

5.4 Cultural Resources

This AFC section addresses the potential impacts of the construction and operation of the PHPP on cultural resources. Cultural resources are defined as buildings, sites, structures, districts, and/or objects that have historical, architectural, archaeological, cultural, or scientific significance.

The Project cultural resources included a complete record search of a one-mile radius around the 377-acre plant site and laydown area and a ¼-mile radius surrounding all linear facilities, an archaeological field survey of the entire Project site plus additional areas around each component (buffer areas), an architectural field reconnaissance (“windshield survey”) of the entire Project site in compliance with the CEC regulations, and an assessment of the potential impacts of PHPP construction and operation activities on the cultural resources identified within the entire Project site (plant site and linear facilities). The work was conducted by qualified cultural resources professionals; information on the qualifications of Project cultural resources staff, as well as additional detail on the investigations performed and their results are provided in AFC Appendix I.

5.4.1 LORS Compliance

The PHPP will comply with the applicable laws, ordinances, regulations, and standards (LORS) during construction and operation. Applicable LORS are listed in Table 5.4-1, and briefly discussed below.

Table 5.4-1 LORS Applicable to Cultural Resources

LORS	Applicability	Where Discussed in AFC
Federal:		
Antiquities Act of 1906, Title 16, United States Code, Sections 431, 432, and 433	Protects any historic or prehistoric ruin or monument, or any object of antiquity situated on lands owned or controlled by the Government of the United States.	Section 5.4.1
National Historic Preservation Act (NHPA), Title 16, United States Code, Section 470	Establishes a national policy to preserve for public use historic sites, buildings, and objects of national significance.	Section 5.4.1
Executive Order 11593, “Protection of the Cultural Environment,” May 13, 1971, 36 Code of Federal Regulations, Section 8921 as incorporated into Title 16, United States Code, Section 470	Orders the protection and enhancement of the cultural environment through providing leadership, establishing state offices of historic preservation, and developing criteria for assessing resource values.	Section 5.4.1

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LORS	Applicability	Where Discussed in AFC
National Environmental Policy Act (NEPA): Title 42 United States Code, Sections 4321-4327	Requires federal agencies to consider potential environmental impacts of projects with federal involvement and requires application of appropriate mitigation measures.	Section 5.4.1
American Indian Religious Freedom Act; Title 42 United States Code, Section 1996	Protects Native American religious practices, ethnic heritage sites, and land uses.	Section 5.4.1
Native American Graves Protection and Repatriation Act (NAGPRA) (1990); Title 25, United States Code Section 3001, <i>et seq.</i>	Defines “cultural items”, “sacred objects”, and “objects of cultural patrimony”; establishes an ownership hierarchy; provides for review; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for return of specified cultural items; applies only on Federal or Indian lands.	Section 5.4.1
State:		
CEQA: Public Resources Code (PRC) Sections 5020.1, 5024.1, 21083.2, 21084.1, <i>et seq.</i>	Requires that proposed projects be analyzed for potential environmental impacts and requires the application of feasible mitigation measures.	Sections 5.4.1, 5.4.3 and 5.4.4
Title 14, PRC, Section 5020.1	Defines several terms, including the following: (f) “DPR Form 523” means the Department of Parks and Recreation Historic Resources Inventory Form; (i) “historical resource” includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California; (j) “local register of historical resources” means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution; (l) “National Register of Historic Places” means the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture as authorized by the National Historic Preservation Act of 1966 (Title 16 United States Code Section 470 <i>et seq.</i>); (q) “substantial adverse change” means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.	Sections 5.4.1, 5.4.3 and 5.4.4
Title 14, PRC, Section 5024.1	Establishes a California Register of Historical Resources; sets forth criteria to determine significance; defines eligible properties; lists nomination procedures.	Sections 5.4.1, and 5.4.3
Title 14, PRC, Section 5097.5	Prohibits any unauthorized removal of archaeological resources from sites located on public lands as a misdemeanor. As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority or public corporation, or any agency thereof.	Sections 5.4.1, 5.4.3 and 5.4.4

LORS	Applicability	Where Discussed in AFC
Title 14, PRC, 5097.98	Prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn; sets penalties.	Sections 5.4.1, 5.4.3 and 5.4.4
Title 14, PRC, Section 21083.2	The lead agency determines whether a project may have a significant effect on unique archaeological resources. If a potential for damage to unique archaeological resources can be demonstrated, such resources must be avoided; if they can't be avoided, mitigation measures shall be required; discusses excavation as mitigation; discusses cost of mitigation for several types of projects; sets time frame for excavation; defines "unique and non-unique archaeological resources"; provides for mitigation of unexpected resources; sets limitation for this section.	Sections 5.4.1, 5.4.3 and 5.4.4
Title 14, PRC, Section 21084.1	Indicates that a project may have a significant effect on the environment if it causes a substantial change in the significance of a historic resource; the section further describes what constitutes a historic resource and a significant historic resource.	Sections 5.4.1, 5.4.3 and 5.4.4
Guidelines for the Implementation of CEQA	Section 15064.5 specifically addresses effects on historic and prehistoric archaeological resources, in response to problems that have arisen in the application of CEQA to these resources.	Sections 5.4.1, 5.4.3 and 5.4.4
Title 14, Penal Code, Section 622.5	Anyone who damages an item of archaeological or historic interest is guilty of a misdemeanor.	Sections 5.4.1, 5.4.3 and 5.4.4
CEQA Guidelines: California Code of Regulations, Sections 15000, <i>et seq.</i> , Appendix G (j)	Specifically defines a potentially significant environment effect as occurring when the Proposed Project will "...disrupt or adversely affect ...an archaeological site, except as part of a scientific study."	Sections 5.4.1, 5.4.3 and 5.4.4
California Health and Safety Code, Section 7050.5(b)	Outlines the procedures to follow should human remains be inadvertently discovered in any location other than a dedicated cemetery.	Sections 5.4.1, 5.4.3 and 5.4.4
Local:		
City of Palmdale General Plan (1993), Goal ER7	The Environmental Resources Element outlines policies relating to historical and culturally significant resources, and provides a list of potential historic structures and an archaeological sensitivity map.	Sections 5.4.1, 5.4.3 and 5.4.4
Los Angeles County Draft Preliminary General Plan (2007), Section VII	Identifies goals and policies for the management and preservation of historical, cultural and paleontological resources within the County.	Sections 5.4.1, 5.4.3 and 5.4.4

5.4.1.1 Federal LORS

Antiquities Act of 1906, Title 16, United States Code, Sections 431, 432, and 433

This Act and subsequent related legislation, policies, and enacting responsibilities allows for the protection of any historic or prehistoric ruin or monument, or any object of antiquity situated on lands owned or controlled by the Government of the United States.

National Historic Preservation Act (NHPA), Title 16, United States Code, Section 470

Section 470 establishes a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.

Executive Order 11593, "Protection of the Cultural Environment," May 13, 1971, 36 Code of Federal Regulations, Section 8921 as incorporated into Title 16, United States Code, Section 470

This orders the protection and enhancement of the cultural environment through providing leadership, establishing state offices of historic preservation, and developing criteria for assessing resource values.

National Environmental Policy Act (NEPA): Title 42 United States Code, Sections 4321-4327

NEPA requires federal agencies to consider potential environmental impacts of projects with federal involvement and requires application of appropriate mitigation measures.

American Indian Religious Freedom Act; Title 42 United States Code, Section 1996

This Act protects Native American religious practices, ethnic heritage sites, and land uses.

Native American Graves Protection and Repatriation Act (NAGPRA) (1990); Title 25, United States Code Section 3001, et seq.

NAGPRA defines "cultural items", "sacred objects", and "objects of cultural patrimony"; establishes an ownership hierarchy; provides for review; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for return of specified cultural items. The Act applies only on Federal or Indian lands.

5.4.1.2 State LORS

CEQA: Public Resources Code (PRC) Sections 5020.1, 5024.1, 21083.2, 21084.1, et seq.

CEQA requires the analysis of potential environmental impacts of proposed projects and the application of feasible mitigation measures. CEQA includes provisions that specifically address the protection of cultural resources. These protections are described below in Section 5.4.3.1, Definition and Use of Significance Criteria. The Office of Historic Preservation (OHP), headed by the State Historic Preservation Officer (SHPO), is responsible for the administration of federally mandated and state-mandated historic preservation programs in California. The State Historical Resources Commission, also headed by the SHPO, determines the eligibility of historic and archaeological resources for listing on the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR). The eligibility criteria for listing in the CRHR are similar to those for NRHP listing but focus on the importance of the resources to California history and heritage. The criteria are described below in Section 5.4.3.1, Definition and Use of Significance Criteria.

Title 14, PRC, Section 5020.1

Title 14, PRC, Section 5020.1 defines several terms, including the following: (f) “DPR Form 523” means the Department of Parks and Recreation Historic Resources Inventory Form; (i) “historical resource” includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California; (j) “local register of historical resources” means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution; (l) “National Register of Historic Places” means the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture as authorized by the National Historic Preservation Act of 1966 (Title 16 United States Code Section 470 et seq.); (q) “substantial adverse change” means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.

