Long-Term Operation – Draft Environmental Impact Statement

Appendix K – Cultural Resources Technical Appendix

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Appendix K Cultural Resources Technical Appendix

K.1 Background Information

This appendix documents the cultural resources and Indian Sacred Sites technical analysis to support the impact analysis in the Environmental Impact Statement (EIS).

K.1.1 Prehistoric Context

K.1.1.1 Introduction to the Prehistoric Context

The study area has a long and complex cultural history with distinct regional patterns that extend back more than 11,000 years (Bureau of Reclamation 1997). The first generally agreed upon evidence for the presence of prehistoric peoples in the study area is represented by the distinctive fluted spear points called Clovis points. These artifacts have been found on the margins of extinct lakes in the San Joaquin Valley. The Clovis points are found on the same surface as the bones of animals that are now extinct, such as mammoths, sloths, and camels. The subsequent period from about 10,000 to 8,000 years before present (BP) is characterized in the archaeological record by a small number of sites with stemmed spear points instead of fluted spear points. Approximately 8,000 years ago, many California cultures shifted the main focus of their subsistence strategies from hunting to seed gathering as evidenced by the increase in food-grinding implements found in archaeological sites dating to this period. In the last 3,000 years, the archaeological record has become more complex as specialized adaptations to locally available resources were developed and populations expanded. Many sites dated to this time period contain mortars and pestles or are associated with bedrock mortars, implying that the occupants exploited acorns intensively. The range of subsistence resources that were used increased, exchange systems expanded, and social stratification and craft specialization occurred as indicated by well-made artifacts such as charm stones and beads, which were often found with burials.

K.1.1.2 Prehistory of the Trinity River Region

The Trinity River region includes portions of Trinity County including Trinity Lake, Lewiston Reservoir, and Trinity River from Lewiston Reservoir to the Humboldt County boundary (near the eastern boundary of Hoopa Valley Indian Reservation); portions of Humboldt County including the Hoopa Valley Indian Reservation, Trinity River from the Humboldt County border to the Del Norte County border (near the confluence of the Trinity and Klamath rivers); and Del Norte County including the lower Klamath River from the confluence with the Trinity River to the Pacific Ocean.

The area surrounding the present-day Trinity Lake and the Trinity River to its confluence with the Klamath River and along the Klamath River to the Pacific Ocean was inhabited by the Wintu, Chimariko, Yurok, and Hoopa Indians at the time of Euroamerican contact.

K.1.1.3 Prehistory of the Central Valley

For the purposes of this analysis, the Central Valley region encompasses the Sacramento Valley, San Joaquin Valley, and San Francisco Bay/Sacramento–San Joaquin Delta Estuary (Bay-Delta) regions of the study area. The Sacramento Valley and San Joaquin Valley are divided into Eastern and Western subregions. Sacramento Valley comprises the upper Sacramento River, American River, and Feather River. The San Joaquin Valley comprises the San Joaquin and Stanislaus River regions.

Prehistory of the Sacramento Valley

The western Sierra Nevada foothills appear to have been first used by Great Basin people around 8000 BP (Bureau of Reclamation 1997). By approximately 4000 BP, people possibly from the Great Basin were seasonally hunting and gathering in the Sierra Nevada and the Sacramento Valley.

In the northwestern portion of Sacramento Valley, between approximately 12,000 and 150 years ago (12,000 to 100 BP), the prehistoric societies of Northern California underwent a series of slow but significant changes in subsistence and economic orientation, population densities and distribution, and social organization. These changes are thought to reflect migrations of various peoples into the area and displacement of earlier populations (Jensen and Reed 1980; Farber 1985; Bureau of Reclamation 1997). Early archaeological investigations within Nomlaki and Wintu ethnographic territory, particularly the present-day Redding area and adjacent tracts of the southern Klamath Mountains, appear to indicate that human occupation of this area began approximately 1050 to 950 BP.

Little is known of human occupation on the floor of the Sacramento Valley prior to 4500 BP (Bureau of Reclamation 1997). Because of alluvial and colluvial deposition over the past 10,000 years, ancient cultural deposits have been deeply buried in many areas. Initially, humans appeared to adapt to lakes, marshes, and grasslands environments until approximately 8,000 to 7,000 BP (Placer County 2007). The earliest evidence of widespread villages and permanent occupation of the lower Sacramento Valley, Sacramento–San Joaquin Delta (Delta), and Suisun Marsh areas comes from several sites assigned to the Windmiller Pattern (previously, “Early Horizon”), dated circa 4500 to 2500 BP (Ragir 1972; Bureau of Reclamation 1997; Bureau of Reclamation et al. 2010).

From circa 2500 to 1500 BP in the Central Valley area, villages were characterized by deep midden deposits, suggesting intensified occupation and a broadened subsistence base (Bureau of Reclamation 1997, 2005a; Bureau of Reclamation et al. 2010; Beardsley 1948; Heizer and Fenenga 1939; Moratto 1984).

During the late prehistoric period from 1500 to 100 BP, development may have been initiated due to the southward expansion of Wintuan populations into the Sacramento Valley (Moratto 1984; Bureau of Reclamation 1997; Bureau of Reclamation et al. 2010). The period is characterized by intensified hunting, fishing, and gathering subsistence with larger communities, highly developed trade networks, elaborate ceremonial and mortuary practices, and social stratification.

Prehistory of the San Joaquin Valley

Evidence of prehistoric occupation of the central and southern Sierra Nevada foothills goes back to 9,500 years ago. The vast majority of investigated sites, however, are less than 500 years old, probably representing a relatively recent proliferation of settlements by Yokut Indians (Moratto 1984; Bureau of Reclamation 1997). The chronological sequence developed in the south-central Sierra Nevada as a result of the Buchanan Reservoir project in present-day Madera County is still used as a general framework (Bureau of Reclamation 1997). Similar findings were identified in major settlement sites along the San Joaquin River and in the present-day New Melones Reservoir area (Bureau of Reclamation 2010; Bureau of Reclamation and California Department of Water Resources 2011a).

During the early Holocene period (10,000 to 12,000 years ago), people probably inhabited or passed through the San Joaquin Valley; however, few indications of this period have been discovered, probably due to burial beneath accumulated river sediment (Bureau of Reclamation 1997, 2013). Examples of early Holocene cultural remains are known primarily from the Tulare Basin in the southern San Joaquin Valley. Evidence along the southern shoreline of the ancient Tulare Lake indicates that human presence may have occurred from 11,000 BP (Bureau of Reclamation and California Department of Parks 2013).

From approximately 1650 to 950 BP, there is evidence that the people of the eastern San Joaquin Valley may have interacted with people in the Delta area (Bureau of Reclamation 1997, 2013).

From approximately 450 to 100 BP, the people of the eastern San Joaquin Valley may have interacted with people in the Central Coast and Southern California areas. Material found in Pacheco to Panoche strata indicates a trade relationship with people of the Delta, Central Coast, and Southern California regions (Moratto 1984; Bureau of Reclamation 1997, 2013).

Prehistory of the Bay-Delta Region

The prehistory context is different throughout the Bay-Delta region. Human occupation in the northern valley regions of present-day San Benito County occurred as described above for the western San Joaquin Valley (San Benito County 2010).

Human occupation in the coastal regions of present-day Contra Costa and Alameda Counties occurred as described above for the southern portion of the Sacramento Valley (Bureau of Reclamation 1997; California Department of Water Resources 2008; Zone 7 Water Agency 2006). From 5000 to 2500 BP, dense settlements extended from the coastal marshes to interior grasslands and woodlands (Zone 7 Water Agency 2006). From about 2500 to 950 BP, coastal communities relied upon shellfish, and major shellmounds were created near these communities, including near the present-day Alameda County shorelines and some interior valleys.

Settlement of the interior valleys of the present-day Contra Costa, Alameda, and Santa Clara Counties occurred during the past 12,000 years. From 6000 to 1700 BP, settlements occurred, as there was less emphasis on nomadic hunting for large animals and increased emphasis on the use of plant materials and hunting, fishing, and shellfish collection (Santa Clara County 2012; Contra Costa Water District et al. 2009). The communities established economies and traded between the communities.

K.1.2 Ethnographic Context

K.1.2.1 Introduction to Ethnographic Context

This section provides brief ethnographic sketches for each native cultural group whose traditional territories are within the study area. Each ethnographic sketch presents the territorial limits of each respective cultural group and then focuses mainly on those aspects of culture that are potentially represented in the archaeological record.

The study area encompasses lands occupied by more than 40 distinct Native American cultural groups. Although most California tribes shared similar elements of social organization and material culture, linguistic affiliation and territorial boundaries primarily distinguish them from each other. Before European settlement of California, an estimated 310,000 native Californians spoke dialects of as many as 80 distinct languages representing six major North American language stocks (Sturtevant and Heizer 1978; Moratto 1984; Bureau of Reclamation 1997).

