the entire area within the 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 DWR archaeologists. Areas and facilities that remain to be surveyed for archaeological resources prior to Project construction include:

- Sites Reservoir Complex:
 - 790 acres within the Sites Reservoir footprint
 - A small portion of the Sites Dam footprint
 - Sites Pumping/Generating Plant
 - Tunnel from Sites Pumping/Generating Plant to the Sites Reservoir Inlet/Outlet Structure
 - Sites Electrical Switchyard
 - Field Office Maintenance Yard
 - Portions of the Stone Corral Recreational Area
 - Previously unsurveyed sections of the proposed Sulpher Gap, Lurline, Eastside, Stone Corral, and South Bridge roads
 - Previously unsurveyed borrow areas outside of the inundation zone
- Holthouse Reservoir Complex:
 - Remaining unsurveyed portions of the Holthouse Dam and Reservoir
 - Holthouse Pumping Plant
 - Holthouse Spillway, Stilling Basin, and related facilities associated with the reservoir
 - WAPA transmission line relocation alignment
 - Previously unsurveyed portions of the Sites Pumping/Generating Plant Approach Channel
 - Existing Tehama-Colusa Canal connections
 - Tehama-Colusa Canal Construction Bypass Pipeline alignment
 - WAPA transmission line relocation alignment
- TRR Complex:
 - GCID Main Canal Facilities Modifications
 - TRR
 - TRR Pipeline
 - TRR Pipeline Road
 - TRR Pumping/Generating Plant
 - TRR Electrical Switchyard

¹⁰ Archaeological data are considered confidential pursuant to California PRC Section 6254.10 and Section 304 of the National Historic Preservation Act; therefore, these reports are not appended to this document.

- GCID Main Canal Connection to the TRR
- TRR to Funks Creek Pipeline
- Delevan Pipeline Complex:
 - Previously inaccessible portions of the Delevan Pipeline Complex. The entire pipeline route may require a survey if the Alternative D pipeline is 150 feet south of the proposed Alternative A alignment.
 - The proposed substation near Colusa for Alternative D
- Overhead Power Lines and Substations:
 - Previously unsurveyed portions of the Sites/Delevan Overhead Power Line parallel to the Delevan Pipeline for Alternatives A, B, and C, and the Delevan Overhead Power Line route for Alternative D.
 - Substation associated with an overhead power line tie-in to the existing WAPA or PG&E transmission lines in the vicinity of Funks Reservoir
 - Various previously unsurveyed, low-voltage overhead power line routes within the Proposed Project area
- Project Buffer:
 - Previously unsurveyed portions within the Sites Reservoir Complex buffer, primarily east of the inundation area

Previously unsurveyed area within the Holthouse Reservoir Complex buffer

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 recommended that six appear eligible for listing in the NRHP and the CRHR, and nine do not appear eligible for the NRHP or CRHR. Two resources, Funks Dam and the Tehama-Colusa Canal, were found to be less than 45 years old and were not recorded. However, both resources are considered contributing elements to the CVP, which Reclamation has determined eligible for listing the NRHP (Perry, 2017). A listing of the recorded and evaluated resources is presented in Table 18-1. Descriptions of the resources are presented in the “Historic-era Resources” section

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

Property Type	Site Name/Location	County	Owner	Description	Evaluation Recommendation
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	Ineligible
Farmstead	Huffmaster Road Farmstead (2), Antelope Valley	Colusa	Private Ownership	Circa 2006 single-family house, circa 1920 barn and 1970 shop	Ineligible

Property Type	Site Name/Location	County	Owner	Description	Evaluation Recommendation
Farmstead	McDermott Road Farmstead (1), Maxwell	Colusa	Private Ownership	Two single-family houses, six silos, and two outbuildings.	Ineligible
Farmstead	McDermott Road Farmstead (2), Maxwell	Colusa	Private Ownership	A 1920 single-family house, circa 2000 barn, circa 1952 outbuilding, and single trailer	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	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	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	Eligible
Dam	Funks Dam and Reservoir	Colusa	CVP	Completed in 1976 to regulate water in the Tehama-Colusa Canal	Eligible as contributing element
Canal	Tehama-Colusa Canal	Colusa and Glenn	CVP	Nearly 111-mile-long canal completed in 1980	Eligible as contributing element
Canal	Glenn-Colusa Canal Headgate	Glenn	GCID	Circa 1941 eight-bay concrete constructed headgate/bridge; earthen bermed canal prism with stone riprap sides	Ineligible
Canal	Glenn-Colusa Canal	Colusa and Glenn	GCID	Circa 1887-1920 earthen canal	Eligible
Levee	Sacramento River Levee, near Stegeman	Colusa	USACE/Maxwell Irrigation District	Circa 1947-53 earthen berm levee/road	Eligible
Canal	Maxwell Irrigation District Canal, near Stegeman	Colusa	Maxwell Irrigation District	Maxwell Irrigation District, old pumping plant and drainage canal	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	Eligible
Railroad	Union Pacific Railroad Siphon, Willows	Glenn	GCID	Circa 1917 gravitational railroad siphon located on the GCID Main Canal and Union Pacific Railroad	Eligible
Road	Colusa & Lake Railroad (C&LRR) Historic District along Stone Corral Creek	Colusa	Colusa County	Two circa 1886 roads that include the historic C&LRR bed and a wagon road	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	Ineligible

Once an action alternative is selected, additional cultural resources investigations, studies, and consultations would be required to comply fully with federal and State requirements. These studies would include additional research, field surveys, site recordings and evaluations, and other related tasks required to identify potentially significant cultural resources and consider impacts of implementing the selected action alternative. All of these efforts will be conducted through consultations with Native American Tribes, Native Americans, the State Historic Preservation Office, and other interested parties. To comply with Section 106 of the National Historic Preservation Act (NHPA), these activities would be carried out under the guidance of a programmatic agreement (PA), pursuant to the implementing guidelines of Section 106 of the NHPA (see Chapter 4 Environmental Compliance) found at 36 Code of Federal Regulations (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 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.

The PA would include Reclamation (likely the lead federal agency), the California State Office of Historic Preservation, the Sites Power Authority (Authority), likely DWR, and other consulting parties including the Advisory Council on Historic Preservation, the U.S. Army Corps of Engineers, Western Area Power Administration, Native American tribes, and other interested parties. Because the Authority, as the lead State agency, 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.