Title 14, PRC, Section 5024.1

Title 14, PRC, Section 5024.1 establishes a California Register of Historical Resources; sets forth criteria to determine significance; defines eligible properties; and lists nomination procedures. The eligibility criteria for listing in the CRHR are similar to those for the NRHP listing but focus on importance of the resources to California history and heritage. The criteria are described in Section 5.4.3.1, Definition and Use of Significance Criteria, below.

Title 14, PRC, Section 5097.5

This section states that any unauthorized removal of archaeological resources on sites located on public lands is a misdemeanor. As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority or public corporation, or any agency thereof.

Title 14, PRC, Section 5097.98

Title 14, PRC, Section 5097.98 prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn, and sets penalties for these offences.

Title 14, PRC, Section 21083.2

Archaeological resources that are not “historical resources” may be “unique archaeological resources” as defined in PRC Section 21083.2. PRC Section 21083.2 (g) defines “unique archaeological resource” as an archaeological artifact, object, or site that does not merely add to the current body of knowledge, but has a high probability of meeting any of the criteria identified in this section. This section also generally provides that “non-unique archaeological resources” do not receive any protection under CEQA. The lead agency determines whether a project may have a significant effect on unique archaeological resources. If a potential for damage to unique archaeological resources can be demonstrated, such resources must be avoided; if they can’t be avoided, mitigation measures shall be required. If an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment. It is sufficient that the resource and the effects on it be noted, but the resource need not be considered further in the CEQA process. This section also discusses excavation as mitigation, the cost of mitigation for several types of projects, sets time frames for excavation, provides for mitigation of unexpected resources, and sets limitations for this section.

Title 14, PRC, Section 21084.1

Indicates that a project may have a significant effect on the environment if it causes a substantial change in the significance of a historic resource; the section further describes what constitutes a historic resource and a significant historic resource.

Guidelines for the Implementation of CEQA.

Section 15064.5 specifically addresses effects on historic and prehistoric archaeological resources, in response to problems that have arisen in the application of CEQA to these resources.

Title 14, Penal Code, Section 622.5

According to Title 14 of the Penal Code (Section 622.5), anyone (except the owner) who willfully damages or destroys an item of archaeological or historic interest or value is guilty of a misdemeanor.

CEQA Guidelines: California Code of Regulations, Sections 15000, et seq., Appendix G (j),

This section specifically defines a potentially significant environmental effect as occurring when the proposed project will "...disrupt or adversely affect ...an archaeological site, except as part of a scientific study."

California Health and Safety Code, Section 7050.5(b)

Section 7050.5(b) of the California Health and Safety Code outlines the procedures to follow should human remains be inadvertently discovered in any location other than a dedicated cemetery. The section also states that the County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the NAHC within twenty-four hours. The NAHC has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant.

5.4.1.3 Local LORS

City of Palmdale General Plan (1993), Goal ER7

The City of Palmdale General Plan includes an Environmental Resources Element that outlines policies relating to historical and culturally significant resources. Goal ER7 is to protect historical and culturally significant resources that contribute to the community's sense of history, and eight policies have been developed for this purpose. The General Plan also includes a list of potential historic structures and an archaeological sensitivity map, which are used to determine the need for cultural resource surveys prior to development. Should resources be identified during a survey, the Plan calls for appropriate testing and preservation, mitigation, or salvage to be undertaken. Figure 5.4-1 depicts the PHPP components overlain on the City of Palmdale's archaeological sensitivity map.

Los Angeles County Draft Preliminary General Plan (2007), Section VII

Section VII of the Los Angeles County Draft Preliminary General Plan identifies goals and policies for the management and preservation of historical, cultural and paleontological resources within the County.

5.4.1.4 Permits Required and Permit Schedule

The PHPP does not require permits, other than CEC certification, for cultural resources.

5.4.1.5 Involved Agencies

As indicated in Table 5.4-2, WSA contacted the Native American Heritage Commission (NAHC) requesting a listing of local, interested Native American representatives and information on traditional or sacred lands within the Project area and vicinity. No Native American cultural resources were located in the immediate project area. Included in the NAHC response was a list of eight Native American representatives, and letters have been sent to the representatives requesting information on Traditional or Sacred Properties within the Project vicinity. No responses had been received by July 7, 2008.

Table 5.4-2 Agency Contacts

Agency Contact	Phone/E-mail	Permit/Issue
David Singleton Native American Heritage Commission 915 Capital Mall, #364 Sacramento, CA 95814	(916) 653-6251 nahc@pacbell.net	Native American cultural issues

5.4.2 Affected Environment

An overview of the environmental and cultural setting of the PHPP is designed to provide a context for the consideration of the significance of cultural resources found to be present in the Project site. Environmental factors have greatly influenced prehistoric occupation of Antelope Valley, as well as playing a major role in the historic and modern development of the Palmdale region. For example, availability of water necessarily affects availability of resources and hence, the viability of settlements. The cultural setting provides a general outline of the prehistoric and early historic Native American occupation of the valley, with brief discussions of the effects of the changing environment on settlement patterns, as well as an overview of the historic development of the area. This allows sites to be placed within an analytical framework within which the site's importance can be understood and assessed.

5.4.2.1 Natural Environment

Palmdale is located in the southern reaches of Antelope Valley, which occupies the westernmost extent of the Mojave Desert. Antelope Valley is a closed basin, which is at least 2,200 square miles in size. The valley is separated from the San Joaquin Valley to the north by the Tehachapi Mountains. On the south and southwest, it is bounded by the San Gabriel Mountains. The northern and eastern boundaries of Antelope Valley are marked by isolated buttes. The San Andreas Fault runs along the whole southern slope of Antelope Valley. The floor of Antelope Valley is primarily alluvial fill, and the average elevation of the valley is 3,500 feet above sea level (Schoenherr, 1995:411).

Fluctuations in temperature, moisture variation, and seasonality through time have altered vegetation zones, which advanced and retreated in response to climatic conditions. In moister times, vegetation zones in the valleys and basins, like Antelope Valley, moved down slope. When the climate became drier, the vegetation zones moved up the slopes of the mountains, leaving the lower lands with sparser vegetation, acclimatized to the more arid conditions. Changes in climate and vegetation had a marked impact on the prehistoric populations of the area.

Pleistocene

During the Late Pleistocene (ca. 20,000-10,000 years ago), the climate in California was cool and moist, a time of widespread glaciations that resulted in the creation of numerous deep pluvial lakes (Antevs, 1953a, 1955; Sutton et al., 2007:230-231). Worldwide, so much water was trapped in glacial ice that sea levels were lower than they are today, exposing a portion of the California coast that is now inundated. In the lower elevations of the California interior, there was considerable rainfall (Chartkoff and Chartkoff, 1984:59). Pluvial lakes were common within the Mojave Desert and were an essential source of food and water for the earliest inhabitants of the desert. Data indicates that Antelope Valley was covered by a large freshwater lake during this period.

Holocene

During the Holocene, or recent epoch (10,000 years ago to present day), the temperatures in interior California rose, bringing warmer conditions to the desert valleys and less precipitation to the surrounding mountains (Chartkoff and Chartkoff, 1984:68). Antevs (1953a, 1953b, 1955) has divided the Holocene into three distinct climatic intervals: the Anathermal (9,000-7,000 years ago), the Altithermal (7,000-4,000 years ago) and the Medithermal (4,000 years ago to present day). Antevs' model for the Great Basin (the immense area formed by the Sierra Nevada, Columbia Plateau and Rocky Mountains) posited a climate at the beginning of the Anathermal period that was similar to the climate of the 20th century. A warming trend began during the Anathermal that led to subhumid and semiarid conditions, and a rise in lake levels. During the Altithermal, the warming trend accelerated until the conditions were more arid than those existing today. Antevs suggested that the glaciers and ice sheets completely melted, and the pluvial lakes in the low-lying basins disappeared. In some instances, the arid conditions lasted for so long that the accumulated salts in the lake beds were completely blown away or buried. During the following Medithermal, moister conditions prevailed, even though the Great Basin remained arid to semiarid. During this time, beginning about 4,000 years ago, the glaciers and ice sheets reformed and the basins refilled, forming lakes. The Medithermal is characterized by fluctuations in temperature and climate – some bringing extreme drought conditions.

The details of Antevs' model are not universally accepted, and continued research is providing new and more reliable information about regional conditions and fluctuations throughout the western states. Studies undertaken at Owens Lake, Rosamond Lake and Emerson Lake indicate that there was a general drying trend commencing sometime prior to 11,550 years ago, followed by relatively wet conditions between 10,000 and 8,000 years ago. Lake levels were generally shallow and fluctuated rapidly between 8,000 and 6,500 years ago, with a consistently dry lake bed from 6,500 to 3,900 years ago. This was followed by sporadic, generally short-term filling of the lakes during and after the Little Ice Age (ca. 600 to 125 years ago). These periods of change would have influenced the availability and distribution of water and biotic resources, and hence affected human occupation of the area (Sutton et al., 2007:231).