K.1.2.2 Ethnography of the Trinity River Region

The Trinity River region includes portions of Shasta, Trinity, Siskiyou, Humboldt, and Del Norte Counties. This area is bounded by the Sacramento River on the east, the Pacific Ocean on the west, and the middle and upper Klamath Basin on the north. The ethnography of the Yurok, Hoopa, Wintu, and Chimariko is described below.

Yurok

The Yurok inhabited California's northwestern coastline from Little River to Damnation Creek; along the Klamath River from the confluence with the Pacific Ocean up past the Klamath-Trinity confluence to Slate Creek; and approximately 6 miles along the Trinity River upstream of the confluence with the Klamath River (Sturtevant and Heizer 1978; U.S. Fish and Wildlife Service et al. 1999). The Yurok life, communities, society, and ceremonies are deeply connected with the Klamath River (U.S. Department of the Interior and California Department of Fish and Wildlife 2012). Yurok culture and traditional stories describe that the Klamath River was created to facilitate the interaction with two neighboring people, the Hoopa and the Karuk, and with the salmon that lived in the Klamath River. Both the Hoopa and Karuk culture and traditional stories also describe this close interaction of the peoples, salmon, and Klamath River.

Yurok are recognized for their highly stylized art forms and their skills in making redwood canoes, weaving fine baskets, hunting, and especially riverine salmon fishing. The ancient traditions are continued through contemporary times (U.S. Fish and Wildlife Service et al. 1999). The redwood canoes for ocean conditions can be 30 to 40 feet in length, designed to haul large amounts of fish and seal carcasses, and paddled by 5 to 20 paddlers (U.S. Department of the Interior and California Department of Fish and Game 2012). The canoes are used to gather food and materials, transport people and materials, and for ceremonial aspects of the Yurok culture. The Jump and Deerskin ceremonies are held in late fall to give thanks for abundant food supplies. The Deerskin Ceremony includes a Boat Ceremony in which the participants travel down the Klamath River to thank the river for continuing to flow and provide resources.

Hoopa

The Hoopa inhabited the area surrounding the lower reaches of the Trinity River from approximately Salyer to approximately 6 miles upstream from the confluence with the Klamath River (Sturtevant and Heizer 1978; U.S. Fish and Wildlife Service et al. 1999). Hoopa life is defined by extended families affiliated with villages. The majority of the tribe are members of the Hoopa Valley Tribe.

The Hoopa believe that the Klamath and Trinity rivers were created to provide interaction with other peoples (Yurok and Karuk) and with the salmon (U.S. Department of the Interior and California Department of Fish and Game 2012). Many of the Hoopa ceremonies highlight their relationship with the rivers, including world renewal ceremonies and ceremonies for bountiful harvests. The world renewal ceremonies include the White Deerskin and Jump ceremonies to honor the earth and the creator for providing food and other resources. The ceremonies for bountiful harvest of fish and acorns include the First Salmon Ceremony and the Acorn Feast.

Wintu

When the Europeans and Americans first explored California, most of the western side of the Sacramento Valley north of about Suisun Bay was inhabited by Wintun-speaking people (U.S. Fish and Wildlife Service et al. 1999). Early in the anthropological study of the region, a linguistic and cultural distinction was recognized between the Wintun-speaking people in the southwestern Central Valley (the Patwin) and the people occupying the northwestern Central Valley and Trinity River Valley (Sturtevant and Heizer 1978; U.S. Fish and Wildlife Service et al. 1999).

Chimariko

The Chimariko lived in a 20-mile-long reach of the Trinity River from approximately Big Bar to the confluence with the South Fork (Sturtevant and Heizer 1978; U.S. Fish and Wildlife Service et al. 1999). Although the Chimariko language is now extinct, early ethnographers recorded some words, and the language is thought to be of Hokan stock.

K.1.2.3 Ethnography of the Central Valley Region

Ethnography of the Sacramento Valley

Maidu, Konkow, and Nisenan

Maidu (also known as northeastern Maidu), Konkow (also known as northwestern Maidu), and Nisenan (also known as southern Maidu) inhabited an area of California from Lassen Peak to the Cosumnes River, and from the Sacramento River to Honey Lake (Bureau of Reclamation 1997; Sturtevant and Heizer 1978). Northeastern Maidu territory extended from Lassen Peak on the west to Honey Lake on the east, Sierra Buttes on the south, and Eagle Lake on the north. The Konkow inhabited the region from the lower Feather River in the north, to the Sutter Buttes in the south, and to the west beyond the Sacramento River. The Nisenan lived in the area east of the Sacramento River and along the Middle Fork Feather River, Bear River, American River, and Cosumnes River from the Sacramento River almost to Lake Tahoe (Sturtevant and Heizer 1978; Bureau of Reclamation 1997, 2005b).

Yana

The Yana of northcentral California inhabited an area from Lassen Peak and the southern Cascade foothills on the east, Rock Creek on the south, Pit River on the north, and the eastern bank of the Sacramento River on the west. The western boundary is the most uncertain (Sturtevant and Heizer 1978; Bureau of Reclamation 1997).

Achumawi, Atsugewi, and Shasta

The Achumawi and Atsugewi of northeastern California are two linguistically and culturally distinct but related groups (Bureau of Reclamation 1997). The Achumawi and Atsugewi languages belong to the Palaihnihan family, or Hokan stock. The territory of the Achumawi extended generally to Mount Lassen, west to Mount Shasta, northeast to Goose Lake, and east to the Warner Range (Kroeber 1925; Sturtevant and Heizer 1978; Bureau of Reclamation 1997). Overlapping this area to some extent, the Atsugewi territory ranged from Mount Lassen in the southwest, the Pit River in the north, and Horse Lake to the east.

The Shasta peoples were originally thought to be associated with the Achumawi and Atsugewi but then were considered as a separate group (Kroeber 1925; Bureau of Reclamation 1997; Sturtevant and Heizer 1978). The Shasta peoples inhabited the area from southern Oregon at the Rogue River, south to the present-day Cecilville, and the area between the Marble and Salmon mountains to Mount Shasta in the west and the Cascade Range in the east. In California, the core areas of settlement were in Shasta Valley, Scotts Valley, and along the Klamath River from about Scotts River to the town of Hornbrook (Sturtevant and Heizer 1978).

Plains Miwok

The Eastern Miwok, and more specifically the Plains Miwok, inhabited the lower reaches of the Mokelumne and Cosumnes Rivers, and the banks of the Sacramento River from Rio Vista to Freeport (Sturtevant and Heizer 1978: 398).

Although the Plains Miwok shared a common language and cultural background, they comprised several separate, politically independent nations, or tribelets (the primary political unit). The tribelet represented an independent, sovereign nation that defined and defended a territory. The tribelet chief, usually a hereditary position, served as the voice of legal and political authority in the tribelet (Sturtevant and Heizer 1978: 410).

The Eastern Miwok village comprised various structures. For houses, conical structures of bark were used in the mountains, and conical structures of tule matting were used in the lower elevations of the central Sierra. Semi-subterranean, earth-covered dwellings served as winter homes. Also within the Miwok settlement were assembly houses, sweathouses, acorn granaries, menstrual huts, and conical grinding huts over bedrock mortars (Sturtevant and Heizer 1978:408–409).

The Spanish mission system forcibly assimilated many Plains Miwok circa 1811 to 1836 (Bennyhoff 1977). With the arrival of trappers, gold miners, and other settlers to California, the Miwok suffered exposure to introduced diseases. While some hostilities occurred between the Sierra Miwok and miners, other Miwok groups became involved in agricultural operations on the newly developing large land grants. After California was annexed by the United States, some Miwok were displaced to Central Valley locations, yet many remained on the rancherias

established in the Sierra Nevada foothills. During the late nineteenth and early twentieth centuries, the Miwok living on the foothill rancherias adapted to new lifestyles, such as seasonal wage labor on ranches and farms, to augment subsistence through hunting and gathering (Sturtevant and Heizer 1978: 400–401). Since the early twentieth century, many persons of Miwok descent survive and maintain strong communities and action-oriented organizations (see also Bennyhoff 1977).

Nomlaki

Two major divisions existed among the Nomlaki: the River and Hill Nomlaki (Sturtevant and Heizer 1978; DuBois 1935; Bureau of Reclamation 1997). The River Nomlaki occupied the Sacramento River Valley in present-day eastern Tehama County. The Hill Nomlaki occupied the eastern side of the Coast Ranges in present-day Tehama and Glenn Counties. The Nomlaki and Wintu conducted trading between the peoples (Sturtevant and Heizer 1978; DuBois 1935; Bureau of Reclamation 1997).

Patwin

The Patwin lived along the western side of the Sacramento Valley from present-day Princeton to Benicia, including Suisun Marsh (Kroeber 1925; Bureau of Reclamation 1997; Bureau of Reclamation et al. 2010). Within this large area, the Patwin have traditionally been divided into River, Hill, and Southern Patwin groups. Settlements generally were located on high ground along the Sacramento River or tributary streams, or in the eastern Coast Range valleys. The ethnographically recorded villages of Aguasto and Suisun were located near San Pablo and Suisun bays (Sturtevant and Heizer 1978; Bureau of Reclamation 1997; Bureau of Reclamation et al. 2010).