Tribal Consultation

Consultations with tribal governments started in the late 1990s through the CALFED program, nearly two decades before implementation of AB 52. The Sites Reservoir Project (then known as North-of-Delta Offstream Storage, or NODOS) Study Team (CALFED, DWR, and Department of the Interior, Bureau of Reclamation (Reclamation)) identified the following tribes that could be affected by implementation of the Sites Reservoir: Cachil Dehe Band of Wintun Indians; Cortina Indian Rancheria of Wintun Indians; Grindstone Indian Rancheria of Wintun-Wailaki; Paskenta Band of Nomlaki Indians; Round Valley Indian Tribe of Round Valley; Wintun Tribe in Redding; and Yocha Dehe Wintun Nation. The NODOS Study Team developed the “Guiding Principles: Working with Indian Tribes on North-of-the-Delta Offstream Storage” in consultation with the tribes to direct planning activities involving the tribes. The NODOS Study Team met at a scoping meeting on January 23, 2002 and at eight subsequent meetings and one field tour of Sites Reservoir location through March 2004 to provide updates on the NODOS progress and to encourage input on issues of concern from the tribes. A Tribal Forum on the Project was held by DWR and Reclamation on February 26, 2004.

As part of compliance with AB 52 requirements, the Authority contacted the California Native American Heritage Commission (NAHC) on January 27, 2017, with a request for a list of tribes that have a traditional and cultural affiliation with the Primary Study Area. The NAHC responded to this request and

the Authority subsequently contacted those identified by the NAHC on February 10, 2017. Table 18-2 summarizes the consultation under Public Resources Code (PRC) Section 21080.3.1, to date, between the Authority and the affected tribes.

**Table 18-2
Native American Consultation Per AB 52**

Tribe	Contact	Notification Letters	Tribal Response	Consultation Actions to Date
Colusa Indian Community Council (Cachil Dehe Band of Wintun Indians)	Oscar Serrano, Principal Engineer	Initial letter sent February 10, 2017	Letter requesting consultation was received by the Authority on February 6, 2017	Authority met with tribal representatives July 12, 2017
Cortina Indian Rancheria of Wintun Indians	Charlie Wright, Chairperson	Initial letter sent February 10, 2017; follow-up letter sent April 6, 2017	No formal response to date	None to date
Estom Yumeka Maidu Tribe of the Enterprise Rancheria	Glenda Nelson, Chairperson	Initial letter sent February 10, 2017; follow-up letter sent April 6, 2017	No formal response to date	None to date
Grindstone Indian Rancheria of Wintun-Wailaki	Ronald Kirk, Chairperson	Initial letter sent February 10, 2017; follow-up letter sent April 6, 2017	No formal response to date	None to date
Mechoopda Indian Tribe	Denis. E. Ramirez, Chairperson	Initial letter sent February 10, 2017; follow-up letter sent April 6, 2017	No formal response to date	None to date
Paskenta Band of Nomlaki Indians	Andrew Alejandro Chairperson	Initial letter sent February 10, 2017; follow-up letter sent April 6, 2017	No formal response to date	None to date
Yocha Dehe Wintun Nation	Leland Kinter, Chairperson	Initial letter sent February 10, 2017; follow-up letter sent April 6, 2017	No formal response to date	None to date; information provided per request

The Colusa Indian Community Council, the governing body of the Cachil Dehe Band of Wintun Indians, had previously notified the Authority that they wished to be notified of projects, pursuant to PRC Section 21080.3 in a letter dated January 3, 2017. Furthermore, the tribe contacted the Authority by letter dated February 6, 2017, in which they expressed their desire to consult on the Project. The Authority responded, by letter on March 6, 2017, acknowledging receipt of the request for consultation letter and informing the tribe that they would be in contact soon to set up a meeting date. A meeting was held between Authority and tribal representatives on June 12, 2017. Key items of discussion were related to interest in project design, facility locations, and ownership coordination. Separately, the Yocha Dehu Wintun Nation also contacted Authority staff on May 19, 2017 about project information, which was subsequently provided by the Authority on June 22, 2017.

Although not related to PRC Section 21080.3.1 consultation, the Cortina Band of Wintun Indians prepared a report in 2010 (Cortina, 2010) to outline their concerns about the Project. In addition to

expressing concerns about fish and water associated with the Project, the tribe provided recommendations regarding cultural resources, including, among other recommendations, the following (Cortina, 2010):

- “The Cortina Band wishes to be consulted at all phases of planning and build out to ensure that impacts on cultural resources are mitigated or avoided. When impacts are unavoidable, the Cortina Band wishes to be involved in determining the best course of action. In particular, the Site’s [sic] Reservoir has a need for site testing, borings, and soil column sampling to ensure that cultural resources are not adversely impacted.”
- “There is the potential for the project to increase the availability of crafts materials, medicines and foods from riparian and wetland areas. Cortina would like to be consulted on the biological mitigations and enhancements to ensure the tribal perspective is considered in these processes.”

The Authority will continue to consult with tribes that have a traditional and cultural affiliation with the Primary Study Area throughout development and construction of the Project.

Reclamation held an informational meeting with the Colusa Indian Community Council in 2016, and letters were sent to the other tribes with an offer to hold similar briefings. Formal consultation between the tribes and Reclamation will be initiated when a preferred alternative has been identified and the Area of Potential Effects is defined and documented in consultation with the State Historic Preservation Office, pursuant to Section 106 of the NHPA.

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 Project feature locations.

Sites Reservoir Complex

The cultural resources inventory of the proposed Sites Reservoir Inundation Area and dam sites 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, millstones, 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 prior to Project implementation. Furthermore, all prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility, and mitigation measures would be applied, as appropriate.

Holthouse Reservoir Complex

The footprint of the existing Funks Reservoir was inventoried and documented by Chartkoff (1969) and West et al. (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. It was, 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 NRHP.

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 Reservoir Complex is entirely within the limits of a survey conducted for the Tehama-Colusa Canal in 1965 (Treganza et al., 1965).

Approximately 348 acres of the Holthouse Reservoir Complex have been surveyed for the 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. Those portions of the Holthouse Reservoir Complex that have not yet been studied would be surveyed prior to Project construction. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility and mitigation measures would be applied, as appropriate.

Terminal Regulating Reservoir Complex

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, the TRR Pipeline, the TRR Pipeline Road, and the GCID Main 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. However, 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. 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 and mitigation measures would be applied, as appropriate.

A cultural resources record search of the GCID Main Canal and associated headworks facilities was conducted by White and Crawford (2003a) at the NWIC and the NEIC of the CHRIS. The record search identified one previously recorded prehistoric resource, CA-GLE-106, in proximity to the GCID Main 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 that may be completely buried and are, therefore, invisible on the ground surface. An archaeological survey would be conducted prior to Project construction. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility, and mitigation measures would be applied, as appropriate.

Delevan Pipeline Complex

A partial survey of the proposed Delevan Pipeline route east of Interstate 5 (I-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. 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. Additional surveys would be necessary to inspect the entire pipeline alignment prior to Project construction. Furthermore, prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility and mitigation measures would be applied, as appropriate.

An inventory of the proposed Delevan Pipeline Intake/Discharge Facilities was also 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/Discharge Facilities it is possible that such resources may be completely buried and are, therefore, invisible on the ground surface. Should prehistoric remains be identified during Project construction, they would be evaluated for NRHP/CRHR eligibility and mitigation measures would be applied, as appropriate.