There is a relatively large body of environmental data available for the Late Holocene, and two climatic episodes, the Medieval Climatic Anomaly (MCA) and the Little Ice Age (LIA), which may have impacted prehistoric lifeways, have been identified. The MCA is generally accepted as a period of drought, dating from 1,200 to 650 years ago, with the warmest periods occurring approximately 850 years ago. A number of cultural changes occurred within the western Mojave Desert during the MCA. Climatic conditions became less favorable, and the large villages, established ca. 2000 years ago, declined. Portions of the desert may have been abandoned, or settlement patterns may have been adjusted to better suit the changing environment. The LIA, generally dated from ca. 600 to 125 years ago, was a period of greater winter

precipitation and cooler temperatures, which marked the close of the MCA. These variations caused significant environmental changes, but it is unclear how this influenced the inhabitants of the western Mojave Desert (Sutton et al., 2007:232-233).

Modern

The topographic differences between basins and adjacent mountain ranges within the Mojave Desert create climatic variations. The range of temperatures during the summer can vary by as much as 30° to 40°F, because of hot days and cool nights. Winter temperatures are generally mild, and although most precipitation falls in winter, rainfall is sparse throughout the Mojave Desert, with an annual average of about 4 inches across the desert (Schoenherr, 1995:406). Winter temperatures generally reach a daytime maximum of 50° to 70°F (10° to 21°C). Polar air masses or the passage of a cyclonic storm can cause major temperature variations in the desert. Winter nocturnal temperatures are often well below freezing. Winds, which blow especially strong in spring and winter, are characteristic features of the climate of the Mojave Desert (Lantis et al., 1989:48-51).

Palmdale has over 300 days of sunshine per year. Annual precipitation is 7.36 inches, which falls mainly in the winter. The average daytime highs during the winter are in the upper 50s to low 60s, while being in the low to mid 30s overnight. Palmdale's summers are very hot with little or no precipitation. Temperatures frequently soar into triple-digits. However, Palmdale's high desert location allows temperatures to cool down at night, unlike the low desert cities of Palm Springs and Blythe. Average day time highs are in the upper 90s, but drop into the mid to upper 60s overnight. The annual average high temperatures are 98°F (summer) and 59°F (winter); the annual average lows are 65°F (summer) and 33°F (winter).

In the Mojave Desert's climate zone vegetation is sparse, consisting mostly of desert shrubs and an intermittent understory of annual and perennial grasses and herbs (United States Department of Agriculture, 1986:126). The vegetation is predominately Shadscale Scrub and, at slightly higher elevations, Creosote bush scrub. As the elevation increases, Blackbrush may flourish. Where elevations are sufficient for the soils to be both coarse and nonalkaline, and where there may be winter snowfall, the dominant vegetation is the Joshua tree, as well as other leaf succulent yuccas. Piñon pines grow in elevations above the Joshua tree zone, and Desert Willows and Honey Mesquite may be found along washes (Schoenherr, 1995:410-413). Although most of the Mojave Desert is extremely arid, some areas, such as Antelope Valley, support limited farming.

5.4.2.2 Prehistoric Background

The Mojave Desert is an area believed to have had limited prehistoric food resources and surface water, however, it supported a long and occasionally dense human population, particularly in Antelope Valley (Moseley and Smith, 1962). Recorded archaeological sites provide evidence for villages and camps, burials, quarries, rock features, and bedrock mortars. These sites may contain evidence of a lengthy prehistoric time span. Although early remains are not found frequently, when they are, they are usually located along the margins of pluvial lakes or in areas of dune deflation. Conversely, artifacts on the desert floor may be sparse, widely scattered, and not easily recognized among the desert pavement. Some sites which are readily visible on the valley floor, a function of sparse vegetation and continual erosion, have been damaged or destroyed due to illegal collection and site looting, particularly when they lie near populated areas.

Most archaeologists have reached a broad consensus regarding the region's general cultural chronology, basing this on an observed sequence of assemblages that are identified predominantly by their distinctive types of projectile points (Bamforth, 1990:72). Although the cultural chronology for the desert region has undergone major changes since it was first developed in the 1920s and 1930s (compare Campbell, 1931, 1935; Campbell and Campbell, 1935; Campbell et al., 1936, Rogers, 1929, 1938), and absolute dates are limited, a relative cultural sequence is now fairly well established (Bettinger and Taylor, 1974; Sutton et al., 2007; Warren, 1980; Warren and Crabtree, 1972). The sequence consists of the Paleoindian, Lake Mojave, Pinto, Deadman Lake (newly defined and not yet generally accepted), Gypsum, Rose Springs, and Late Prehistoric periods.

Paleoindian Period (Clovis Complex) (12,000-10,000 years ago)

The earliest documented evidence of human occupation in the Mojave Desert comes from the Paleoindian period and is associated with the Clovis Complex. Clovis sites, characterized by fluted Clovis points, have been found primarily in the northern and western portions of the Mojave Desert, with concentrations of fluted points occurring in the drainage basins of Pleistocene China and Thompson lakes. There has been a lack of reliable dates for Clovis sites, and their exact position in the cultural chronology of the area has not been clearly determined. However, it appears that the Clovis Complex overlaps in some area with the later Stemmed (GBS) Complex that occurs to the north in the Great Basin (Sutton et al., 2007:233-234). Although data relating to the Paleoindian Period are limited, Sutton et al. (2007:234) hypothesize that there was likely a small population of Paleoindian peoples who were highly mobile, inhabiting small, temporary camps near reliable water sources.

Lake Mojave Complex (10,000-8,000 years ago)

The early Holocene in the Mojave Desert is represented by the Lake Mojave Complex (Sutton et al., 2007:236). The Lake Mojave Complex (previously referred to as the Western Pluvial Lakes Tradition) has been described as a cultural adaptation to pluvial conditions – lakes, marshes, and grasslands – that flourished for several millennia after 11,000 years ago, but then disappeared during the warmer and more arid Altithermal climatic period (Moratto, 1984:90-91). It covered an area that stretched from the currently arid lands of southern California, encompassing the western Mojave Desert, to Oregon.

Although the exact boundaries of the Lake Mojave Complex have not been defined, available evidence suggests it may have covered a vast area, including parts of the southwestern Great Basin and the Mojave Desert, and may have reached as far south as the San Diego area. The Lake Mojave Complex is characterized by Lake Mojave and Silver Lake projectile points (of the Great Basin stemmed series), bifaces, steep-edged unifaces, crescents, and some cobble-core tools and ground stone artifacts (Sutton et al., 2007:234).

Artifacts belonging to the Lake Mojave Complex were initially recovered from sites situated on shoreline strands alongside the former lake bed of Pleistocene Lake Mojave. Lake Mojave encompassed the Soda Lake and Silver Lake Playas, which are located about 125 miles east of Palmdale. The investigations of several scholars indicate that an age of 10,000-8,000 years ago is a reasonable chronological range for the Lake Mojave Complex (Antevs, 1953a, 1953b; Warren and DeCosta, 1962; Warren and Ore, 1978). Artifacts similar to those found around Pleistocene Lake Mojave have subsequently been recorded along the shoreline of many other pluvial lakes in the Mojave Desert, such as China Lake and Rosamond Lake, as well as in the Fort Irwin and Twentynine Palms areas (Sutton et al., 2007:237). Additionally, strong similarities have been noted between artifacts and radiocarbon dates recovered at the C. W. Harris site on

the San Dieguito River, which is situated to the north of San Diego (15 miles inland), and the Lake Mojave Complex (Moratto, 1984:93-97; Warren, 1967).

Sutton et al. (2007:237) state that flaked-stone artifact assemblages from Lake Mojave Complex sites reflect long-term curation and transport of stone tools. Groundstone is not a well represented component of sites, suggesting that vegetal resources were not of major importance. Lake Mojave Complex sites typically represent large residential accumulations, and some workshops and small camps with few formed tools.

Pinto Period/Complex (ca. 10,000-4,000 years ago)

The Pinto Period assemblages are characterized by a distinctive type of projectile point. The interpreters of the Pinto point series fall into two camps – those who support a short chronology and proponents of a longer chronology. The supporters of the short chronology (Donnan, 1964; Kowta, 1969; Wallace, 1962; Wallace and Wallace, 1977) have suggested there was a cultural hiatus of over 1,000 years in much of the Mojave Desert between 7,000 and 5,000 years ago due to the extremely warm, dry climate. Other archaeologists (Susia, 1963; Tuohy, 1974; Warren, 1980) do not see a break. Instead, they recognize a continual development of the Pinto assemblages out of the earlier Lake Mojave Complex assemblages (Moratto, 1984:411). Data from sites investigated in the last two decades support this model of an early inception, with some temporal overlap between the Pinto Complex and the previous Lake Mojave Complex (Sutton et al., 2007:237). There appears to be some broad continuity between assemblages associated with the Lake Mojave Complex and those of the Pinto Complex, relating to factors such as stone tool raw material types, interaction with coastal groups evidenced through the presence of Olivella shell beads, and resource exploitation. The most notable difference between the two complexes is an increase in milling equipment and a widening of the subsistence resource base. New data indicate that a reliance on plant resources developed ca. 9,000 years ago, prior to the onset of the Middle Holocene drier period (Sutton et al., 2007:238).