Ethnography of the San Joaquin Valley

Eastern Miwok

The Miwok cultures in present-day California include the Coast Miwok, Lake Miwok, and Eastern Miwok divisions. The Eastern Miwok included five separate groups (Bay, Plains, Northern Sierra, Central Sierra, and Southern Sierra) that inhabited the area from present-day Walnut Creek in Contra Costa County and the Delta, along the lower Mokelumne and Cosumnes Rivers and along the Sacramento River from present-day Rio Vista to Freeport, the foothill and mountain areas of the upper Mokelumne River and Calaveras River watersheds, the upper Stanislaus River and Tuolumne River watersheds, and the upper Merced River and Chowchilla River watersheds, respectively (Sturtevant and Heizer 1978; Bureau of Reclamation 1997). No one Miwok tribal organization encompassed all the peoples speaking Miwokan languages, nor was there a single tribal organization that encompassed an entire division.

Yokuts

Yokuts are a large and diverse group of people in the San Joaquin Valley and Sierra Nevada foothills of central California, including the Southern San Joaquin Valley Yokuts, Northern San Joaquin Valley Yokuts, and Foothill Yokuts (Bureau of Reclamation 1997; Bureau of Reclamation et al. 2011; San Joaquin River Restoration Program 2011). The three subdivisions of the Yokuts languages belong to the Yokutsan family, or Penutian stock (Sturtevant and Heizer 1978).

The Southern Valley Yokuts inhabited the southern San Joaquin Valley from present-day Fresno to the Tehachapi Mountains (Sturtevant and Heizer 1978). The Northern Valley Yokuts inhabited the northern San Joaquin Valley from Bear Creek to the San Joaquin River near present-day Mendota, western San Joaquin Valley near present-day San Luis Reservoir, and eastern present-day Contra Costa and Alameda Counties (East Contra Costa County Habitat Conservation Plan Association and U.S. Fish and Wildlife Service 2006; Sturtevant and Heizer 1978; Bureau of Reclamation and California Department of Water Resources 2011a). The Foothill Yokuts inhabited the western slopes of the Sierra Nevada foothills from the Fresno River to the Kern River (Sturtevant and Heizer 1978; Bureau of Reclamation and California Department of Parks 2013). Yokuts were mobile hunters and gatherers with semipermanent villages and seasonal travel corridors to food sources.

Dumna and Kechayi

The Dumna and Kechayi lived along the San Joaquin River in the Sierra Nevada foothills near present-day Millerton Lake (Bureau of Reclamation and California Department of Parks 2013).

Ethnography of the San Francisco Bay-Delta Region

Native inhabitants of the Bay-Delta region include the Miwok, Cholvon Northern Valley Yokuts, and the Costanoan Indians (Bureau of Reclamation 1997; Contra Costa Water District et al. 2009; East Contra Costa County Habitat Conservation Plan Association and U.S. Fish and Wildlife Service 2006; East Bay Municipal Utility District 2009; Bureau of Reclamation 2005b; Santa Clara County 2012; San Benito County 2013).

Miwok

In the Bay-Delta region, the Coast Miwok people lived along lower San Joaquin River and San Pablo Bay and in the interior of the present-day Contra Costa and Alameda Counties (Bureau of Reclamation 1997; East Contra Costa County Habitat Conservation Plan Association and U.S. Fish and Wildlife Service 2006; Sturtevant and Heizer 1978). The Bay Miwok villages were located in the San Ramon Valley with other settlements on the western slopes of the Diablo Range. The Volvons, speakers of the Bay Miwok language, settled along Marsh Creek and Kellogg Creek on the northern side of the Diablo Range and near the present-day Los Vaqueros Reservoir (Contra Costa Water District et al. 2009). The Miwok people may have held lands at the peak of Mount Diablo.

Costanoan

The Costanoans (also known as Ohlone) are a linguistically defined group with several autonomous tribelets that speak related languages (Sturtevant and Heizer 1978; Bureau of Reclamation 1997; East Bay Municipal Utility District 2009; Zone 7 Water Agency 2006; Santa Clara County 2012). The Costanoans inhabited coastal shorelines along San Francisco, San Pablo, and Suisun Bay and along the Pacific Ocean Coast from the Golden Gate to Monterey Bay and interior valleys that extended approximately 60 miles inland, including areas within Santa Clara and San Benito Counties (Bureau of Reclamation 1997; East Contra Costa County Habitat Conservation Plan Association and U.S. Fish and Wildlife Service 2006; San Benito County 2010).

K.1.3 Historical Context

The historical context presented in this section is focused on historical activities and resources that affected and/or were affected by operation of Central Valley Project (CVP) and State Water Project (SWP). Changes in CVP and SWP operations under implementation of alternatives considered in this EIS could change how CVP and SWP facilities are operated. These changes also could affect regional and local water supplies, reservoirs, and associated land uses of those that use CVP and SWP water.

K.1.3.1 Introduction to Historical Context

Initial contact with Europeans and Americans occurred with Spanish missionaries and soldiers, who entered California from the south in 1769, eventually founding 21 missions along the California coast (Bureau of Reclamation 1997). This period is characterized by the establishment of missions and military presidios, the development of large tracts of land owned by the missions, and subjugation of the local Native American population for labor. This way of life began to change in 1822 when Mexico became independent of Spain. The mission lands were divided by government grants into large ranchos often consisting of tens of thousands of acres. The owners of these large *estancias* built homes, often of adobe, and maintained large herds of cattle and horses.

During the Spanish and Mexican periods, explorers entered the region. Fort Ross on the Sonoma coast was established by the Russians from 1812 until 1841 to support hunting, fishing, and whaling businesses (Bureau of Reclamation 1997). American explorer Jedediah Smith and Peter Skene Odgen, chief trader for the Hudson Bay Company, with other members of the Hudson Bay Company, also came to California during this period.

In 1848, the Treaty of Guadalupe Hidalgo transferred the lands of California from the Mexican Republic to the United States and initiated what is called the American Period in California history (Bureau of Reclamation 1997). During that same year, gold was discovered in the foothills of the Sierra Nevada, and thousands of hopeful miners as well as storekeepers, settlers, and farmers entered the region. Mining in the Trinity River region was expanded for both gold and copper mines (Placer County 2007).

To support this growth, extensive transportation systems were created to support wagon routes, steamboats on the major rivers, and numerous railroads (Bureau of Reclamation 1997). Many of the supply centers and shipment points along these transportation corridors developed into cities, towns, and settlements. Logging and ranching also expanded to meet the needs of the new settlers. American ranchers found Central California ideally suited for grazing large herds of stock. During the latter part of the nineteenth century, American ranchers amassed large tracts of former rancho land, and several great cattle empires were formed. As settlements grew, farming increased. A primary constraint to expansion of crop diversity and areas under cultivation was the lack of water. Irrigation was virtually unknown in California until the 1880s, when large-scale irrigation systems were developed to improve agriculture yields. With the development of irrigation and improved transportation, new crops were added to the grains obtained from dry farming, including vegetables, fruits, and nuts.

Irrigation capabilities further expanded in the 1950s and 1960s with the implementation of multiple water projects. The availability of water also expanded the agricultural and urban water supplies in the Central Valley and Bay-Delta regions.

K.1.3.2 History of the Trinity River Region

Explorers from the Philippines and Europe may have visited and interacted with the Yurok people as early as the late 1700s. Peter Skene Odgen and Jedediah Smith initially visited the lower and middle Klamath River reaches in the 1820s. In 1828, Jedediah Smith and his party of explorers were the first white men known to have visited the Trinity River watershed (U.S. Fish and Wildlife Service et al. 1999).

Although the area was first used extensively by trappers, gold was discovered on the Trinity River in 1848, and by the late 1840s, gold mining was a major activity along the Trinity River (Hoover et al. 1990; Del Norte County 2003; U.S. Fish and Wildlife Service et al. 1999). Weaverville was the center of gold mining activity after 1849 with numerous mining camps and settlements along the Trinity River. Mining continued along the Trinity River through the early and mid-1900s with large-scale dragline and bucket dredging operations beginning in 1939. Logging has occurred since the 1880s and continues in the Trinity River region. These activities resulted in significant changes to rivers and may have caused the destruction of many prehistoric or historic archaeological sites (Hoover et al. 1990).

Increased activities within the Trinity River region led to conflicts between the new residents and the Yurok and Hoopa people. On November 16, 1855, the Klamath Indian Reservation was established by Executive Order for lands from the mouth of the Klamath River to a location upstream of Tectah Creek that extended one mile wide on either side of the river for the approximately 20-mile reach (U.S. Department of the Interior and California Department of Fish and Game 2012). The Hoopa Valley Reservation was established in 1864 and expanded in 1891 to include lands from the mouth of the Klamath River to the Hoopa Valley that extended one mile wide on either side of the river including portions of the Klamath Indian Reservation. In 1988, the Hoopa-Yurok Settlement Act (Public Law 100-580) partitioned portions of the previously established reservations into the Yurok Indian Reservation and Hoopa Valley Reservation and established the Resighini Rancheria.