Overhead Power Lines and Substations

A survey of some segments of the proposed Sites/Delevan Overhead Power Line parallel to the Delevan Pipeline route east of I-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. Archaeological resources may exist in areas that were not surveyed, including resources that may be completely buried and are, therefore, invisible on the ground surface.

The portion of the Sites/Delevan Overhead Power Line between the Holthouse Reservoir and the TRR, and inaccessible sections east of I-5 have not yet been surveyed for archaeological resources. Under Alternative D, only the small western-most portion of the Delevan/Sites Overhead Power Line from the proposed substation to the Sites Pumping/Generating Plant would be constructed. Instead of the east to west alignment to the Delevan Pipeline Intake/Discharge Facilities, electrical power will be connected to the Delevan Pipeline Intake/Discharge Facilities via the Delevan Overhead Power Line from a proposed substation near Colusa, with alignment along SR 45. Furthermore, various other low-voltage overhead power lines in the Project area have not been surveyed. All of these alignments would be investigated prior to Project construction according to the guidelines of the PA. Any prehistoric archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility 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 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 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. Consultations with Native American tribes regarding TCRs as well as tribal consultations through the Section 106 process, may identify additional ethnographic resources within the Primary Study Area. Ethnographic resources that are identified would be evaluated for NRHP/CRHR eligibility, and mitigation measures would be applied, as appropriate. These studies would be conducted for all elements of the Primary Study Area, as listed in the following sections.

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). Ethnographic resources are known to be within the footprint 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/Discharge Facilities.

Sites Reservoir Complex

According to White et al. (2009), a majority of the proposed Sites Reservoir footprint, including the proposed inundation area, the Sites and Golden Gate dam sites along with the nine saddle dam locations, the Sites Reservoir Inlet/Outlet Structure, Sites Electrical Switchyard, Field Office Maintenance Yard, the Recreational 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

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

Terminal Regulating Reservoir Complex

The proposed TRR and appurtenant facilities would be located within the ethnographic territory of the *Ko'-roo* (Kroeber, 1932; White et al., 2009). No known previously recorded ethnographic resources are located in the immediate vicinity of the proposed TRR Complex elements.

Delevan Pipeline Complex

The proposed Delevan Pipeline 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 previously recorded ethnographic resources within the immediate vicinity of the Delevan Pipeline.

The proposed Delevan Pipeline Intake/Discharge Facilities would be located within the ethnographic territory of the *Ko'-roo* (Kroeber, 1932; White et al., 2009). These facilities are located adjacent to the recorded location of 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.

Overhead Power Lines and Substations

The proposed Sites/Delevan Overhead Power 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 previously recorded ethnographic resources within the immediate vicinity of the Sites/Delevan Overhead Power Line. Under Alternative D, only the shorter western end of the Sites/Delevan Overhead Power Line would be constructed. Instead, electrical power would be connected to the Delevan Pipeline Intake/Discharge Facilities via the Delevan Overhead Power Line from a proposed substation near Colusa, with alignment along SR 45. Should Alternative D be selected, the overhead power line route would require review for ethnographic resources.

Project Buffer

The Project Buffer would surround all Project facilities, with the exception of the Delevan Pipeline, Sites/Delevan Overhead Power 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 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 Complex

The cultural resources inventory identified 34 historic-era archaeological resources within the proposed Sites Reservoir Complex footprint; 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 prior to Project construction. Furthermore, all historic-era archaeological resources that are identified would be evaluated for NRHP/CRHR eligibility and mitigation measures would be applied, as appropriate.

The built environment study (Jimenez, 2013) identified two resources within the Sites Reservoir Complex portion of the Primary Study Area:

1. The Colusa and 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; it begins west of the town of Sites and extends to the east to 0.25 mile beyond the edge of the Project Buffer, although the entire length of the railroad and road is 8 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 crisscross 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.
2. The Funks Reservoir Farmstead is located in the area of the proposed Sites Reservoir Inlet/Outlet Structure. This farm complex is on a 230-acre parcel and comprises several buildings that date to about 1933. The various structures include a single-family residence, an open-eave 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 these resources, 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 NRHP/CRHR eligibility. 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 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 and mitigation measures would be applied, as appropriate.

Holthouse Reservoir Complex

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 Tehama-Colusa 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 Tehama-Colusa Canal, Funks Dam, and the Western Area Power Administration (WAPA) Maxwell-Olinda 500-kV transmission lines. The Tehama-Colusa Canal and Funks Dam, which would be decommissioned within the reservoir footprint, are both considered contributing elements to the CVP, which has been determined eligible for listing in the NRHP by Reclamation; neither resource is individually eligible for the NRHP. That portion of the Tehama-Colusa Canal in the Primary Study Area and Funks Dam would be recorded as contributing elements to the NRHP-eligible CVP 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 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 and mitigation measures would be applied, as appropriate.

Terminal Regulating Reservoir Complex

White and Crawford (2003a) conducted an archaeological records search at the NWIC and the NEIC of the CHRIS that included components of the proposed TRR Complex and the entire length of the GCID Main Canal. Eight historic-era resources were identified along or adjacent to the GCID Canal, including three historic-era town sites, a highway alignment, a California Historic Landmark (No. 238, Swift's Stone Corral), two railroad alignments, and the GCID Main Canal and associated features. Of these eight resources, only the GCID Main Canal has been formally recorded and is identified by the State trinomial CA-GLE-605H. Except for the presence of the GCID Main Canal, recorded as site CA-GLE-605H, none of the other historic-era resources identified by the records search are within or near these Project features.

In addition to the GCID Main Canal, the built environment study identified and evaluated five historic-era resources located within the vicinity of the TRR Complex features (Jimenez, 2013):

1. The GCID Main 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 Main 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 and 1920 (Criteria C and 3). The period of significance for the GCID is between 1887 and 1920.
2. The GCID Main Canal Railroad Siphon, including the headworks and prism, were recorded as part of the built environment study (Jimenez, 2013). The facility is an engineered structure designed by the Central Irrigation District to convey water by gravity under the 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 4-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 GCID Main Canal is slightly higher than the west side, because 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 potentially 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 Main Canal Railroad Siphon appears individually eligible for the NRHP and the CRHR, and it is a contributing element to the GCID Main Canal as a whole.
3. The GCID Main 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. The headgate serves 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 modified in 1941 to accommodate the new headgate and was extended north to its 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. In addition, because the headgate does not date to the period of significance for the GCID Main Canal, it is not a contributing element to that resource.
4. 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 Main 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.

5. 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 Main 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 Complex facilities 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 and mitigation measures would be applied, as appropriate.

Delevan Pipeline Complex

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 Project component; therefore, only a small portion of the Delevan Pipeline was examined. Surveys of the previously uninspected Delevan Pipeline footprint 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 and mitigation measures would be applied, as appropriate.