Sites that contain elements of the Pinto Period occur in a diverse range of environmental and topographic situations (Sutton et al., 2007:238). Sites tend to be small and often limited to surface deposits, although larger sites have been found, usually associated with well-watered habitats. Glennan (1971) advocated a “Pinto Age” assemblage for the western Mojave Desert. He based this on observations during an extensive surface collection at the Sweetser site (CA-KER 302) in Antelope Valley, as well as several other sites in the area. Glennan (1971) identified a Rhyolite Tradition, which consisted primarily of knives, choppers, scrapers, cores, and some milling stones.

There may have been a 1,000 year hiatus between 5,000 and 4,000 years ago, when conditions became hotter and drier and less suitable for supporting large populations. This possible abandonment of the Mojave Desert marks the end of the Pinto period, though this may have occurred even earlier than previously thought, as most Pinto components date to pre-6,500 years ago (Sutton et al., 2007:241).

Deadman Lake Complex (ca. 9,500 and 7,200 years ago)

The Deadman Lake Complex was recently proposed by Sutton et al. (2007). This complex has so far been identified only in the Twentynine Palms area, though Sutton et al. (2007) suggest that it may extend further outwards as new sites are discovered and older sites are reassessed. The Deadman Lake Complex is characterized by small- to medium-size contracting-stemmed or lozenge-shaped points, along with large quantities of bifaces, simple flake tools, milling equipment, and battered cobbles and core tools. Sutton et al. (2007:239) stated that, in the Twentynine Palms region, Pinto sites are typically situated within remnant

pluvial lake basins and Deadman Lake sites are located at higher elevations, with the Deadman Lake and Pinto assemblages reflecting differing subsistence strategies. They also acknowledge that Deadman Lake assemblages may not represent a previously unidentified cultural entity, but may rather be a “segment of the tactical inventory” of the Pinto Complex (Sutton et al., 2007:239).

Gypsum Period/Complex (4,000-1,800 years ago)

The beginning of the Gypsum Period about 4,000 years ago coincides with the beginning of a period when the desert had a moister, milder climate, often referred to as the Little Pluvial (Antev's Medithermal period). The moist conditions present at the beginning of the Gypsum Period allowed for more intensive occupation of the Mojave Desert (Sutton et al., 2007:241).

Although hunting continued to be an important economic pursuit during the Gypsum period, the presence of milling tools indicates increased use of plant foods and reliance on hard seeds. Mortars and pestles, and manos and mutates, are reported at Mesquite Flat in Death Valley and on the Amargosa River, where they dated between 2080 and 3250 B.C. These sites are located near or in mesquite groves, suggesting that the processing of mesquite pods with the mortar and pestle may have become an important element in the subsistence system.

Generally, the Gypsum period was a time in which the Mojave Desert population incorporated new technological items and ritual activities and increased socioeconomic ties through trade. Because of these new means of adaptation, the return of arid conditions toward the end of the Gypsum period had relatively little effect on the Mojave Desert's population density and distribution.

The presence of Humboldt Concave Base, Gypsum Cave, Elko Eared, or Elko corner-notched points are indicative of the Gypsum Period, which has been radiocarbon dated from 4,000 to 1,800 years ago. In addition to the diagnostic projectile points, the cultural assemblage at Gypsum Period sites includes leaf-shaped points, rectangular-based knives, flake scrapers, T-shaped drills, and occasionally large scraper-planes, choppers, and hammerstones. Artifacts that are indicative of trade and exchange with the cultures of the Central Valley include shaft-smoothers; incised slate and sandstone tablets and pendants; fragments of drilled slate tubes; *Halotis* rings, beads and ornaments of Central California's “Middle Horizon” type; *Olivella* shell beads; and bone awls.

Rose Spring Period/Complex (1,800-900 years ago)

The Rose Spring Period, previously known as the Saratoga Springs Period, marked the onset of cultural diversification in the Mojave Desert, with the development of distinctive regional traits. Changes are most notable in the western portion of the Mojave Desert. Lake levels began to rise in the western Mojave ca. 2,000 years ago, creating a more mesic environment. Rose Spring sites are typically found alongside water sources, such as springs, washes and lakeshores (Sutton et al., 2007:242). Data from Rose Spring sites in the area indicate that there was a large increase in population, marked changes in artifact assemblages, and the creation of well-developed middens. The bow-and-arrow first appears in the region during this time, with Rose Spring points inferred to have functioned as arrow points (Sutton et al., 2007:241). Hunting small- to medium-sized game formed the principal subsistence strategy, and trade with outside groups was common. Artifact types dating to this period include Eastgate and Rose Spring series projectile points, stone knives, drills, pipes, bone awls, a variety of milling tools, marine shell ornaments, and large amounts of obsidian (Sutton et al., 2007:241-242).

According to Sutton (1980), the people occupying the Antelope Valley during this period lived in large permanent or seasonally occupied villages in addition to a variety of smaller, special purpose sites that were also seasonally based. Sutton suggests that the presence of large villages with cemeteries, along with the large number and complexity of other sites, imply that the Antelope Valley supported a large population during the late prehistoric period. Besides village sites, smaller sites included rock rings, lithic scatters, and milling stations. Artifacts from these sites include shell beads, ornaments, and steatite from the southern California coast, as well as projectile points of the Rose Spring and Cottonwood types.

Grave goods from burials that date to this period – some of which may be attributed to the Serrano or the Kitanemuk – indicate that a disparity in the distribution of wealth existed among these populations. Sutton points to this as evidence that systems of prestige and status were in place. This would indicate a more complex socio-political organization than that usually attributed to the inhabitants of the Mojave Desert. He sees the social complexity as the result of intensive participation in a trade network, where the Antelope Valley inhabitants functioned as the conveyers of goods between the coastal and interior populations (Sutton, 1980:221). Moratto (1984:391) agrees that the large villages and systems of status and prestige may represent a strong regional development that set Antelope Valley apart from the other areas of the Mojave Desert.

The MCA began around the middle of the Rose Spring period, producing drought conditions. The reduction in available water and resources, coupled with the relatively high population that had previously been supported by the wetter conditions, may have resulted in the end of the Rose Spring Complex ca. 900 years ago (Sutton et al., 2007:242).

Late Prehistoric Period (900 years ago to the time of European contact)

The historic aboriginal people of the California deserts are clearly the descendants of the prehistoric inhabitants, although some movements of peoples have occurred during historic times. The regional cultural developments, which were established during the Rose Spring Period, continued with some modifications. Later occupations in the Antelope Valley are identified by small triangular projectile points of rhyolite and obsidian and late shell bead types.

During the Late Prehistoric Period, the tradition of the Southern Desert moved northward and probably reached the vicinity of the Project. There is little doubt that late sites along the Mojave River are the prehistoric remains of the Serrano of the historic period. The Serrano appear to be similar to the Yuman people of the Colorado River; this similarity is attributable to a Mojave River trade route that, for centuries, brought the Serrano into contact with the cultural developments of the lower Colorado River. Because of the ongoing trade, there were undoubtedly opportunities to obtain relatively great amounts of wealth and to develop more complex socio-economic and political organization.

The major occupation of Antelope Valley appears to have ended by 300 years ago, after which the valley became a marginal area, as reflected in the ethnographic record. Although the exact reason for the decline is unknown, Sutton (1980:221) suggests that one possible explanation was a disruption in the trade network.

5.4.2.3 Ethnographic Background

The PHPP is near the intersection of four neighboring Native American groups, as depicted by Kroeber (1970): the Serrano, Vanyume, Kitanemuk, and Tataviam (Alliklik). Figure 5.4-2 shows the territories of the ethnographic groups that occupied the Project site.

Serrano

The Serrano territory included the San Bernardino Mountains, east of Cajon Pass, as well as the desert area that lies immediately south of Victorville, extending east as far as Twenty-nine Palms and south as far as Yucaipa Valley. The Serrano were primarily hunters and gatherers. Vegetal staples varied with village locality: acorns and piñon nuts in the foothills; mesquite, yucca roots, cacti fruits, and piñon nuts in or near the desert regions. Diets were supplemented with other roots, bulbs, shoots, and seeds (Bean and Smith, 1978:571). An increased yield of herbaceous plants was created by periodic burning. Communal gathering expeditions, involving several lineages under one leader's authority, were not uncommon (Bean and Smith, 1978:571; Benedict, 1924:391-392; Drucker, 1937). Deer, mountain sheep, antelope, rabbits, and other small rodents were among the principal animals hunted. Various game birds were also hunted – quail being the most important. The bow-and-arrow was used for large game, while smaller game and birds were killed with curved throwing sticks, traps, and snares. Occasionally game was hunted communally, especially during annual mourning ceremonies (Bean and Smith, 1978:571; Benedict, 1924:391-392; Drucker, 1937).