K.1.3.3 History of the Central Valley Region

History of the Sacramento Valley

Europeans, Americans, and Canadians may have initially entered the Sacramento Valley in the late 1700s and early 1800s as part of missionary or military expeditions (Bureau of Reclamation 1997, 2005a; Bureau of Reclamation et al. 2006; Placer County 2007). By 1776, José de Cañizares explored areas located south of the present-day Sacramento community, and in 1813, there was a major battle between the Spanish and the Miwok people near the confluence of the Cosumnes River along the Sacramento River. Fur trappers moved through this area from the 1820s to 1840s.

The first settlements in this area occurred in the 1830s and 1840s on Mexican Land Grants. The New Helvetica Land Grant, which included more than 40,000 acres in the Sacramento Valley, was awarded to John Sutter in 1841 (Delta Stewardship Council 2011).

Following the discovery of gold on the New Helvetica Land Grant in 1848 near present-day Coloma, numerous mining-related settlements were established in areas with the Nisenan, Maidu, Konkow, and Atsugewi people in the eastern portion of the Sacramento Valley and in areas with the Nomlaki and Wintu people in the western Sacramento Valley. Many of the Native Americans died after exposure to diseases from the new settlers, including malaria. Numerous other Native American died during battles against the new settlers.

Mining activities in the northern Sacramento Valley foothills and mountains near present-day Redding primarily were related to gold and copper (Bureau of Reclamation 2013). Mining activities in the central Sierra Nevada foothills primarily were related to gold. In 1848, mining started along the Trinity River and upper Sacramento River tributaries, primarily for copper and gold (Bureau of Reclamation 2013; Bureau of Reclamation et al. 2006). Smelters, mills, and communities grew rapidly near the mining areas, including the town of Keswick, and communities were established within and adjacent to present-day Folsom Reservoir. The development of hydraulic mining in 1851 required establishment of substantial water diversions, flumes, and ditches to convey the water and displacement of vast amounts of sediment into the streams and along the banks of the waterways.

Logging also was a dominant industry in the western Sacramento Valley since the 1850s (Bureau of Reclamation 1997, 2013). The logging industry grew as the railroads were extended. Establishment of logging in the Sierra Nevada foothills and mountains also led to development of water infrastructure to move and/or mill the logs. One of the first water system infrastructures developed for these purposes was the original Folsom Dam constructed in 1893 (Bureau of Reclamation et al. 2006).

Agricultural activities were successful throughout the Sacramento Valley to serve the mining communities (Bureau of Reclamation 1997). The completion of the first transcontinental railroad in 1869 increased the number of settlers and allowed transport of crops from the Sacramento Valley to Nevada, Utah, and subsequently to other areas of the nation (Bureau of Reclamation 2005b). The expanded agricultural markets expanded due to the establishment and development of commercial crops, accessibility to markets, and new farming techniques and irrigation.

Construction of hydroelectric power and water storage facilities in the Sacramento Valley foothills started in the early 1900s to provide hydropower and water supplies to local and regional users, as well as export to other portions of the state using the CVP, SWP, City and County of San Francisco, and East Bay Municipal Utility District facilities. The CVP, which is comprised of a system of dams, power plants, canals, pumping plants, and associated structures, was determined eligible for listing on the National Register of Historic Places (NRHP) in 2018 under Criteria A, B, and C (Bureau of Reclamation 2018: 65-79, 105-109). The SWP facilities, including intake channels, reservoirs, pumping plants, aqueducts, and other components are likely eligible for NRHP listing under Criteria A and C for their role in an expansive engineered water conveyance campaign of the 20th century (ICF 2022, Delta Conveyance Project EIR 19-25).

History of the San Joaquin Valley

The San Joaquin Valley area was not widely settled by Europeans or Mexicans when California lands were under Spanish rule (1769 to 1821) or Mexican rule (1821 to 1848). Numerous expeditions traveled through the San Joaquin Valley during this period but did not establish major settlements (Bureau of Reclamation 2010). During the Spanish rule, several settlements occurred along Fresno Slough (Bureau of Reclamation and California Department of Water Resources 2011a). There were several settlements along the San Joaquin River and along the western boundary of the San Joaquin Valley during Mexican rule when ranches were established in the Coast Range foothills, including in Pacheco Pass and along Los Banos Creek.

In the latter half of the nineteenth century, agricultural settlements and mining camps were established in the San Joaquin Valley along the railroad corridors (Bureau of Reclamation 1997; Bureau of Reclamation and California Department of Water Resources 2011a). The town of Rootville, subsequently renamed Millerton in honor of Major Miller, was established near the present-day Millerton Lake with a military post, Camp Barbour (later named Fort Miller) to maintain order in the mining camps.

Initially, agricultural activities were related to ranching and dry farming. Livestock ranching expanded in the late 1860s (Bureau of Reclamation and California Department of Water Resources 2011b). With the increased availability of electric pumps, groundwater and surface water irrigation was used throughout the valley. Many irrigation districts were formed after the passage of the Wright Act in 1877 that provided methods to finance major irrigation projects. One of the first irrigation systems constructed in the eastern San Joaquin Valley was the "Main Canal" as part of the Miller and Lux's San Joaquin and Kings River Canal and Irrigation Company (Bureau of Reclamation and California Department of Parks 2013). Water and aquatic resources management played a critical role in the economic development of the region. The Friant Division of the CVP diverted the flow of the San Joaquin River and provided water for irrigation. The main features of the Friant Division are the Friant Dam (constructed 1930-42), the Friant-Kern Canal (constructed 1945-51), and the Madera Canal (constructed 1940-45).

Historic resources are related to the settlement of the valley and include homesteads, transportation infrastructure (such as ship landings, ferry ports, and bridges), food processing and other industrial facilities, residential properties, commercial establishments, mining features (in the eastern portion), and government facilities (Bureau of Reclamation 1997, 2010; Bureau of Reclamation and California Department of Water Resources 2011a).

History of the Delta and Suisun Marsh

Communities were not established in the Delta and Suisun Marsh areas until the mid-1800s. There were numerous Spanish expeditions under Spanish rule. In the 1830s and 1840s, Mexico established land grants, including Rancho Suisun located west of present-day City of Fairfield (Bureau of Reclamation et al. 2010).

Following the discovery of gold in the Sacramento Valley, settlements occurred in the Delta to provide support services and agricultural products for those traveling to the gold fields and the Sacramento and San Francisco areas. Passage of the Swamp and Overflow Act in 1850 led to the transfer of lands from the U.S. Government in the Delta to the State of California (California), which subsequently sold the land to individuals. The new settlers in the Delta constructed levees

to protect the lands from periodic flooding and drained other lands to reduce the potential for mosquito-borne diseases. By the 1920s, numerous communities were established around food processing and packing houses that supported a wide range of crops such as asparagus, barley, celery, corn, winter grain, sugar beets, onions, and alfalfa for local dairy farms were introduced to the area (Delta Stewardship Council 2011; Bureau of Reclamation et al. 2010). By the 1950s, major food packers and processors moved from the Delta, and many communities became smaller. Recreational opportunities were established in the 1850s with duck hunting opportunities in the Suisun Marsh area.

History of the San Francisco Bay Area Region

In 1579, Sir Francis Drake and other Spanish explorers led expeditions into the San Francisco Bay Area. However, in general, the Spanish did not settle Northern California until the 1700s when other Europeans established trading settlements for fur, mining, and other products. Initially, the Spanish confined their settlement to the coastline to establish military bases, or presidios (Hoover et al. 1990). Father Junípero Serra and other Franciscans worked with the Spanish explorers to establish missions along the Alta California coastal areas between present-day Sonoma County (San Francisco Solano established in 1823) to present-day Ventura County (San Buenaventura established in 1782), including three missions in areas that use CVP and SWP water (Mission San Jose established in 1797, Mission Santa Clara established in 1777, and Mission San Juan Bautista established in 1797).

San Jose was one of the first towns established in Alta California as Pueblo de San José de Guadalupe (Santa Clara County 2012). The Spanish government awarded land grants in the San Francisco Bay Area region (California Department of Water Resources 2008; East Bay Municipal Utility District 2009; Hoover et al. 1990; Bureau of Reclamation 2005b; San Benito County 2010; Zone 7 Water Agency 2006). In 1821, Mexico won independence from Spain, began to establish more secular communities around the missions, and divided many of the ranchos into smaller pueblos (Santa Clara County 2012). These actions supported growth in the present-day California coastal areas.

Following California statehood in 1849, ranching and farming communities were established in the interior valleys of the San Francisco Bay Area region (Santa Clara County 2012; Contra Costa Water District et al. 2009; East Contra Costa County Habitat Conservation Plan Association and U.S. Fish and Wildlife Service 2006). Starting in the late 1800s, expansion of the railroads in the area and use of improved irrigation systems led to the expansion of agriculture throughout the area. In the mid-1900s, industrial expansion occurred in Contra Costa, Alameda, and Santa Clara Counties.