Built environment historic resources within the footprint of the Delevan Pipeline Complex include the WAPA Transmission Line, the GCID Main Canal, and the Colusa Basin Drain (CBD) (Jimenez, 2013). As previously discussed, the WAPA Transmission Line does not appear eligible for the NRHP or CRHR, but the GCID Main Canal does appear to be an eligible resource. The 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 and 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).

An archaeological inventory of the proposed locations for the proposed Delevan Pipeline Intake/Discharge Facilities was 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 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 and CRHR under Criterion A and 1, respectively, 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/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/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/Discharge Facilities does not appear eligible for the NRHP or the CRHR.

Overhead Power Lines and Substations

An archaeological survey of a portion of the Sites/Delevan Overhead Power Line route east of I-5 was conducted by California State University, Chico's ARP (Westwood and White, 2005). No historic-era resources were discovered. The remaining sections of the Sites/Delevan Overhead Power Line would be surveyed prior to Project construction. Furthermore, under Alternative D, only the western end of the Sites/Delevan Overhead Power Line would be constructed; instead, electrical power would be connected to the Delevan Pipeline Intake/Discharge Facilities via an overhead power line from a proposed substation near Colusa, with an alignment along SR 45. 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 and mitigation measures would be applied, as appropriate.

Project Buffer

The archaeological inventory within Sites Reservoir Survey Area includes virtually all of the area within the 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 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 Project Buffer outside of the Sites Reservoir Inundation Area. These resources include three farmsteads and one quarry district:

- 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 mobile home 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 or CRHR.
- The Stone Corral Creek Quarries Historic District is directly east of the location of the proposed Sites Dam. It 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

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 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 and 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/Tribal Cultural Resources

Currently, no TCPs/TCRs have been identified within the Primary Study Area. Consultations with Native American tribes and other communities within the Primary Study Area will take place prior to Project implementation to identify TCPs/TCRs. Potential TCP/TCR resources that are identified would be evaluated for NRHP/CRHR eligibility, and mitigation measures would be applied, as appropriate.

18.3 Environmental Impacts/Environmental Consequences

18.3.1 Evaluation Criteria and Significance Thresholds

Significance criteria represent the thresholds that were used to identify whether an impact would be potentially 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 an historical resource as defined in PRC Section 15064.5?

- Cause a substantial adverse change in the significance of an archaeological resource pursuant to PRC Section 15064.5?
- Disturb any human remains, including those interred outside of dedicated cemeteries?
- Cause a substantial adverse change in the significance of a TCR, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
 - a. Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k).
 - b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

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 National Environmental Policy Act. For the purposes of this analysis, an alternative would result in a potentially significant impact if it would result in any of the following:

- A substantial adverse change in the significance of an archaeological resource
- A substantial adverse change in the significance of an historical resource of the built environment
- Disturb a Traditional Cultural Property or a Tribal Cultural Resource as defined in PRC Section 21074.
- Disturb any human remains, including those interred outside of dedicated cemeteries.

18.3.2 Impact Assessment Assumptions and Methodology

Combinations of Project facilities were used to create Alternatives A, B, C, C₁, and D. In all resource chapters, the Authority and Reclamation described the potential impacts associated with the construction, operation, and maintenance of each of the Project facilities for each of the five action alternatives. Some Project features/facilities and operations (e.g., reservoir size, overhead power line alignments, provision of water for local uses) differ by alternative, and are evaluated in detail within each of the resource areas chapters. As such, the Authority has evaluated all potential impacts with each feature individually, and may choose to select or combine individual features as determined necessary.

Impacts associated with the construction, operation, and maintenance for Alternative C₁ would be the same as Alternative C and are therefore not discussed separately below.

18.3.2.1 Assumptions

The following assumptions were made regarding Project-related construction, operation, and maintenance impacts on 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 two additional pumps into an existing bay at the Red Bluff Pumping Plant (RBPP).
- 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 Main Canal Intake and the RBPP).
- 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 from 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 from the Delevan Pipeline Intake/Discharge Facilities would be required.

18.3.2.2 Methodology

Existing conditions and the future No Project/No Action alternatives were assumed to be similar in the Primary Study Area given the generally rural nature of the area and limited potential for growth and development in Glenn and Colusa counties within the 2030 study period used for this EIR/EIS as further described in Chapter 2 Alternatives Analysis. As a result, within the Primary Study Area, it is anticipated that the No Project/No Action Alternative would not entail material changes in conditions as compared to the existing conditions baseline.

With respect to the Extended and Secondary study areas, the effects of the proposed action alternatives would be primarily related to changes to available water supplies in the Extended and Secondary study areas and the Project's cooperative operations with other existing large reservoirs in the Sacramento watershed, and the resultant potential impacts and benefits to biological resources, land use, recreation, socioeconomic conditions, and other resource areas. DWR has projected future water demands through 2030 conditions that assume the vast majority of CVP and SWP water contractors would use their total contract amounts, and that most senior water rights users also would fully use most of their water rights. This increased demand in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the EIR/EIS would constitute the No Project/No Action Condition. As described in Chapter 2 Alternatives Analysis, the primary difference in these projected water demands would be in the Sacramento Valley; and as of the time of preparation of this EIR/EIS, the water demands have expanded to the levels projected to be achieved on or before 2030.

Accordingly, existing conditions and the No Project/No Action alternatives are assumed to be the same for this EIR/EIS and as such are referred to as the Existing Conditions/No Project/No Action Condition, which is further discussed in Chapter 2 Alternatives Analysis. With respect to applicable reasonably foreseeable plans, projects, programs and policies that may be implemented in the future but that have not

yet been approved, these are included as part of the analysis of cumulative impacts in Chapter 35 Cumulative Impacts.

The results of the cultural resources studies described in Section 18.2.1.3 were compared to the Existing Conditions/No Project/No Action Conditions, and with the footprints of Project facilities. This comparison identified the number of known archaeological sites and built environment resources that would be affected by the Project, as well as an assessment of cultural resources potentially identified during future studies. Because the NRHP/CRHR eligibility of most resources within the Primary Study Area 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.

18.3.3 Topics Eliminated from Further Analytical Consideration

No cultural resources, including TCPs/TCRs, were eliminated from consideration or impact analysis in this chapter.

18.3.4 Impacts Associated with Alternative A

18.3.4.1 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

No impact on archaeological resources would occur due to Project construction because no Project facilities would be constructed in the Extended Study Area. Modeling results indicate changes in water deliveries to agricultural, municipal, industrial, and wildlife refuge users included in the Extended Study Area range from negligible to noticeably increased or decreased. These minor water level fluctuations and flow regime changes would be within the historic range of operations for these facilities. Therefore, Alternative A operations would result in a **less-than-significant impact** on historical resources, when compared to the Existing Conditions/No Project/No Action Condition.

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

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 the Existing Conditions/No Project/No Action Condition.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074.

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated 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***

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 at San Luis Reservoir 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. However, modeling results indicate that water level fluctuations within San Luis Reservoir would be within the historic range of operations. Therefore, Alternative A operations would result in a **less-than-significant impact** on archaeological resources, when compared to the Existing Conditions/No Project/No Action Condition. 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 the Existing Conditions/No Project/No Action Condition.