Individual family dwellings were occupied by a husband, wife, their unmarried female children, sometimes the husband's parents, and occasionally a widowed aunt or uncle. The Serrano lived in circular, domed structures that were constructed of willow frames and covered with tule thatch. These structures were utilized primarily as sleeping and storage areas, with most Serrano activities taking place outside or under a shade structure consisting simply of four posts and a roof. On occasion, an individual would erect a separate house for private use (Benedict, 1924; Drucker, 1937; Kroeber, 1925).

Technologically, the Serrano were quite accomplished and produced a vast array of articles. Their manufactured goods included baskets, pottery, rabbit-skin blankets, awls, arrow straighteners, sinew backed bows, arrows, fire drills, stone pipes, musical instruments (rattles, rasps, whistles, bull-roarers, and flutes), feathered costumes, mats, bags, storage pouches, and nets (Bean and Smith, 1978:571). Food acquisition and processing required the manufacture of additional items such as knives, stone or bone scrapers, pottery trays and bowls, bone or horn spoons, and stirrers. Mortars, made of either stone or wood, and metates were also manufactured (Benedict, 1924; Drucker, 1937; Strong, 1929).

The Serrano were organized into exogamous clans. Each of these, in turn, was affiliated with one of two exogamous moieties (Strong, 1929). Although the exact nature of these clans, including their structure, function, and number is unknown, Strong (1929) determined that the clan was the largest autonomous political and landholding unit of the Serrano. The clan was patrilineal: all the male members recognized descent from a common male ancestor. The descendants and wives of these men were also regarded as clan members. When women married, however, they retained their own lineage names and participated in ceremonies of their natal lineage (Strong, 1929:17).

Every clan had a headman or chief, which was a hereditary position passed from father to son. Under unusual circumstances this could pass to the wife of the previous headman (Strong, 1929; Gifford, 1918). Duties of the head of the clan included determining when and where to collect or hunt, as well as conducting religious and other ceremonies. An assistant (also a hereditary post passing from father to son) assisted the head or chief in these ceremonies. The assistant's duties included taking charge of the sacred bundle (a kit of ceremonial paraphernalia), notification of the time and location of the ceremonies, carrying shell money between groups for ceremonial purposes, and attending to the division of shell money and food at ceremonies (Bean and Smith, 1978:572).

Like other California Indian groups, the Serrano had a shaman who acquired his various powers through datura-enhanced dreaming (Strong, 1929). Shamans were mainly curers, who healed their patients through administering herbal remedies and sucking out disease causing agents (Benedict, 1924).

Vanyume

The Vanyume inhabited the Mojave River. Unlike their neighbors, the Serrano, the Vanyume maintained friendly relations with the Chemehuevi and Mojave peoples. The Vanyume had a small population, which dwindled rapidly following Spanish settlement of California. No Vanyume speaking members survived into the 20th century, and as a result, very little is known about this group (Bean and Smith, 1978:570; Kroeber, 1970:614).

Kitanemuk

The Kitanemuk were located primarily in the southern Tehachapi Mountains, but their territory extended down into Antelope Valley (Kroeber, 1925). In 1917, Harrington found a few Kitanemuk living at Tejón Ranch (Blackburn and Bean, 1978). The Kitanemuk lived to the south of the Yokuts of the Central Valley, to the east of the Chumash, to the north of the Tataviam, and to the west of the Kawaiisu. Primarily mountain dwellers they ranged into the arid lowlands to the south during the cooler seasons.

The Kitanemuk depended on both piñon pine nuts and on acorns as important food staples. The acorns were abundant on the western slopes of the Tehachapis, facing the San Joaquin Valley, while the groves of piñon pine tended to be found on the eastern side of the range, facing the desert.

The Kitanemuk, like other groups on the mountain margins of the Mojave Desert, lived in permanent winter villages of 50 to 80 people or more. These people dispersed into smaller mobile gathering groups during the late spring, summer, and fall months. The smaller groups made use of temporary camps for relatively short times, visiting different "environmental niches" as the important food-producing plants in them became ready to harvest (Antelope Valley Indian Museum, 2006).

The Kitanemuk spoke a language that appears to have been a dialect of Serrano, which was spoken by groups located as far distant as modern Yucca Valley and Twentynine Palms, east of the San Bernardino Mountains (Blackburn and Bean, 1978).

The Kitanemuk shared some elements of culture with the rest of the Serrano groups, who lived to the east in parts of the Antelope Valley, the upper Mojave River area, and the San Bernardino Mountains (Blackburn and Bean, 1978). Some customs, however, such as rituals and practices to honor the dead, may have been different. The Kitanemuk appear to have buried their dead, while the Serrano cremated them. The population of the Kitanemuk has been placed in the 500 to 1000 range at the time of the arrival of the Spanish (Antelope Valley Indian Museum, 2006).

There were no permanent communities on the valley floor. Instead, the Antelope Valley provided an Indian trade route from Arizona and New Mexico to the California coast. The Indian population of California was estimated to be 133,000 in 1770, just before the mission era. But by 1910, they numbered about 16,350. The Indian population of the Antelope Valley consisted of just a few families in 1910 (Antelope Valley Indian Museum, 2006).

Tataviam

Tataviam speakers inhabited the upper reaches of the Santa Clara River, the majority of Piru Creek, Castaic Creek and possibly Pastoria Creek (King and Blackburn, 1978:535; Kroeber, 1970:613-614). Their territory extended into at least the southwestern fringes of the Antelope Valley, though the majority of the valley was likely held by the Kitanemuk and Vanyume groups. Although Kroeber originally used the term Tataviam for people of this region, he later adopted the name Alliklik. King and Blackburn (1978:537) suggested that this may have been because Kroeber thought the term Tataviam had too broad an application. King and Blackburn (1978) continue to use the term Tataviam.

The Tataviam relied heavily on yucca as a staple food source, which related to their occupation of primarily south facing slopes, along with acorns, sage seeds, juniper berries and islay berries. Small mammals, deer and possibly antelope were the most common animal food sources. Tataviam villages varied in size, from approximately 200 inhabitants living in large settlements, to small camps of 10 to 15 people (King and Blackburn, 1978:536).

Little is known about the Tataviam people. By 1810, nearly all of the surviving Tataviam people had been taken to the San Fernando and San Buenaventura missions. By the 1830s, most Tataviam people in the missions had married members of other groups, and by 1916 the last speaker of the Tataviam language had died (King and Blackburn, 1978:536; Kroeber, 1970:613-614).

5.4.2.4 Historical Background

The availability of water, which in historic times was supplied to the desert regions by shipment in tanks and barrels, was a critical factor in the settlement of the Mojave Desert. Much of the 15,000-square-mile desert is uninhabitable in the hot summer months; however, its sporadic settlement was prompted by the desert's proximity to Los Angeles, in addition to its valuable mineral deposits. It also served as a crossing point for people traveling west during the period of exploration and settlement.

Spanish Period

Spanish explorer Francisco Garcés followed a western route in 1771 that was an ancient Indian trail into the San Bernardino Mountains. The trail passed by the Barstow area, which is located about 45 miles north of the proposed Project area. The Pedro Fages (1772) trail, initially referred to as the Old Spanish Trail, and later as the Salt Lake Road or Mormon Trail, is the earliest known in the Project region. It travels south of the proposed Project area before ultimately reaching the coast. Francisco Garcés took this trail in 1776, and Jedediah Smith traveled it in 1826 and 1827 (Kyle, 1990:304). Father Garcés' account is the first complete documentation of the Antelope Valley and its original inhabitants. For years after this initial contact, Spanish influence in Antelope Valley was sporadic and benign. However, in 1808 the Spanish sent a military expedition into Antelope Valley to relocate the Indians to the San Fernando Mission.

Mexican Period

Mexican independence from Spain resulted in the division of land into large ranchos throughout California. In an attempt to incorporate the Antelope Valley into the zone of Mexican settlement, several land grants were established in the western Antelope Valley in the early 1840s. However, there were no non-Native American permanent settlers within the southwestern portion of the valley and it remained a frontier zone until after the American conquest of California. By 1850, the furthest reaches of American settlement extended as far as Soledad Canyon (Earle, 2003).

American Period

New York native Jedediah Strong Smith made two trips into California's desert region, probably along the Old Spanish Trail into the San Bernardino Valley (Kyle, 1990:304). He crossed the Mojave River for the first time in 1826, christening it the "Inconstant River," probably due to its intermittent, partially underground flow (Pierson, 1970). His route passed an Indian village on the Mojave Desert named Otangallavil, which was located near Hesperia (Pierson, 1970:87). In April 1844, while searching for the Old Spanish Trail, General Fremont also recorded the "clear, bold stream" of the Mojave River (Pierson, 1970:67). He heard it called the "Rio de las Animas" by the Spaniards, but on his map he named it the "Mohave River" (Pierson, 1970:68).