K.1.4 CVP and SWP Service Areas (South to Diamond Valley) and Nearshore Pacific Ocean on the California Coast

No project or program-level measures or actions would take place with mechanisms for changes in cultural resources conditions in the nearshore Pacific Ocean on the California coast or CVP and SWP service areas. Therefore, no background setting information for these regions is provided for this analysis.

K.2 Known Cultural Resources and Identification of Historic Properties

The following subsections describe known cultural resources in the counties in the study area, as determined through review of reports prepared for other projects in the study area. No physical or record surveys were conducted for this EIS because no site-specific actions were considered in this EIS. Activities that constitute an undertaking under Section 106 of the National Historic Preservation Act (NHPA) would be analyzed in greater detail through a consultative process of steps, including identification and evaluation of cultural resources for inclusion in the NRHP, finding of effect, and resolution of adverse effects, all in compliance with Title 54 U.S.C. § 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found at 36 Code of Federal Regulations (CFR) § 800. Cultural resources that are eligible for the NRHP would require the application of the criteria of adverse effect, pursuant to 36 CFR § 800.5(a). If the effect to a historic property is adverse, Reclamation is required to resolve the adverse effects, pursuant to 36 CFR § 800.6.

These studies as described above may include background research, pedestrian inventory, and reporting. Background research would include a records search of the California Historical Resources Information System, consultation with interested parties, and a review of existing literature. Fieldwork would include intensive pedestrian surveys, resource recordation, and possibly testing of archaeological sites. There may also be a need to address the potential for buried archaeological deposits, even those not visible from the ground surface, which may require additional subsurface testing. The need and extent of buried site testing could be assessed during the ground surface cultural resource inventory, combined with additional geologic information obtained through research and other project-related investigations. Reporting would include a detailed cultural and environmental context, details of the methods and results of the studies, and recommendations for next steps.

The EIS evaluates alternatives to continue the coordinated long-term operation of the CVP and SWP. The resources described in this subsection indicate the types of resources that occur in areas served by CVP and SWP water and adjacent areas. Therefore, some of the known resources presented in this appendix are located in portions of the counties that are not within the CVP and SWP water service areas and is intended to be a general characterization of cultural resource types that may need to be assessed under Section 106.

K.2.1 Known Cultural Resources of the Trinity River Region

A cultural resources records search of the Trinity River region in Trinity County was conducted for the *Trinity River Mainstem Fishery Restoration EIS/Environmental Impact Report* (U.S. Fish and Wildlife Service et al. 1999). The area covered included 660 feet on either side of the Trinity River from Trinity Lake to the eastern boundary of Hoopa Valley Indian Reservation and the inundation areas of the Trinity Lake and Lewiston Reservoir. More than 150 recorded cultural resources were identified along the mainstem of Trinity River within Trinity County, including 20 types of prehistoric and historic sites. Among these were Native American villages, camps, and lithic scatters; historic Indian sites; mines; ditches; cabins; structures; a school; U.S. Fish and Wildlife Service stations and campgrounds; cemeteries; a rock wall; trails; a wagon road; and a bridge. Fifty-one sites are inundated within Trinity Lake and Lewiston Reservoir. Few of these

sites have been evaluated for eligibility to be included in the NRHP. With respect to more recent historic sites in Trinity County, none of the sites listed in the NRHP, California State Historical Landmarks, California Register of Historical Resources (CRHR), and/or Points of Interest are located within or along banks of the Trinity River (California State Parks Office of Historic Preservation 2014).

In Humboldt County, numerous culturally sensitive areas are located along the lower Klamath and lower Trinity Rivers. The culturally sensitive areas include the areas along the riverbanks associated with religious and/or resource-producing important sites, in addition to specific known cultural resources. Many cultural resource locations are in the Hoopa Valley Indian Reservation and Yurok Reservation, including villages, cemeteries, ceremonial and gathering areas, and along ridgeline corridors that were used for traveling between villages (Humboldt County 2012). With respect to more recent historic sites in Humboldt County, none of the sites listed in the NRHP, California State Historical Landmarks, CRHR, and/or Points of Interest are located within or along banks of the Trinity or Klamath Rivers (California State Parks Office of Historic Preservation 2014).

In Del Norte County, numerous culturally sensitive areas are located along the lower Klamath River, including areas within the Yurok Reservation and the Resighini Rancheria along the southern shoreline of the mouth of the Klamath River at the Pacific Ocean (Del Norte County 2003). The mouth of the Klamath River is of great spiritual significance for the Yurok people (Yurok Tribe 2005). The Yurok Tribe has suggested that the entire Klamath River, including the lower Klamath River, be designated as a Cultural Riverscape and be submitted for consideration for listing in the NRHP (Yurok Tribe 2005). With respect to more recent historic sites in Del Norte County, none of the sites listed in the NRHP, California State Historical Landmarks, CRHR, and/or Points of Interest are located within or along banks of the Klamath River (California State Parks Office of Historic Preservation 2014).

K.2.2 Previously Recorded Cultural Resources in the Central Valley Region

The Central Valley region is rich in both historic- and prehistoric-period resources (Bureau of Reclamation 1997), including large, deep midden sites (which generally contain waste materials that indicate human inhabitation) that provide information on prehistoric culture extending over thousands of years.

K.2.2.1 Cultural Resources at CVP and SWP Reservoir Facilities in the Sacramento Valley

Previous cultural resource studies were conducted at and/or near Shasta Reservoir, and Folsom Reservoir.

The studies near Shasta Reservoir surveyed approximately 8% of the study area and identified 261 cultural resources, including 190 prehistoric properties, 45 historic resources, and 26 properties with prehistoric and historic resources (Bureau of Reclamation 2013). The prehistoric sites include habitation sites, artifact and lithic scatters, caves used as shelter, and cemeteries. The historic sites included bridges, railways, a dam, buildings, ranches, orchards, mines, towns, and cemeteries. Several prehistoric and historic cemeteries located within the inundation area were moved prior to completion of the Shasta Reservoir complex. The Dog Creek Bridge is the

only resource in this area that is listed on the NRHP. The Shasta and Keswick dams were determined to be NRHP-eligible.

The studies near Folsom Reservoir identified 185 prehistoric properties and 59 historic sites (Bureau of Reclamation 2005b; Bureau of Reclamation et al. 2006). The prehistoric sites include habitation sites, middens, groundstones, and artifact and lithic scatters. The historic sites included buildings, mining areas, and refuse dumps. Folsom Dam was determined to be NRHP-eligible.

K.2.2.2 Cultural Resources at CVP and SWP Reservoir and Pumping Plant Facilities in the San Joaquin Valley

Previous cultural resource studies were conducted at and/or near New Melones Reservoir, San Luis Reservoir, and Millerton Reservoir and San Joaquin River downstream of Friant Dam.

The studies near New Melones Reservoir surveyed approximately 78% of the study area and identified 725 cultural resources within the New Melones Reservoir area or within 0.25 mile of this area (Bureau of Reclamation 2010). The prehistoric sites include habitation sites, artifact and lithic scatters, mortars, caves, rock art, and cemeteries. The historic sites included bridges, buildings, ranches, orchards, towns, water and power systems, transportation infrastructure, and cemeteries. Many of the sites are located within the inundation area. However, a substantial number of surveys, site testing, and data recovery were conducted from the 1940s through the late 1970s prior to operation of New Melones Reservoir in the 1980s.

The studies near San Luis Reservoir identified 51 prehistoric and historic cultural resources (Bureau of Reclamation and California Department of Parks 2013). The prehistoric sites include habitation sites and artifact and lithic scatters. The historic sites included bridges, water infrastructure, buildings, ranches, orchards, towns, and cemeteries. One of the major historic sites in this area is the remnant locations of Rancho San Luis Gonzaga. Many portions of the ranch are located within the inundation area. However, many of the structures were moved to a site near Pacheco Pass. The remaining portions of the ranch were deeded to California in 1992 to become part of the Pacheco State Park. Rancho San Luis Gonzaga, a historic stock ranch landscape, has been designated by the state to be a Historic District/Cultural Landscape that is potentially NRHP-eligible and CRHR-eligible.

Recent studies along the San Joaquin River identified 19 prehistoric sites within the seasonal inundation area of Millerton Lake (Bureau of Reclamation and California Department of Water Resources 2011a; Bureau of Reclamation and California Department of Parks 2013). Additional sites are located within the area of the lake that is constantly inundated. Some of the known sites include the remains of Kuyu Illik; the Dumna “head” village; the Kechaye/“Dumna” village of Sanwo Kianu; remains of Fort Miller, Millerton, and Collins Sulphur Springs; and prehistoric sites with housepits, mortars, grinding sticks, and rock alignments (Bureau of Reclamation and California Department of Parks 2013).