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

No built environment resources at San Luis Reservoir include the San Luis Dam, which is eligible for listing in the NRHP. As previously noted, drawdowns at the San Luis Reservoir would be within the historic range of operations for Alternative A, when compared to the Existing Conditions/No Project/No Action Condition and would not affect the dam. 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 the Existing Conditions/No Project/No Action Condition.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074.

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

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 or burial sites 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 **less-than-significant impact** on human remains at San Luis Reservoir, when compared to the Existing Conditions/No Project/No Action Condition.

18.3.4.2 Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Trinity Lake, Lewiston Reservoir, Trinity River, Klamath River downstream from 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

The minimal Project construction identified for the Secondary Study Area would be limited to the installation of two pumps within existing bays at the RBPP; no ground disturbance is expected to occur. Therefore, compared to the Existing Conditions/No Project/No Action Condition, there would be **no impact** on potentially significant archaeological resources that are historical resources or historic properties as the result of construction activities in the Secondary Study Area. There would also be **no impact** on NRHP/CRHR-eligible archaeological resources from changes in operations because no ground disturbance is expected to occur during that Project phase, when compared to the Existing Conditions/No Project/No Action Condition.

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 Reservoir, 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**

on archaeological resources as defined in PRC Section 15064.5 and TCPs, when compared to the Existing Conditions/No Project/No Action Condition.

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

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

Direct Project-related construction for the Secondary Study Area would be limited to the installation of two additional pumps into existing bays at the RBPP. The Tehama-Colusa 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 an historical resource, the intake would need to be recorded as a built environment feature. There would be a **less-than-significant impact** on built environment resources that are eligible for the CRHR or the NRHP as the result of construction, operation, and maintenance activities for the Secondary Study Area, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074.

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

18.3.4.3 Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Sites Reservoir Complex

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

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. Although all five proposed Recreational Areas were included in the archaeological survey area (a portion of the Stone Corral Recreational Area has yet to be surveyed) (White et al., 2009), two archaeological sites were identified at only the Peninsula Hills Recreation Area. Furthermore, construction of approximately 50 miles of new public and private access roads (including associated detours and construction roads and all related features such as culverts, fences, and guardrails) and the proposed South Bridge have the potential to affect nine known archaeological sites. An additional four sites are located in close proximity to the road footprints and have the potential for being affected during construction activities. Thus, a total of 72 archaeological resources have the potential to be disturbed during construction of Sites Reservoir Complex elements. Portions of the reservoir footprint and many of the related facilities, including some road segments, have not been surveyed, because of lack of access. Those areas would require a 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 Sites Reservoir Complex elements would result in a **potentially significant impact** on archaeological sites pursuant to PRC Section 15064.5, when compared to the Existing Conditions/No Project/No Action Condition.

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

Two built environment resources, the Colusa & Lake Railroad Historic District and the Funks Reservoir Farmstead, are located within the Sites Reservoir Complex area. The Colusa & Lake Railroad Historic District is located along Stone Corral Creek, within the footprint of the proposed Sites Dam. The historic district appears eligible for the NRHP and CRHR; however, the Funks Reservoir Farmstead does not appear to be eligible for listing. As a result, construction of the Sites Reservoir Complex components would have a **potentially significant impact** on historical resources or historic properties of the built environment, pursuant to PRC Section 15064.5, when compared to the Existing Conditions/No Project/No Action Condition. However, operation and maintenance of the Sites Reservoir Complex facilities would have **no impact** on built environment resources when compared to the Existing Conditions/No Project/No Action Condition.

Approximately 20 residential dwellings and approximately 45 other ranch compounds and other structures 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 1.3-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 PRC Section 15064.5, when compared to the Existing Conditions/No Project/No Action Condition. 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 the Existing Conditions/No Project/No Action Condition.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074.

No TCPs/TCRs have been identified within the proposed Sites Reservoir Complex area, to date. Ethnographic studies and tribal consultations pursuant to PRC Section 21080.3.1 have not yet been undertaken and have the potential to identify TCPs/TCRs. The construction, operation, and maintenance of the 1.3-MAF Sites Reservoir and dams could result in a **potentially significant impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

Two cemeteries are known to exist within the inundation area of the proposed Sites Reservoir Complex area. 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 the Existing Conditions/No Project/No Action Condition.

No marked or dedicated cemeteries are located within the footprint of any of the other elements in the Sites Reservoir Complex area. It is possible, however, that currently undetected buried human remains are present; therefore, construction, operation, and maintenance of the various Sites Reservoir Complex elements could have a **potentially significant impact** on human remains, when compared to the Existing Conditions/No Project/No Action Condition.

Holthouse Reservoir Complex***Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource***

A record search was conducted of the proposed Holthouse Reservoir Complex area 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 Tehama-Colusa 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). As discussed in Section 18.2.3.4, studies determined that these sites are not eligible for inclusion in the NRHP/CRHR.

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, when compared to the Existing Conditions/No Project/No Action Condition, could have a **potentially significant impact** on archaeological sites pursuant to PRC Section 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** on NRHP/CRHR-eligible archaeological deposits, when compared to the Existing Conditions/No Project/No Action Condition, 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** on archaeological resources that are eligible for the CRHR or the NRHP, when compared to the Existing Conditions/No Project/No Action Condition,

because dredging that may occur in the future could occur deeper than planned, exposing or damaging buried archaeological deposits.

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

The built environment resources within the proposed Holthouse Reservoir Complex are the Tehama-Colusa 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 Tehama-Colusa Canal and Funks Dam are not yet 50 years old, but are considered contributing elements of the NRHP-eligible CVP, and should be recorded as elements of the CVP 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 would, therefore, have a **potentially significant** on built environment historical resources or historic properties, when compared to the Existing Conditions/No Project/No Action Condition.

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 the Existing Conditions/No Project/No Action Condition.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074

Ethnographic studies and tribal consultations pursuant to PRC Section 21080.3.1 have not been conducted for the Project, so it is not known if TCPs/TCRs are located within the proposed Holthouse Reservoir Complex (including Funks Reservoir). Until those studies and consultations are complete, the construction, operation, and maintenance of these new facilities may have a **potentially significant impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition.

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

There are no dedicated cemeteries within the footprint of the proposed Holthouse Reservoir Complex (including Funks Reservoir). 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 the Existing Conditions/No Project/No Action Condition.