In the 1850s, settlement of the southwestern corner of Antelope Valley was related to stock grazing, as well as the construction of roads to the mines, settlements, and military installations in the southern San Joaquin Valley and Tehachapi Mountains areas. Native American raids on stock stalled the stock raising industry, leading to the establishment of an Indian reservation at Fort Tejon, located in the mountains at the western edge of Antelope Valley (Earle, 2003). In an attempt to halt the skirmishes between Native Americans and settlers, the U.S. government relocated at least 1,000 Indians from Antelope Valley to the Fort Tejon reservation. During the 1860s and 1870s, the sheep raising industry within the Antelope Valley was booming. During periods of drought, cattle and sheep were grazed in the highlands of the adjoining mountains (Earle, 2003).

In 1853, Lieutenant R. S. Williamson was sent by the U.S. government to map one of the routes for a possible railroad between the Mississippi River and the Pacific Coast. From the San Joaquin Valley, Williamson headed south to the Mojave Desert via the northern slope of the San Gabriel Mountains (Keeling, 1976). The Williamson party passed near the present site of Palmdale and did not observe any non-Native permanent settlers within the region (Earle, 2003).

Construction of the Southern Pacific Railroad (SPRR), linking San Francisco to Los Angeles via the Mojave Desert, was completed in 1876. Large numbers of Chinese workers were employed in the construction of the railroad, and following its completion, many became involved in placer mining in the upper Santa Clarita River area (Earle, 2003). The SPRR Mojave line also included a 20-day (round trip) rail route that extended over 165 miles of mountains and desert, running from the Harmony Borax Works in Death Valley (Inyo County) to the railroad loading dock in Mojave (Kyle, 1990:129).

With the construction of the railroad, historic development of Antelope Valley increased. Lancaster, to the northwest of Palmdale, was first settled in 1876 with the completion of the SPRR. Promotional literature espousing the charms of the new township location attracted settlers. In the early 1880s, Moses Langley Wicks founded a Scottish agricultural colony of around 150 people near present-day Lancaster. In 1884, Wicks purchased and platted the town site, which he named Lancaster after his Pennsylvania hometown. In the late 1880s, Lancaster was sold to James P. Ward, and the first land boom occurred in Antelope Valley. Ample rain during this period led to bumper wheat and barley harvests. The subsequent 10-year drought that affected nearby Palmdale so badly had the same consequences for farmers in Lancaster. Lancaster again became a boom town in the early 1900s, housing large numbers of workers constructing the Los Angeles Aqueduct. The town experienced a period of growth in the 1930s following construction of the Muroc Air Force Base (County of Los Angeles Public Library, 2007).

The present town of Palmdale originated as two small communities called Palmenthal and Harold. Palmenthal was settled in 1886 by 50 or 60 families of Swiss and German settlers. The families, venturing west primarily from Illinois and Nebraska, were informed that once they saw palm trees they would be very near to the coast. Mistaking the Joshua trees for palm trees, they settled in the Antelope Valley, calling the township Palmenthal. That year, the Palmdale Water District was established, and shortly thereafter an irrigation ditch was excavated by the Palmdale Irrigation Company to divert water from Littlerock Creek to Palmdale. In 1890, the ditch was described as 7 miles in length, having cost \$16,000 to build. The principal crops the water supported were alfalfa, corn, potatoes, vegetables, fruit trees and vineyards (Newell, 1890:60). In 1896, the California State Mining Bureau described the ditch as 8 miles long, 8 feet wide at the top, 5 feet wide at the bottom, and 3 feet deep, with a grade of 7.5 feet per mile (California State Mining Bureau, 1896:538). In 1894, drought hit the area, and an increased supply of water was needed. An earthen dam, forming Harold Reservoir (now Palmdale Lake), was constructed by the Antelope Valley Irrigation Company in 1895, and another earthen ditch, linking Littlerock Creek to Harold Reservoir, was excavated alongside the earlier ditch. A flume and wooden trestle were incorporated into this design (Palmdale Water District, 2004). The settlers prospered temporarily, growing grain and fruit. An extended period of drought in the 1890s brought the boom to an end, and Palmenthal was largely abandoned. Harold, also known as Alpine Station and Trejo Post Office, was established at the crossroads of the Southern Pacific Railroad and Fort Tejon Road (now Barrel Springs Road). It was essentially abandoned when the railroad moved the site of its booster engine station to another location north of Harold (County of Los Angeles Public Library, 2007; Palmdale City Library, 2008).

Mining in the Mojave Desert led to increased settlement during the latter half of the 19th century. Gold was discovered in the southwestern portion of Antelope Valley in 1842 in what is today known as Placerita Canyon. Gold seekers flocked to the canyon and an estimated \$100,000 of gold was mined there. Some of the miners settled permanently in the southwest Antelope Valley in the 1850s and 1860s, while others headed north to continue their search for wealth. Gold, silver and copper were also mined from the Soledad Canyon region during the Civil War period (County of Los Angeles Public Library, 2007; Earle, 2003). The town of Mojave was the rail terminus for the 20-mule-team borax wagons that operated from Death Valley between the years 1884 and 1889 (Kyle, 1990:129). The United States Borax and Chemical Company (formerly the Pacific Coast Borax Company) developed sodium borate mining at Boron, about 30 miles north of Victorville. Gold was discovered at Standard Hill in 1894, and the Cactus Queen Mine produced the largest quantity of silver ore in California until World War II (Kyle, 1990:130). By 1896, the Alpine Plaster Company had established a gypsum quarry one mile south of Palmdale, and the Fire Pulp Plaster Company also worked Palmdale's gypsum deposits (California State Mining Bureau, 1896:504; Hess, 1910:29). All of this activity rejuvenated the development of Antelope Valley.

The town of Palmdale was established in 1899 when settlers who remained at Palmenthal and Harold moved closer to the Southern Pacific Railroad station and the San Francisco to New Orleans stagecoach line. In 1905, following the end of a drought, irrigation systems using pumps powered by gasoline, and later electricity, replaced the previous reliance on artesian wells. This more reliable source of water revived the agricultural industry in the Antelope Valley (County of Los Angeles Public Library, 2007). Completion of the Los Angeles Aqueduct in 1914 (to the west of Palmdale) further prompted development of the Palmdale area. That year, the Southern California Panama Expositions Commission (McGroarty, 1914:78) described Palmdale as "a new town on the railroad with considerable improvement going on including the planting of a large acreage to young fruit trees." Palmdale's population began to steadily increase. Irrigated lands in the valley increased from 5,000 acres in 1910 to 11,900 in 1919. The

township apparently failed to impress at least one author who described it as “a lonely little town marking the terminus of the railroad”, although he saw fit to comment on the “frequent cultivated fields which showed the fertility of this barren desert when irrigated” (Murphy, 1921:306). Alfalfa, pears and apples became staple crops in the area. Agriculture remained the primary industry of the Antelope Valley, with Palmdale serving as the “trading center of poultry and cattle ranchers and fruit growers” (Workers of the Writers’ Program of the Work Projects Administration in Southern California [Writers’ Program], 1941:397), until World War II. After World War II, Palmdale grew as a center for aerospace and defense industries with the establishment of Edwards Air Force Base in Kern County and Air Force Plant 42 in Palmdale (see below) (Palmdale City Library, 2006).

The town of Littlerock, to the southeast of Palmdale, followed a similar path of development. The first settler moved into the area in the 1860s, building an adobe along Little Rock Creek. He was shortly thereafter killed by a grizzly bear, and the adobe became a bandit hide-out. Legitimate settlement of the Littlerock township, originally called Alpine Springs Colony and then Tierra Bonita, began in the 1890s, when settlers planted 2,000 acres of almond trees, along with some pear trees. The almond trees were unsuited to the desert climate, and failed, while the pear trees flourished. Pear growing subsequently became the major industry, and Littlerock Dam was constructed in 1924 to provide irrigation to the orchards. While agricultural pursuits were the primary industries on the floor of the Antelope Valley at this time, extensive stock grazing continued in the foothills and in some other areas of the valley (Earle, 2003). Littlerock, known as “The Fruitbasket of the Antelope Valley,” did not experience the growth seen at Palmdale and Lancaster, and in 1941, with a population of 150, was described as “an isolated settlement surrounded by irrigation orchards” and as “the trade center of ranchers on 2,000 acres of land producing pears and miscellaneous fruits” (Workers’ Program, 1941:399). Littlerock remains a small town with a current population of approximately 9,100 (Littlerock California Chamber of Commerce, 2003).

Pearblossom, located to the east of Littlerock, was another early pear growing settlement. However, by 1941 the settlement was in decline and the pear orchards had mostly reverted to desert as a result of increased competition from neighboring pear growing regions. At this time, Pearblossom consisted of a few houses, a store and a garage (Workers’ Program, 1941:399).