Along the San Joaquin River downstream of Friant Dam (which forms Millerton Lake) to the confluence of the Merced River, 84 prehistoric sites, 18 historic sites, and 7 sites with both prehistoric and historic resources were identified as part of the San Joaquin River Restoration Program efforts. The prehistoric sites include habitation sites, artifact and lithic scatters, and

bedrock milling features. The historic sites included bridges, buildings, ranches, orchards, towns, water and power systems, and transportation infrastructure.

The Friant Dam, Friant-Kern Canal, associated features (berms, siphons, control structures, inlets, outlets, and check structures), approximately 40 bridges that cross the canal, and Little Dry Creek Wasteway Facility are considered historic resources (Bureau of Reclamation and California Department of Parks 2013; Bureau of Reclamation and California Department of Water Resources 2011b). The Friant Dam and Friant-Kern Canal were determined to be NRHP-eligible.

K.2.2.3 Cultural Resources in the Areas That Use CVP and SWP Water Supplies in the Central Valley

Numerous cultural and historical resources are in the Central Valley, as summarized in Table K-1. Most of the cultural resources are located within areas that would not be affected by land use changes that could result from changes in CVP and SWP water supplies. The resources listed in Table K-1 also include the sites described above near CVP and SWP facilities.

Table K-1. Previously Recorded Cultural and Historical Resources of the Central Valley Region.

County	Historic Site Types	Prehistoric Site Types
Butte	26 NRHP properties, 8 California Historical Landmarks, and 21 California Points of Historical Interest.	1,198 Known Prehistoric Site Types.
Colusa	7 NRHP properties, 3 California Historical Landmarks, and 3 California Points of Historical Interest.	115 Known Prehistoric Site Types.
El Dorado	18 NRHP properties, 30 California Historical Landmarks, 8 California Points of Historical Interest; numerous historic sites, such as mining features, building foundations, trash scatters, and bridges, were inundated by Folsom Lake.	595 Known Prehistoric Site Types.
Fresno	38 NRHP properties, 8 California Historic Landmarks, and 13 of which are California Points of Historical Interest.	2,603 Known Prehistoric Site Types.
Glenn	2 NRHP properties, 2 California Historical Landmarks, and 17 California Points of Historical Interest.	373 Known Prehistoric Site Types.
Kern	20 NRHP properties, 47 California Historic Landmarks, and 11 California Points of Historical Interest.	3,850 Known Prehistoric and Historic Site Types.
Kings	4 NRHP properties, 3 California Historic Landmarks; the San Luis Canal, the only CVP facility in Kings County, has no historic or architectural resources in its vicinity.	56 Known Prehistoric Site Types.
Madera	2 NRHP property, 1 California Historic Landmarks, and 9 California Points of Historical Interest.	2,043 Known Prehistoric Site Types.
Merced	14 NRHP properties, 5 California Historic Landmarks, 1 CRHR properties, and 8 California Points of Historical Interest.	316 Known Prehistoric Site Types.

County	Historic Site Types	Prehistoric Site Types
Napa	76 NRHP properties, 17 California Historical Landmarks, and 13 California Points of Historical Interest.	700 Known Prehistoric Site Types.
Placer	18 NRHP properties, 20 California Historical Landmarks, 21 California Points of Historical Interest; numerous historic sites, such as mining features, building foundations, trash scatters, and bridges, were inundated by Folsom Reservoir, which is a CVP facility.	627 Known Prehistoric Site Types.
Plumas	6 NRHP properties, 13 California Historical Landmarks, and 5 California Points of Historical Interest.	1,639 prehistoric sites in Plumas County.
Sacramento	90 NRHP properties, 56 California Historical Landmarks, 4 CRHR properties, 20 California Points of Historical Interest; numerous historic sites, such as mining features, building foundations, trash scatters, and bridges, were inundated by Folsom Reservoir; the Folsom Mining District surrounds Lake Natoma. There are over 40 historic sites along the Sacramento River between Sutter County boundary and Freeport; including Natomas Main Drainage Canal, Town of Freeport, Sacramento Weir, Yolo Bypass, homes and farms, and a church. There are 14 historic sites along the American River between Folsom Dam and the confluence with the Sacramento River.	407 Known Prehistoric Site Types (Bureau of Reclamation 1997). There are 24 prehistoric sites along the Sacramento River between Sutter County boundary and Freeport. There are 22 prehistoric sites along the American River between Folsom Dam and the confluence with the Sacramento River.
San Joaquin	31 NRHP properties, 25 California Historic Landmarks, 3 CRHR properties, and 7 are California Points of Historical Interest.	189 Known Prehistoric Site Types.
Shasta	26 NRHP properties, 19 California Historical Landmarks, 1 CRHR properties, 15 California Points of Historical Interest. The Anderson-Cottonwood Irrigation District Diversion Dam has been determined to be eligible for NRHP listing.	1,419 Known Prehistoric Site Types. Many of these sites occur along the Sacramento River near Redding and between Battle Creek and Table Mountain.
Solano	23 NRHP properties, 14 California Historical Landmarks, and 9 California Points of Historical Interest.	300 Known Prehistoric Site Types.
Stanislaus	21 NRHP properties, 5 California Historic Landmarks, and 7 are California Points of Historical Interest; the former right-of-way for the Patterson and Western Railroad, which was constructed in 1916, bisects the Delta-Mendota Canal.	280 Known Prehistoric Site Types.
Sutter	7 NRHP properties, 2 California Historical Landmarks, and 22 California Points of Historical Interest.	62 Known Prehistoric Site Types.
Tehama	10 NRHP properties, 3 California Historical Landmarks, and 1 California Point of Historical Interest.	1,415 Known Prehistoric Site Types.

County	Historic Site Types	Prehistoric Site Types
Tulare	34 NRHP properties, 8 California Historic Landmarks, and no California Points of Historical Interest.	1,857 Known Prehistoric Site Types.
Yolo	21 NRHP properties, 2 California Historical Landmarks, 1 CRHR properties, and 8 California Points of Historical Interest.	175 Known Prehistoric Site Types. Includes possible fishing stations along Putah and Cache Creeks, the Sacramento, and ephemeral tributaries to these watercourses.
Yuba	10 NRHP properties, 6 California Historical Landmarks, and 14 California Points of Historical Interest.	1,112 Known Prehistoric Site Types.

Sources: Bureau of Reclamation 1997, 2005b, 2013; California State Parks Office of Historic Preservation 2014; Plumas County 2012.
Notes: NRHP = National Register of Historic Places; CRHR = California Register of Historic Resources

K.2.3 Previously Recorded Cultural Resources in the Bay-Delta Region

The Bay-Delta region is highly urbanized, and that development has affected archaeological resources. Numerous cultural and historical resources are in the Bay-Delta region, as summarized in Table K-2. Most of the cultural resources are located within areas that would not be affected by land use changes that could result from changes in CVP and SWP water supplies.

Table K-2. Previously Recorded Cultural Resources of the Bay-Delta Region.

County	Historic Site Types	Prehistoric Site Types
Alameda	141 NRHP properties, 34 California Historical Landmarks, 2 CRHR properties, and 4 California Points of Historical Interest.	No comprehensive inventory of prehistoric sites in Alameda County.
Contra Costa	40 NRHP properties, 13 California Historical Landmarks, 1 CRHR property, and 12 California Points of Historical Interest.	No comprehensive inventory of prehistoric sites in Contra Costa County. Up to 41 sites were identified in the Kellogg Creek Historic District near Los Vaqueros Reservoir.
San Benito	12 NRHP properties, 5 California Historic Landmarks, and 2 California Points of Historical Interest.	180 Known Prehistoric Site Types.
Santa Clara	101 NRHP properties, 41 California Historical Landmarks, and 58 California Points of Historical Interest.	Between 1912 and 1960, 43 sites were recorded in the Santa Clara Valley portion of Santa Clara County.

Sources: Bureau of Reclamation 1997; California State Parks Office of Historic Preservation 2014; Contra Costa County 2005; Contra Costa Water District et al. 2009; Santa Clara County 1994, 2012; Zone 7 Water Agency 2006.
Notes: NRHP = National Register of Historic Places; CRHR = California Register of Historic Resources

K.2.4 Indian Sacred Sites

Indian Sacred Sites on federal land or access to sacred sites on federal land under Executive Order 13007 are primarily identified during the process of federally recognized tribal consultation. Because of this, an analysis of Indian Sacred Sites was not possible for the purposes of this document. Once a project is identified, the lead federal agency is required to consult with any tribes that have cultural affiliation with the proposed project area. It is during this process that Indian Sacred Sites that could be affected by the Proposed Action would be identified.

K.2.5 Native American Graves Protection and Repatriation Act

Under the Native American Graves Protection and Repatriation Act (25 USC 3001) and implementing regulations 43 CFR Part 10, Reclamation is responsible for the protection of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on Reclamation lands. All human remains and potential human remains will be treated with respect and dignity at all times. In the event that suspected human remains are discovered during proposed project activity on Reclamation land, all activities in the immediate area will cease, and appropriate precautions will be taken to protect the remains and any associated cultural items from further disturbance. Reclamation will follow the procedures outlined in 43 CFR § 10.4 Inadvertent Discoveries.