TRR Complex

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

As previously noted, a records search was conducted of the TRR Complex facilities (Westwood and White, 2005), including the entire GCID Main Canal (White and Crawford, 2003a). No previously recorded archaeological resources were identified in the TRR Complex facility footprints by the search, but one prehistoric archaeological site was previously recorded in proximity to the proposed GCID Main Canal Facilities Modifications (Westwood and White, 2005). None of the TRR Complex facilities, or the GCID Main Canal, 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** on archaeological resources pursuant to PRC Section 15064.5, when compared to the Existing Conditions/No Project/No Action Condition. Operation and maintenance of these facilities would have **no impact** on historical resources or historic properties that are archaeological sites, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on 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

Built environment resources associated with the TRR Complex include the two McDermott Road farmsteads and the GCID Main Canal, including the existing related features of the canal (refer to Chapter 3 Description of the Sites Reservoir Project Alternatives). Neither of the McDermott Road farmsteads appear to meet the NRHP/CRHR 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.

Conversely, an evaluation of the GCID Main Canal suggests that the resource is eligible for the NRHP and the CRHP under Criteria A and C, and 1 and 3, respectively. Most of the GCID Main Canal features would remain intact with construction of the Project, 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 were evaluated for NRHP/CRHR eligibility as contributing elements of the GCID Main Canal. 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 and CRHR and is a contributing element to the GCID Main Canal as a whole. 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 Main 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 or CRHR either individually or as part of the GCID Main 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 the Existing Conditions/No Project/No Action Condition. Operation and maintenance would have **no impact** on these same resources, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on those resources would have been mitigated during construction.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074

It has not yet been determined if TCPs/TCRs are within the footprint of the proposed TRR Complex elements. Therefore, it is possible that construction, activities could have a **potentially significant impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition. Operation and maintenance tasks would have **no impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on those resources would have been mitigated during construction.

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

There are no dedicated cemeteries within the footprints for these proposed facilities, but the presence of unrecorded burials is possible. As a result, construction of the TRR Complex facilities could have a **potentially significant impact** on human remains, when compared to the Existing Conditions/No Project/No Action Condition. There would be **no impact** on human remains due to operation and maintenance activities, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on those resources would have been mitigated during construction.

Delevan Pipeline Complex

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

An archaeological study for the proposed Delevan Pipeline Complex facilities involved a record search, a field inventory of portions of the of the Delevan Pipeline east of I-5, and a field inventory of the footprints of Delevan Pipeline Intake/Discharge Facilities at the Sacramento River (Westwood and White, 2005). No previously recorded archaeological resources were identified in the facility footprints by the search, but the ethnographic village of *Ts'a* has been recorded near the Delevan Pipeline Intake/Discharge Facilities. The Delevan Pipeline west of I-5 (and some portions of the Delevan Pipeline east of the freeway) have not been subject to archaeological survey, nor has the Delevan Pipeline alignment proposed for Alternative D. A potential switchyard located near Colusa is also included in Alternative D and would require a survey. The lack of surveys and the potential for burial sites (particularly adjacent to the Sacramento River), indicate that Project construction could result in a **potentially significant impact** on archaeological resources, pursuant to PRC Section 15064.5, when compared to the Existing Conditions/No Project/No Action Condition. Operation and maintenance of these facilities would have a **potentially significant impact** on historical resources or historic properties that are archaeological sites, when compared to the Existing Conditions/No Project/No Action Condition, if new access roads, boring, or trenching are required during maintenance activities.

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

Built environment resources identified within the Delevan Pipeline Complex include Tehama-Colusa Canal, WAPA, and PG&E transmission lines; GCID Main Canal; CBD; MID Canal; and the Sacramento River levee. The GCID Main Canal appears eligible for the NRHP and CRHR, as previously discussed. An evaluation of the CBD suggests that the resource is eligible for the NRHP and CRHP under Criteria A and C, and 1 and 3, respectively. The Sacramento River levee similarly appears eligible for the NRHP and CRHR under criteria A and 1, respectively. The MID Canal within the Project footprint does not appear to be an eligible resource, because this portion of the canal was not constructed as part the original resource that dates to 1918. Three isolated historic-era features were recorded as a result of the pipeline survey: 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). Isolates are generally not considered potentially eligible resources, because of their limited ability to fulfill the NRHP/CRHR eligibility criteria. The presence of the GCID Main Canal, CBD, and the Sacramento River levee within the Delevan Pipeline Complex indicates that Project construction may have a **potentially significant impact** on an historical resource or historic property of the built environment, when compared to Existing Conditions and the Existing Conditions/No Project/No Action Condition. Operation and maintenance tasks would have **no impact** on these resources, when compared to the Existing Conditions/No

Project/No Action Condition, because any impacts on those resources would have been mitigated prior to construction.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074

It has not yet been determined if TCPs/TCRs are within the Delevan Pipeline Complex areas. Therefore, it is possible that construction activities could have a **potentially significant impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition. Operation, and maintenance tasks would have **no impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on those resources would have been mitigated prior to construction.

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

Dedicated cemeteries do not exist within the footprints of proposed Delevan Pipeline Complex facilities. However, it is remotely possible that unrecorded burials may be located within the Project area for the Complex and that Project construction would have a **potentially significant impact** on human remains, when compared to the Existing Conditions/No Project/No Action Conditions. Operation and maintenance activities would have **no impact** on human remains, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on those resources would have been mitigated during construction.

Overhead Power Lines and Substations

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

The Sites/Delevan Overhead Power Line footprint was included in the archaeological study described for the Delevan Pipeline Complex. No previously recorded archaeological resources were identified along the overhead power line route, and no archaeological resources were discovered during the survey of portions of the alignment. However, because segments of the overhead power line route have not been surveyed and because of the potential for buried sites, Project construction could result in a **potentially significant impact** on archaeological resources, pursuant to PRC Section 15064.5, when compared to the Existing Conditions/No Project/No Action Condition. Operation and maintenance of the facility would have the potential to have a **potentially significant impact** on historical resources or historic properties that are archaeological sites, when compared to the Existing Conditions/No Project/No Action Condition, if new access roads, boring, or trenching are required during maintenance activities, such as pole replacement.

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

The Sites/Delevan Overhead Power Line crosses over or near several built environment resources. From west to east, these include the WAPA, Tehama-Colusa Canal, and PG&E transmission lines; GCID Main Canal; two McDermott Road properties; CBD Canal; MID Canal; and the Sacramento River levee. The GCID Main Canal, CBD, and Sacramento River levee are all eligible for the NRHP and CRHR. As a result, depending on methods used for construction, the Project could have a **potentially significant impact** on built environment resources, when compared to the Existing Conditions/No Project/No Action Condition. Operation and maintenance tasks would have **no impact** on these resources, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on those resources would have been mitigated prior to construction.

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074

It has not yet been determined if TCPs/TCRs are within the footprints of the Sites/Delevan Overhead Power Line or other Project overhead power lines or substations. Therefore, it is possible that construction, activities could have a **potentially significant impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition. Operation and maintenance tasks would have **no impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Condition, because any impacts on those resources would have been mitigated prior to construction.