The military has played an important role in the modern history of the Mojave Desert. In 1933, Rogers Dry Lake (located between Barstow and Boron) was used as a gunnery and bombing range. In 1942, the first U.S. jet airplane was tested at Muroc Army Airfield. This installation became Muroc Air Force Base in 1948 and was renamed Edwards Air Force Base in 1981 (Kyle, 1990:131-132). In 1940, the Palmdale Airport was used as Palmdale Army Air Field to serve as an emergency landing strip and for B-25 support training during World War II. In 1946, the Army Air Field was declared a surplus facility and Los Angeles County purchased it to serve as a municipal airport. The United States Air Force again took over the airport in 1950 (purchased in 1951) to use in final assembly and flight testing of jet aircraft (California State Military Department, 2008). In 1951, Lockheed Aircraft was contracted to develop a master plan for the site, which involved the construction of a facility “that would meet the requirements of full war mobilization and augment the industrial production potential of the major airframe manufacturing industry in southern California” (California State Military Department, 2008). The plan was approved in 1953, and the site became officially known as Air Force Plant 42. The Federal Government took over ownership of the facility in 1954 (California State Military Department, 2008). Air Force Plant 42 is the home of the B1 and B2 bombers, along with the Space Shuttle. Palmdale has often been referred to as the Aerospace Capitol of the United States, with Rockwell, Northrop, Lockheed and McDonnell Douglas maintaining production facilities at Air Force Plant 42. The Federal Aviation Administration’s Air Route Traffic Control

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Center, which handles air traffic for the Western Region of the United States, is also located in Palmdale. With the development of the Palmdale Regional Airport, the possibility of a bullet train linking Palmdale to Los Angeles International Airport, and the relocation of Lockheed's secret research facilities to Palmdale, Palmdale's future in aerospace seems assured (Palmdale City Library, 2006). In 1998, the Joe Davies Heritage Airpark was opened at Air Force Plant 42. Several aircraft that were flown, tested, designed, produced or modified at Air Force Plant 42 are on display at the Heritage Airpark. The construction of a new visitor's center is planned for the future (City of Palmdale, 2008).

When Palmdale incorporated in 1962, its land area measured 2.1 square miles. By 1965, the city limits contained 22.4 square miles, and by 1983, Palmdale had grown to 45 square miles and had 130 additional square miles in its planning area. Palmdale was the fastest growing city in the state for the decade of the 1980s, climbing 573 percent from a population of 12,227 in 1980 to 68,842 in 1990. The vast majority of Palmdale's land is vacant (75%), providing space for continued growth and development in the future.

Palmdale's growth in recent decades is not so much related to industrial growth as it is to the availability of affordable housing. Palmdale has become a 'bedroom' community, with a large number of residents commuting to the Los Angeles area to work.

Although the aerospace industry remains the area's largest source of employment, both Palmdale and Lancaster are trying to entice industry and jobs into the area. Increased population in the last decade provides a large labor force available to employers, and is expected to attract more companies, thus broadening the area's economic base. The combined population for the cities of Palmdale and Lancaster is projected to reach half a million by the year 2010 (Oxford Enterprises 2008).

5.4.2.5 Cultural Resources Inventory

Methods: Records Search, Background Research, and Native American Contacts

All cultural resources investigations for the PHPP were carried out under the direct supervision of Dr. Allen Estes of William Self Associates (WSA), Project cultural resources specialists. The staff at the South Central Coastal Information Center, California State University, Fullerton (SCCIC) conducted a record search of the PHPP vicinity on June 4, 2007 (SCCIC #7629.4749), May 27, 2008 (SCCIC #8529.5554), June 25, 2008 (SCCIC #8608.5598) and June 26, 2008 (SCCIC #8613.5644). The record search included a review of all recorded archaeological sites within a one-mile radius of the plant site and laydown area, and a ¼-mile radius of all linear facilities (e.g., proposed reclaimed water supply pipeline, natural gas supply pipeline, sanitary wastewater pipeline, and electrical transmission line).

In addition, the California Points of Historical Interest, the California Historical Landmarks, the California Register of Historical Resources, the National Register of Historic Places, and the California State Historic Resources Inventory listings were reviewed for the PHPP. Historic maps consulted include USGS 15-minute Alpine Butte, CA quadrangle (1945), USGS 15-minute Lancaster, CA quadrangle (1933 and 1958), USGS 15-minute Tujunga, CA quadrangle (1900), USGS 15-minute Tujunga, CA quadrangle (1944), and USGS 30-minute Elizabeth Lake, CA quadrangle (1941).

The following public agencies and historical societies were also contacted by letter on June 17 and 18, 2008, requesting information regarding historic or other cultural resources within or adjacent to the PHPP: the Los Angeles County Department of Regional Planning, the Palmdale Planning Department, the Palmdale City Library, the Antelope Valley Genealogical Society, the Antelope Valley Indian Museum, the

Hi-Desert Genealogical Society, the West Antelope Valley Historical Society, and the Historical Society of Southern California. On July 21, 2008, WSA also contacted the City of Lancaster Planning Department. On the City of Palmdale Planning Department provided a copy of McKenna's (1993) study for the proposed Palmdale Business Park Center Specific Plan project. On June 27, 2008, the letter to the Historical Society of Southern California was returned as they were no longer located at the listed address. No other responses had been received by July 10, 2008.

On June 26 and 27, 2008, Tom Taylor and Adam Sriro of Southern California Edison were contacted to obtain the dates of construction of the Vincent Substation and H-frame transmission poles extending to the northeast of the Substation. Mr. Sriro informed WSA on July 10, 2008, that initial pre-construction geotechnical borings for the Vincent Substation were undertaken in 1963 and the substation began service in 1967. In addition, during the field survey of the proposed transmission line, a date of 1971 was observed on the H-frame transmission poles.

Between July 8 and July 10, 2008, a series of agency contacts were made to clarify the eligibility status of the Palmdale ditch (LAN-1534H). Currently, the Palmdale ditch is listed in the CRHR as a "contributor to a district determined eligible" for the NRHP (California OHP, 2007). A number of contacts were made to obtain information regarding the historic district that includes the Palmdale ditch (LAN-1534H): These included Thomas Shackford of the SCCIC, who indicated that the information center had no records on file of a historic district that included the Palmdale ditch. WSA then contacted Darrell Vance of the U.S. Forest Service, Angeles National Forest, who provided copies of relevant correspondence which showed that the Palmdale ditch had originally been recommended eligible as part of a district that included the Littlerock Dam, the Palmdale ditch, and an associated historic campsite (Brock and Elliott 1990:31). However, the Angeles National Forest representative was unable to locate any records indicating that the district was ever formed. It appears that after repairs to the Littlerock Dam altered the dam's historical integrity its eligibility status was changed. The ditch, however, was recommended at that time as eligible on its own by the Angeles National Forest (Rogers1994a).

Joseph McDole of the OHP also was contacted; he indicated that the OHP does not have any record that a district including the Palmdale ditch was ever formed. However, according to Mr. McDole, the fact that a district was never formed would not affect the eligibility of the Palmdale ditch, since it is currently listed in the CRHR.

WSA contacted the NAHC by letter on June 17, 2008, with a description of the proposed PHPP. The letter included a request for a listing of local, interested Native American representatives and information on traditional or sacred lands within the Project area and vicinity. NAHC program analyst, David Singleton, responded to this letter on June 20, 2008, stating that a record search of the sacred lands file "failed to indicate the presence of Native American cultural resources in the immediate project area." Included in the response was a list of Native American Contacts. On June 23, 2008, WSA contacted the following Native American persons, and requested information from them regarding Traditional or Sacred Properties within the Project vicinity: Charles Cooke, Ron Andrade (Director, Los Angeles City/County Native American Indian Commission), Beverly Salazar Folkes, Delia Dominguez (Kitanemuk & Yowlumne Tejon Indians), James Ramos (Chairperson, San Manuel Band of Mission Indians), John Valenzuela (Chairperson, San Fernando Band of Mission Indians), William Gonzalaes (Cultural/Environmental Department, Fernandeno Tataviam Band of Mission Indians), and Randy Guzman-Folkes.

5.4 Cultural Resources

The above listed Native Americans were contacted by telephone on July 10, 2008. Charles Cooke stated that he had not received the letter and requested it be sent again; the letter was re-sent the same day. Beverly Salazar Folkes requested that a monitor be present, either on-site or on standby, during all ground disturbing activities through previously undisturbed soil, in both developed and undeveloped areas. She noted that on previous projects within the surrounding area, Native American burials had been uncovered in developed areas within native soil existing beneath layers of previously disturbed soil. Messages were left for the remaining contacts.