K.2.6 Archaeological Resources Protection Act

The Archaeological Resources Protection Act (ARPA, 16 U.S.C 470) applies when a project may involve archaeological resources located on federal or tribal land. The ARPA requires that a permit be obtained before excavation of an archaeological resource on such land can take place. This statute was enacted to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites that are on federally owned lands and Indian lands. It was also enacted to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals.

K.3 Evaluation of Alternatives

This section describes the technical background for the evaluation of environmental consequences associated with the action alternatives and the No Action Alternative.

K.3.1 Methods

The impact assessment considers the potential to effect cultural resources and historic properties related to changes in CVP and SWP operations under the alternatives as compared with the No Action Alternative. This section details methods and tools used to evaluate those effects. It should be noted that Alternative 2 consists of four phases that could be utilized under its implementation. All four phases are considered in the assessment of Alternative 2 to bracket the range of potential impacts. The analysis considers the known historic property environmental setting in the plan area, as well as the potential for previously undocumented historic properties and physical effects on known and previously undocumented properties that could result from implementation of the action alternatives. Because there is no ground disturbance involved in the

action alternatives, the key mechanism for impacts on cultural resources is the potential for inundation and/or exposure of buried archaeological historic properties in a way that can cause damage or destruction to those properties. The analysis is also informed by the requirements of federal and state laws and regulations that apply to cultural resources. Because the coordinated long-term operation of the CVP and SWP is subject to Section 106 of the NHPA, Reclamation is responsible for compliance with Section 106. Compliance with Section 106 follows a series of steps, identified in its implementing regulations found at 36 CFR Part 800, that include identifying consulting and interested parties, delineating an area of potential effects (APE), identifying historic properties within the APE, and assessing effects on any identified historic properties, and resolving adverse effects through consultations with the State Historic Preservation Officer, Indian tribes, and other consulting parties.

K.3.2 No Action Alternative

Under the No Action Alternative, Reclamation would continue with current operation of the CVP, as described in the 2020 Record of Decision and subject to the 2019 Biological Opinions. The 2020 Record of Decision for the CVP and the 2020 Incidental Take Permit for the SWP represent current management direction or intensity pursuant to 43 CFR § 46.30.

Although the No Action Alternative included habitat restoration projects at a programmatic level, the 2020 ROD did not provide environmental coverage for these projects, and all of the habitat projects considered under the No Action required or will require additional environmental documentation. Thus, ground disturbance for habitat restoration projects did not materialize as a result of implementing the No Action Alternative. For the purpose of the analysis, these habitat restoration projects are considered independent projects that will be considered under cumulative effects.

The No Action Alternative is based on 2040 conditions. Changes that would occur over that time frame without implementation of the action alternatives are not analyzed in this technical appendix. However, the changes to cultural resources that are assumed to occur by 2040 under the No Action Alternative are summarized in this section.

Conditions in 2040 would be different than existing conditions because of the following factors:

1. Climate change and sea-level rise
2. General plan development throughout California, including increased water demands in portions of the Sacramento Valley

By the end of September, the surface water elevations at CVP reservoirs generally decline, and bare mineral “bathtub rings” appear as inundated areas drain. It is anticipated that climate change would result in more short-duration high-rainfall events and less snowpack in the winter and early spring months. The reservoirs would be full more frequently by the end of April or May by 2040 than in recent historical conditions, potentially resulting in less exposure of previously inundated areas around reservoirs. However, as the water is released in the spring, there would be less snowpack to refill the reservoirs. This condition would reduce reservoir storage, thereby increasing the vertical height of the exposed but previously inundated around reservoirs, potentially exposing cultural resources.

Under the No Action Alternative, land uses in 2040 would occur in accordance with adopted general plans. Development under the general plans could affect cultural resources, depending on the type and location of development. Infill projects where areas are already developed could increase density but would be done in compliance with applicable zoning and general plan policies around cultural resources. Development in non-urbanized areas could convert natural or rural areas to developed areas, resulting in impacts to cultural resources.

The No Action Alternative would also rely upon increased use of Livingston-Stone National Fish Hatchery during droughts to increase production of winter-run Chinook salmon. However, this component requires no physical changes to the facility and would have no adverse effect on historic properties.

K.3.3 Alternative 1

K.3.3.1 Project Activities with the Potential to Effect Historic Properties

Compared with the No Action Alternative, Alternative 1 would make changes to: Keswick Dam release rates (ramping) and releases (Sacramento River/Keswick Reservoir), Shasta Dam releases (Sacramento River/Shasta Reservoir), Whiskeytown Dam releases (Clear Creek/Whiskeytown Lake), American River minimum instream flows (Nimbus Dam, Folsom Dam), Delta Outflow, and New Melones Reservoir releases (Stanislaus River minimum instream flows).

If peak river flows or reservoir levels have substantial increases beyond the No Action Alternative, it could result in erosion in areas with historic properties and has the potential to adversely affect the historic properties. Compared with the No Action Alternative, for example, Alternative 1 would result in the following changes to storage and flow:

3. **Shasta Reservoir:** there would mostly be minor increases in the average storage volumes with a decrease in storage in June compared to the No Action Alternative (see Table F.2.1-3-1c in Appendix F, Modeling Technical Appendix). As a result, with higher storage volume, exposure of new resources is unlikely, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes are minor in intensity, such that adverse effects to historic properties are not expected.
4. **Folsom Reservoir:** In most cases the end of month storage at Folsom Reservoir increases other than for June (see Table F.2.1-7-1b in Appendix F). As a result, there could be longer periods of inundation. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes in storage are minor in intensity, such that adverse effects to historic properties are not expected.
5. **New Melones Reservoir:** Average storage would decrease at New Melones Reservoir (see Table F.2.1-13-1c in Appendix F). As a result, the lower storage volumes could expose resources, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes in highs and lows are minor in intensity, such that adverse effects on historic properties are not expected.

6. **Clear Creek:** The reductions in monthly average flow are substantial compared with the No Action Alternative, with some monthly reductions down to about one-third of the flows of the No Action Alternative. Flow would decrease every month (see Table F.2.2-2-1c in Appendix F). This could result in exposure of previously inundated areas. As an example, flows in October under the No Action Alternative would be about 200 cfs, while under Alternative 1 they would be about 61 cfs. An even larger reduction would occur around June. Under the No Action Alternative, flows would be about 303 cfs in June, and under Alternative 1 they would be about 77 cfs, about one-fourth the flow of the No Action Alternative (see Tables F.2.2-2-1a and F.2.2-2-1b in Appendix F). The proposed monthly average flows under Alternative 1 would be lower than all proposed monthly average flows under the No Action Alternative. For 8 months of the year, these flows are also lower than the lowest monthly flow under the No Action Alternative. As identified in Appendix N, *Visual Resources Technical Appendix*, Section N.1.2.2, *Clear Creek Watershed*, the upper portion of lower Clear Creek is characterized by a deep gorge with flowing, cascading water surrounded by a forested upland landscape. In this area, lower flows are unlikely to expose intact resources because the high flow environment is not conducive to preserving cultural resources. The lower portion is characterized by broad alluvial floodplains, meandering gravel bars, and lush riparian vegetation. Therefore, reduced flows in this area could expose resources. However, the flows would generally stay low such that cycles of inundation would not occur and would not cause damage to resources. Therefore, no adverse effects to historic properties are expected.

Storage changes are relatively small during each year type and follow existing patterns in reservoir storage. Therefore, Alternative 1 does not have the potential to adversely affect historic properties if they are present.

K.3.4 Alternative 2

K.3.4.1 Project Activities with the Potential to Effect Historic Properties

Compared with the No Action Alternative, Alternative 2 would make changes to: Shasta Dam releases and storage (Sacramento River/Shasta Lake), Whiskeytown Dam releases (Clear Creek/Whiskeytown Lake), and New Melones Reservoir releases (Stanislaus River minimum instream, winter instability, and fall pulse flows).

If peak river flows or reservoir levels have substantial increases beyond the No Action Alternative, it could result in erosion in areas with historic properties and has the potential to adversely affect the historic properties. Compared with the No Action Alternative, for example, Alternative 2 would result in the following changes to storage and flow:

7. **Shasta Reservoir:** The average storage would increase compared to the No Action Alternative (see Tables F.2.1-3-2c, F.2.1.-3-3c, F.2.1-3-4c, and F.2.1-3-4d in Appendix F). As a result, the higher storage volumes would not expose resources, though the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes are minor in intensity, such that adverse effects on historic properties are not expected.

8. **New Melones Reservoir:** There would be minor changes in end of month storage volumes compared to the No Action Alternative, as well as some increases in storage volume (see Tables F.2.1-13-2c, F.2.1-13-3c, F.2.1-13-4c, and F.2.1-13-5c in Appendix F). As a result, the lower storage volumes could expose resources, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes in storage are minor in intensity, such that adverse effects on historic properties are not expected.