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Formal Cemeteries

Dedicated cemeteries do not exist within the footprints of the Sites/Delevan Power Line or other Project overhead power lines or substations. However, it is remotely possible that unrecorded burials may be located within the Project area for the Overhead Power Lines and Substations Complex, and that Project construction would have a **potentially significant impact** on human remains, when compared to the Existing Conditions/No Project/No Action Condition. Operation and maintenance activities would have **no impact** on human remains, when compared to the Existing Conditions/No Project/No Action Conditions, because any impacts on those resources would have been mitigated during construction.

Project Buffer

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

Most of the 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 previously described construction elements. Portions of the Project Buffer have not been surveyed due to late identification of this Project feature. It is, therefore, possible that other archaeological 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** on archaeological resources that are eligible for the CRHR or the NRHP, when compared to the Existing Conditions/No Project/No Action Condition.

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

The built environment study (Jimenez, 2013) identified four resources within the Project Buffer: two Huffmaster Road Farmsteads, 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 they 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 PRC Section 15064.5, when compared to the Existing Conditions/No Project/No Action Conditions. There would be **no impact** on the NRHP/CRHR-eligible built environment resources

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

Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074

Ethnographic studies and tribal consultations pursuant to PRC Section 21080.3.1 have not been conducted for this Project component, so it is not known if TCPs/TCRs are located within the Project Buffer. Until those studies are complete, any ground-disturbing construction, operation, or maintenance activities may have a **potentially significant impact** on TCPs/TCRs, when compared to the Existing Conditions/No Project/No Action Conditions.

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

Formal cemeteries are not present within the 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** on human remains, when compared to the Existing Conditions/No Project/No Action Conditions.

18.3.5 Impacts Associated with Alternative B

18.3.5.1 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.

18.3.5.2 Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities are included in Alternatives A and B (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operations and maintenance activities, and would, therefore, result in the same construction, operation, and maintenance impacts on cultural resources. Therefore, unless explicitly discussed below, impacts for all Project facilities are anticipated to be the same as previously discussed for Alternative A.

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, the 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/Discharge Facilities with the Delevan Pipeline Discharge Facilities, and shortens the Sites/Delevan Overhead Power Line. The Alternative B facilities' construction impacts on cultural resources that would differ from those described for Alternative A are discussed in the following sections.

Sites Reservoir Complex

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

Construction of a 1.8-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.

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 length 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 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 affect archaeological resources that would not be affected by Alternative A.

As a result, Alternative B would have a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, when compared to the Existing Conditions/No Project/No Action Condition.

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

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 or a Tribal Cultural Resource As Defined in PRC Section 21074

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

Delevan Pipeline Complex

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

Alternative B varies from Alternative A in that there would only be Delevan Pipeline Discharge Facilities, rather than the larger Delevan Intake/Discharge Facilities. Impacts on 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/Discharge Facilities in Alternative A, could potentially lessen the impact on 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, when compared to the Existing Conditions/No Project/No Action Condition.

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

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 or a Tribal Cultural Resource As Defined in PRC Section 21074

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

Overhead Power Lines and Substations

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

Under Alternative B, the proposed Sites/Delevan Overhead Power Line along the Delevan Pipeline corridor would not be constructed east of the existing WAPA or PG&E transmission lines. This reduced length would potentially result in impacts on 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 the Existing Conditions/No Project/No Action Condition.

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

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 or a Tribal Cultural Resource As Defined in PRC Section 21074

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

18.3.6 Impacts Associated with Alternative C

18.3.6.1 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.

18.3.6.2 Primary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities are included in Alternatives A and C (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operations and maintenance activities regardless of alternative and would, therefore, result in the same construction, operation, and maintenance impacts on cultural resources. Therefore, unless explicitly discussed below, impacts for all Project facilities are anticipated to be the same as previously discussed for Alternative A. The boundary of the Project Buffer would be the same for all 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 for the Sites Reservoir Inundation Area and Dams and South Bridge and Roads 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 on cultural resources as described for Alternative B.

18.3.7 Impacts Associated with Alternative D

18.3.7.1 Extended and Secondary Study Areas – Alternative D

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative D 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 D

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities in Alternative D are included in Alternatives A, B, and C (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operations and maintenance activities regardless of alternative and would, therefore, result in the same construction, operation, and maintenance impacts on cultural

resources. Therefore, unless explicitly discussed below, impacts for all Project facilities are anticipated to be the same as previously discussed for Alternative A.

The boundary of the Project Buffer would be the same for all 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; that is, the buffer would remain the same, relative to the size of the facility footprint. 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 D facilities' construction impacts on cultural resources that would differ from those described for Alternative A are discussed in the following sections.

Sites Reservoir Complex

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

Effects on archaeological resources from construction associated with road relocations and the South Bridge for Alternative D would be similar to the impacts described for Alternative A. However, the road segments providing access to Lurline Headwaters Recreation Area for the other alternatives would not be required. Alternative D also includes an additional 5.2 miles of roadway from Huffmaster Road to Leesville Road which has the potential to affect archaeological resources that would not otherwise be affected by the other alternatives.

As a result, Alternative D would have a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, when compared to the Existing Conditions/No Project/No Action Condition.

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

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 or a Tribal Cultural Resource As Defined in PRC Section 21074

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

Holthouse Reservoir Complex

All elements of the Holthouse Reservoir Complex under Alternative D would be the same as those for Alternative A; therefore, there would be no additional potential impacts on cultural resources under this alternative.

Terminal Regulating Reservoir Complex

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

The TRR for Alternative D is smaller and would be located slightly of the location identified than the other alternatives. As a result, the location of the TRR has the potential to affect archaeological sites that

would not be affected by the other alternatives. Alternative D would have a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, when compared to the Existing Conditions/No Project/No Action Condition.

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

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 or a Tribal Cultural Resource As Defined in PRC Section 21074

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

Delevan Pipeline Complex

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

Delevan Pipeline Complex facilities for Alternative D vary from the other alternatives in that the Delevan Pipeline alignment would be approximately 50 to 150 feet south of the alignment. This variance has the potential to affect archaeological sites that would not be affected by the other alternatives. Alternative D would have a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, when compared to the Existing Conditions/No Project/No Action Condition.

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

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 or a Tribal Cultural Resource As Defined in PRC Section 21074

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

Overhead Power Lines and Substations

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

The Sites/Delevan Overhead Power Line proposed under the other alternatives would not be constructed under Alternative D, except for the western end of the alignment from the proposed substation near the WAPA or PG&E transmission lines. Instead, power for the Delevan Pipeline Intake/Discharge Facilities would connect from the proposed substation near Colusa. The overhead power line would extend from the substation, north along SR 45 to the proposed Delevan Pipeline Intake/Discharge Facilities. The Alternative D overhead power line route could affect archaeological resources that would not be affected

by the other alternatives. Under Alternative D, the Delevan Overhead Power Line would have a **potentially significant impact** on NRHP/CRHR-eligible archaeological resources, when compared to the Existing Conditions/No Project/No Action Condition.

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

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 or a Tribal Cultural Resource As Defined in PRC Section 21074

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

Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries

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

18.4 Mitigation Measures

Mitigation measures are provided in the following sections and summarized in Table 18-3 for the impacts that have been identified as potentially significant.