9. **Clear Creek:** Flow would both increase and decrease under Alternative 2 depending on the phase and the month. Decreases in flows would be up to 29 percent during June for Alternative 2 Without TUCP Without VA, but there would be flow increases during 6 out of 12 months for this phase of Alternative 2 (see Tables F.2.2-2a, F.2.2-2-2b, and F.2.2-2-2c in Appendix F). Flows for Alternative 2 Without TUCP Delta VA, Alternative 2 Without TUCP All VA, and Table F.2.2-2-5c would be comparable (see Tables F.2.2-2-3c, Table F.2.2-2-4c, and Table F.2.2-2-5c). These fluctuations could result in the minor exposure of previously inundated areas, although the general pattern in flow changes (i.e., highs and lows over the years) would remain the same. As an example, flows in October under the No Action Alternative would be about 200 cfs, while under Alternative 2 (Alternative 2 With TUCP Without VA) they would be about 174 cfs. Depending on stream geometry, this change in flow could result in decreased river width or reduced flow speed. However, the range in fluctuations under Alternative 2 for the most part is within the range of fluctuations of the No Action Alternative. Therefore, adverse effects on historic properties are not expected.

Storage changes are relatively small during each year type and follow existing patterns in reservoir storage. Therefore, Alternative 2 does not have the potential to adversely affect historic properties if they are present.

K.3.5 Alternative 3

K.3.5.1 Project Activities with the Potential to Effect Historic Properties

Compared with the No Action Alternative, Alternative 3 would make changes to: Shasta Dam spring pulse flows and releases (Sacramento River/Shasta Reservoir), Whiskeytown Dam releases (Clear Creek/Whiskeytown Lake), American River minimum instream flows and winter and spring pulse flow (Folsom Reservoir), and New Melones Reservoir releases (Stanislaus River minimum instream flows and fall pulse flows).

If peak river flows or reservoir levels have substantial increases beyond the No Action Alternative, it could result in erosion in areas with historic properties and has the potential to adversely affect the historic properties. Compared with the No Action Alternative, for example, Alternative 3 would result in the following changes to storage and flow:

10. **Shasta Reservoir:** End of month storage would increase compared to the No Action Alternative (see Table F.2.1-3-6c in Appendix F). As a result, the higher storage volumes would not expose resources, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the

same as recorded past conditions and the changes are minor in intensity, such that adverse effects on historic properties resources are not expected.

11. **Folsom Reservoir:** Average monthly storage volumes would increase other than for March through May (see Table F.2.1-7-6c in Appendix F). As a result, the lower storage volumes could expose resources, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes in highs and lows are minor in intensity, such that adverse effects on historic properties are not expected.
12. **New Melones Reservoir:** There would be decreases in storage volumes (see Table F.2.1-13-6c in Appendix F). As a result, the lower storage volumes could expose resources, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes in highs and lows are minor in intensity, such that adverse effects on historic properties are not expected.
13. **Clear Creek:** The reductions in average monthly flow occur for six months of the year and are minor compared with No Action Alternative, with some monthly reductions of about 13% of No Action Alternative (see Table F.2.2-2-6c in Appendix F). These reductions could result in minor exposure of previously inundated areas, although the general pattern in flow changes (i.e., highs and lows over the years) would remain the same. As an example, flows in October under the No Action Alternative would be about 200 cfs, while under Alternative 3 they would be about 167 cfs, with this difference changing by month. Depending on stream geometry, this change in flow could result in decreased river width or reduced flow speed. However, the range in fluctuations under Alternative 3 for the most part is within the range of fluctuations of the No Action Alternative. Therefore, adverse effects on historic properties are not expected.

Storage changes are relatively small during each year type and follow existing patterns in reservoir storage. Therefore, Alternative 3 does not have the potential to adversely affect historic properties if they are present.

K.3.6 Alternative 4

K.3.6.1 Project Activities with the Potential to Effect Historic Properties

Compared with the No Action Alternative, Alternative 4 would make changes to: Keswick Dam releases (Keswick Reservoir/Shasta Reservoir/Sacramento River), Shasta Dam releases (Shasta Reservoir/Sacramento River), Whiskeytown Dam (Clear Creek/Whiskeytown Lake), and New Melones Reservoir releases (Stanislaus River minimum instream flows, winter instability flows, spring pulse flows, and fall pulse flows).

If peak river flows or reservoir levels have substantial increases beyond the No Action Alternative, it could result in erosion in areas with historic properties and has the potential to adversely affect the historic properties. Compared with the No Action Alternative, for example, Alternative 4 would result in the following changes to storage and flow:

14. **Shasta Reservoir:** End of month storage would be higher than the No Action Alternative (see Table F.2.1-3-7c in Appendix F). Storage volumes would follow the same historical pattern of storage variation over time. As a result, the higher storage volumes would not expose resources, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes in highs and lows are minor in intensity, such that adverse effects on historic properties are not expected.

15. **New Melones Reservoir:** There would be increases in average storage volumes, (see Table F.2.1-13-7c in Appendix F). As a result, the higher storage volumes would not expose resources, while the pattern of inundation and drainage may increase erosion. However, the general pattern of fluctuations would remain the same as recorded past conditions and the changes in highs and lows are minor in intensity, such that adverse effects on historic properties are not expected.

16. **Clear Creek:** The reductions in average flow are minor compared with No Action Alternative, and occur for 6 months of the year. Monthly reductions ranging from 6% to 29% of the No Action Alternative flows (see Table F.2.2-2-7c in Appendix F). This could result in minor exposure of previously inundated areas, although the general pattern in flow changes (i.e., highs and lows over the years) would remain the same. As an example, flows in October under the No Action Alternative would be about 200 cfs, while under Alternative 4 they would be about 173 cfs, with this difference changing by month. Depending on stream geometry, this change in flow could result in decreased river width or reduced flow speed. However, the range in fluctuations under Alternative 3 for the most part is within the range of fluctuations of the No Action Alternative. Therefore, adverse effects on historic properties are not expected.

Storage changes are relatively small during each year type and follow existing patterns in reservoir storage. Therefore, Alternative 4 does not have the potential to adversely affect historic properties if they are present.

K.3.7 Mitigation Measures

No avoidance and minimization measures or mitigation measures have been identified.

K.3.8 Summary of Impacts

Table K-3 includes a summary of impacts, the magnitude and the direction of those impacts.

This would require construction activities resulting in ground disturbance potentially affecting historic properties. Consequently, there is a potential for new indirect or direct effects on cultural resources to occur under the No Action Alternative. These activities would be subject to additional environmental compliance procedures and review for compliance with the NHPA, if required.

Table K-3. Impact Summary

Impact	Alternative	Magnitude and Direction of Impacts	Potential Mitigation Measures
Project activities with the potential to affect historic properties	No Action Alternative	Potential indirect or direct effects on cultural resources resulting from continuation of ground disturbance activities e.g., habitat restoration projects, implementation of CA general plan actions. Activities would be subject to additional environmental compliance procedures and review for compliance with the NHPA.	—
	Alternative 1	Within the range of flow fluctuations associated with the No Action Alternative	—
	Alternative 2	Within the range of flow fluctuations associated with the No Action Alternative	—
	Alternative 3	Within the range of flow fluctuations associated with the No Action Alternative	—
	Alternative 4	Within the range of flow fluctuations associated with the No Action Alternative	—

[1] While the evaluation of Alternatives 1 through 4 is completed in comparison to the effects of the No Action Alternative, the No Action Alternative discloses the impacts of not implementing any of the action alternatives.

K.3.9 Cumulative Impacts

Past, present, and reasonably foreseeable projects, described in Appendix Y, *Cumulative Impacts Technical Appendix*, may have cumulative effects on Cultural Resources, to the extent that they could affect historic properties resulting from ground-disturbing activities.

Past and present actions contribute to the existing condition of the affected environment in the project area while reasonably foreseeable actions are those that are likely to occur in the future that are not speculative. Past, present, and reasonably foreseeable projects include actions to develop water storage capacity, water conveyance infrastructure, water recycling capacity, the reoperation of existing water supply infrastructure, including surface water reservoirs and conveyance infrastructure, and habitat restoration actions. The projects identified in Appendix Y that have the most potential to contribute to cumulative impact on Cultural Resources are related to projects with the potential to cause ground-disturbing activities or peak flows that would contribute to erosion in areas with historic properties (e.g. B.F. Sisk Dam Raise and Reservoir Expansion Project, Cache Slough Area Restoration, Bay-Delta Water Quality Control Plan Update and habitat restoration).

The No Action Alternative would continue with the current operation of the CVP and is not expected to affect historic properties which was described and considered in the 2020 Record of Decision.

Appendix Y lists past, present, and reasonably foreseeable projects that have or may potentially result in cumulative impacts to Cultural Resources. Under Alternatives 1, 2, 3, and 4 there are no activities which include ground disturbing activities and/or alteration to a historic property and the range of flow fluctuations are within the range of flow fluctuations associated with the No Action Alternative. Therefore, as the action alternatives are not anticipated to effect historic properties, no cumulative impacts to cultural resources are expected.

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