**Table 18-3
Summary of Mitigation Measures for
Project Impacts on 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	All Primary Study Area Project Facilities	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts on Historical Resources/Historic Properties	Less Than Significant
			Mitigation Measure Cul-1b: Conduct Archaeological Data Recovery	Less Than Significant
			Mitigation Measure Cul-1c: Conduct Archaeological Construction Monitoring	Less Than Significant
			Mitigation Measure Cul-1d: Immediately Halt Construction If Cultural Resources Are Discovered and Implement a Post-review Discovery Plan	Less Than Significant
			Mitigation Measure Cul-1e: Protection of Archaeological Sites by Capping	Less Than Significant

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment	All Primary Study Area Project Facilities	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts on Historical Resources 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	Less Than Significant Less Than Significant Significant and Unavoidable If Eligible for CRHR or NRHP Listing
Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource As Defined in PRC Section 21074	All Primary Study Area Project Facilities	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts on Historical Resources Mitigation Measure Cul-3: Consult with Affected Communities regarding How to Mitigate for Impacts on TCPs/TCRs ^a	Less Than Significant Less Than Significant; or Significant and Unavoidable for Some Categories of TCPs
Impact Cul-4: Disturb Human Remains, Including Those Interred outside of Dedicated Cemeteries	All Primary Study Area Project Facilities	Potentially Significant	Mitigation Measure Cul-1a: Avoid Impacts on Historical Resources Mitigation Measure Cul-4a: Relocation of Dedicated or Known Cemeteries Mitigation Measure Cul-4b: Immediately Halt Construction If Human Remains Are Discovered and Implement a Burial Treatment Plan	Less Than Significant Less Than Significant; or Significant and Unavoidable for Some Categories of TCPs Less Than Significant

^aMitigation Measure Cul-3 is pending consultation with tribes.

Note:

LOS = Level of Significance

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

If feasible, impacts on identified historical resources/historic properties, including prehistoric and historic-era archaeological sites, buildings and structures, TCPs/TCRs, 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. These measures would be

implemented after consultation with Native American tribes or other affected communities, as appropriate.

Mitigation Measure Cul-1b: Conduct Archaeological Data Recovery

If it is infeasible to avoid impacts on 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 will be conducted. This work shall be directed by a qualified archaeologist who meets the U.S. Secretary of Interior's professional standards, and may 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 the California Code of Regulations 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.

Mitigation Measure Cul-1c: Conduct Archaeological Construction Monitoring

A qualified archaeological and Native American monitor (as appropriate for a given location) shall be retained to monitor all ground disturbing activities associated with the Project. If any important prehistoric or historic-era features, or human remains, are exposed during construction, the archaeological monitor shall have the authority to notify the appropriate contractor supervisor to stop work in the vicinity of the find and implement Mitigation Measure Cul-1d.

Details of the construction monitoring shall be presented in the Post Review Discovery Plan described for Mitigation Measure Cul-1d: Immediately Halt Construction If Cultural Resources Are Discovered, and Implement a Post-review Discovery Plan.

Mitigation Measure Cul-1d: Immediately Halt Construction If Cultural Resources Are Discovered, and Implement a Post-review 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 shall be outlined in a Post Review Discovery Plan. If important 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 in coordination with the appropriate contractor supervisor 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 an 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 shall be detailed in a Post Review Discovery Plan developed at least 3 months 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 in the following sections for Mitigation Measure Cul-4b.

At a minimum, the Post Review Discovery Plan shall describe (1) materials to be covered in the archaeological sensitivity training included in the Worker Environmental Awareness Program (see Chapter 3 Description of the Sites Reservoir Project Alternatives), (2) protocols for monitoring construction, including documentation and chain-of-command notifications, (3) procedures for securing an area where cultural remains are discovered, (4) procedures for evaluating the nature of the finds, and (5) the schedule for notifications and conducting activities associated with evaluating the finds.

Mitigation Measure Cul-1e: 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 may 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, may 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. Potential capping methods would be assessed according to the resource type and circumstance, as determined by a qualified archeologist after consultation with affected parties, such as Native American tribes, as appropriate.

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, when feasible, 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

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. Some methods for documentation may include photographs, architectural drawings, or development of an historical narrative.

Mitigation Measure Cul-3: Consult with Affected Communities regarding How to Mitigate for Impacts on TCPs/TCRs

[Mitigation Measure Cul-3 is pending consultation with tribes.] TCPs/TCRs are often locations on the landscape that have sacred or other special meaning to Native American communities. Visible manifestations, 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 on TCPs/TCRs.

TCPs are not always associated with Native American tribes, and TCPs in the Project area may be associated with the early settlers and ranching families. If such TCPs are identified in the Project area, mitigation measures shall be developed in consultation with the affected communities.

Mitigation Measure Cul-4a: Relocation of Dedicated or Known Cemeteries

The Authority shall consult with the entity (County, City, private) and interested parties, as appropriate, that have jurisdiction over any cemetery that requires relocation of human remains, in order to identify a satisfactory place that is protected from future disturbance, according to the requirements of the California Health and Safety Code. Similarly, if Native American burials are known to exist in a specific location, marked or unmarked, the Authority shall work with the appropriate tribe(s) having a traditional and cultural affiliation with the cemetery to identify a satisfactory location for re-interment of burials in a protected location, if that is the desire of the tribe(s) affiliated with the cemetery.

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 on 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 shall 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 NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). Pursuant to the provisions of PRC Section 5097.98, the NAHC will identify a Most Likely Descendent (MLD). The MLD designated by the NAHC will 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 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 of Native American origin are uncovered during Project construction. If human remains that are not of Native American origin are discovered, disposition of the remains shall be determined in consultation with the Coroner or possible descendants, if they can be identified.

Implementation of **Mitigation Measures Cul-1a, Cul-1b, Cul-1c, Cul-1d, Cul-2a, Cul-2b, Cul-3, Cul-4a, and Cul-4b** would reduce the level of significance of most Project impacts on cultural resources to **no impact** or a **less-than-significant impact**; however, some impacts could remain **potentially significant and unavoidable**. Implementation of *Mitigation Measure Cul-2b: Record Built Environment Resources* will lessen impacts to built environment resources that are eligible for listing in the NRHP or CRHR, but demolition of these resources would remain a **significant and unavoidable** impact. Implementation of *Mitigation Measure Cul-3: Consult with Affected Communities Regarding How to Mitigate for Impacts on TCPs/TCRs* will lessen the impacts to TCPs/TCRs, but in some cases may not avert **significant and unavoidable** impacts, particularly if the resource is destroyed by Project construction. Similarly, implementation of *Mitigation Measure Cul-4a: Relocation of Dedicated or Known Cemeteries* will lessen Project impacts to most cemeteries, but for those that are also TCPs/TCRs, impacts may remain **significant and unavoidable**.