Methods: Field Surveys

Field surveys of the Project site were performed by a four-person crew between June 25 and June 29, 2008. The crews conducted intensive pedestrian surveys for archaeological resources on the proposed plant site and laydown area, reclaimed water supply pipeline route, natural gas supply pipeline route, sanitary wastewater pipeline route, and electrical transmission line route, as well as the surrounding buffer zones for each Project component. The survey areas were walked at 20 meter intervals. A “windshield” survey was conducted for potential historic structures surrounding the PHPP components. The surveyed areas are listed below with the survey activities in each area summarized in Table 5.4-3.

1. The 377-acre plant site;
2. A 50-acre laydown area, located immediately west of the plant site;
3. A 35.6-mile electrical transmission line;
4. A 7.4-mile reclaimed water supply pipeline;
5. An 8.7-mile natural gas supply pipeline; and
6. A 1-mile sanitary wastewater pipeline.

Table 5.4-3 Summary of Cultural Resource Survey Activities

Project Area	Date Surveyed (2008)	Description	Size	Comments
1	June 26	Plant site	377 acres	Plant site plus 200-ft.-wide buffer around the entire plant site.
1	June 25-26	"Windshield" survey	One mile radius around Project plant site	Visual reconnaissance to determine whether standing historic structures exist adjacent to the plant site.
2	June 27-29	Transmission line (35.6 miles total)	100 ft. ROW with 50 ft. buffer on each side	Corridor for transmission line construction.
2	June 25	"Windshield" survey	One parcel width in urban setting; ¼ mile width in rural setting.	Visual reconnaissance to determine whether standing historic structures exist adjacent to the transmission line corridor.
3	June 26	Reclaimed water supply pipeline (7.4 miles total)	50 ft. ROW with 50 ft. buffer on each side	Corridor for pipeline construction
3	June 26	"Windshield" survey	One parcel width in urban setting; ¼ mile width in rural setting.	Visual reconnaissance to determine whether standing historic structures exist adjacent to the reclaimed water supply pipeline corridor.
4	June 26	Natural gas supply pipeline (8.7 miles total)	50 ft. ROW with 50 ft. buffer on each side	Corridor for pipeline construction
4	June 26	"Windshield" survey	One parcel width in urban setting; ¼ mile width in rural setting.	Visual reconnaissance to determine whether standing historic structures exist adjacent to the natural gas supply pipeline corridor.
5	June 26	Sanitary wastewater pipeline (1 mile total)	50 ft. ROW with 50 ft. buffer on each side	Corridor for pipeline construction
5	June 26	"Windshield" survey	¼ mile width; all in rural setting	Visual reconnaissance to determine whether standing historic structures exist adjacent to the sanitary wastewater pipeline corridor.
6	June 26	Laydown area	50 acres	Laydown area plus 200-ft.-wide buffer around the entire area.
6	June 26	"Windshield" survey	One mile radius around laydown area	Visual reconnaissance to determine whether standing historic structures exist adjacent to the laydown area.

Findings: Prehistoric and Historic Archaeological Resources Identified and Evaluated for Historical Significance

Seventy-four studies have been conducted within the one-mile record search radius of the plant site area and the ¼-mile record search radius of the remainder of the Project site. Forty-six of these overlapped with portions of the survey areas for the plant site, laydown areas, and linears (reclaimed water supply pipeline, natural gas supply pipeline, sanitary wastewater pipeline, and electrical transmission line), 21 were outside of the survey area but within the ¼-mile search radius, and an additional seven were more than ¼-mile but within one mile of the plant site. They are important in characterizing the cultural potential of the Project area. These studies indicate that prehistoric resources are present in the vicinity of the Project site, with archaeological sites located on the flat valley floor as well as the adjoining foothills. Historic-period resources relate primarily to the early settlement and agricultural development of the area, but also to the military occupation of sections of Palmdale.

The SCCIC record search indicated that 71 archaeological and historic sites have been previously recorded within the one-mile record search radius of the plant site area and the ¼-mile record search radius of the linear facilities. Nine archaeological sites are prehistoric, consisting of five artifact scatters (lithic reduction areas), three campsites, and one bedrock mortar. Sixty-one archaeological sites are historic and include four homestead sites, five features (including linear features such as a railroad and the Palmdale ditch), and 53 trash scatters/dumps. The records search indicated that 12 historic-period archaeological sites have been recorded in the survey areas; no prehistoric sites were recorded in the survey areas. These previously recorded sites include six sites that were not located during the current survey. During the current archaeological survey, WSA identified six previously recorded sites and six new historic-period archaeological sites (Table 5.4-4).

Table 5.4-4 Sites Recorded in Current PHPP Archaeological Survey Area

Site #	Project Comp.	Previously Recorded?	Type; Age	Description and Current Condition	CRHR Eligible?
LAN-1534H	T-Line	Yes	Historic ditch; 1918-1919	Located. Ditch crosses T-line corridor; consists of a concrete channel. Channel is slightly degraded and partially filled with sediments. A concrete and rock bridge over channel is 30 ft. outside survey corridor.	Listed
19-2713	T-line	Yes	Historic trash scatter; early to mid-20 th century	Not located. No site components observed during pedestrian survey. Site appears to no longer exist, destroyed through road widening.	No
19-2722	Plant Site	Yes	Historic trash scatter; early to mid-20 th century	Not located. Within 200-ft. buffer, but on restricted Air Force Plant 42 property.	No
19-2723	Plant Site	Yes	Historic trash scatter; early to mid-20 th century	Not located. Within 200-ft. buffer, but on restricted Air Force Plant 42 property.	No

Site #	Project Comp.	Previously Recorded?	Type; Age	Description and Current Condition	CRHR Eligible?
19-2724	Plant Site	Yes	Historic trash scatter; early to mid-20 th century	Not located. Within 200-ft. buffer, but on restricted Air Force Plant 42 property.	No
19-2726	Plant Site	Yes	Historic trash scatter; early to mid-20 th century	Not located. Within 200-ft. buffer, but on restricted Air Force Plant 42 property.	No
LAN-2774	G-line	Yes	Historic trash scatter; early to mid-20 th century	Not located. No site components observed. Site appears to no longer exist, destroyed through new housing development.	No
19-3703	WS- & G-lines	Yes	Historic trash scatter; 20 th century	Located. Mostly modern road side trash with some mixed historic sanitary cans and glass, including bottles with Owens-Illinois maker marks and soda bottles. Relatively unchanged since last recorded.	No
19-3704	WS- & G-lines	Yes	Historic trash scatter; early to mid-20 th century	Located. Mostly modern road side trash with some mixed historic sanitary cans. Relatively unchanged since last recorded.	No
19-3705	WS- & G-lines	Yes	Historic trash scatter; 20 th century	Located. Mostly modern road side trash with some mixed historic sanitary cans, ceramics, and glass, including Owens-Illinois maker marks, sun-colored amethyst glass, and Duraglas. Relatively unchanged since last recorded.	No
19-180638	WS- & G-lines	Yes	Historic Railroad; late 19 th century	Located. SPRR, standard gauge tracks, still in use and maintained, date of 1995 embossed on rails.	No (portions outside of Project area may be CRHR eligible)
19-187713	T-line	Yes	Historic Road; 1930-1940s	Located. Road crosses the T-line corridor. Still an active two-lane roadway that has been upgraded.	No
PHP-1*	Plant Site	No	Trash scatter; mid-20 th century	Newly recorded. Hole-in-top milk cans, sanitary cans, tobacco tins, and other dry food cans; ceramic and glass tableware fragments (Does not meet eligibility criteria.)	No
PHP-2	T-Line	No	Trash scatter; mid-20 th century	Newly recorded. Hole-in-top milk cans, hole-in-top can, mixed with modern trash along road side (Does not meet eligibility criteria.)	No

5.4 Cultural Resources

Site #	Project Comp.	Previously Recorded?	Type; Age	Description and Current Condition	CRHR Eligible?
PHP-3	T-Line	No	Trash scatter; mid-20 th century	Newly recorded. Hole-in-top milk cans, sanitary cans, church key opened beer cans, paint cans, meat tins, bottle glass and ceramic fragments, mixed with modern trash along seasonal wash (Does not meet eligibility criteria.)	No
PHP-4	T-line	No	Trash scatter; mid-20 th century	Newly recorded. Hole-in-top milk cans, sanitary cans, tobacco tins, church key opened beer cans, meat tins, mixed with modern trash along dirt road (Does not meet eligibility criteria.)	No
PHP-5	T-Line	No	Trash scatter; mid-20 th century	Newly recorded. Hole-in-top milk cans, sanitary cans, tobacco tins, church key opened beer cans, bottle glass, ceramic fragments and other debris, mixed with modern trash along dirt road (Does not meet eligibility criteria.)	No
PHP-6	T-Line	No	Trash scatter; mid- 20 th century	Newly recorded. Hole-in-top milk cans, sanitary cans, church key opened beer cans, cone beer can, and glass fragments. (Does not meet eligibility criteria.)	No

*PHP numbers are the field numbers used when recording the sites.

In addition to the archaeological sites recorded during the current survey within the Project site, two isolates have been recorded (19-100024 and 19-100025), both of which were collected by the previous survey crew in 1993 and are no longer present in the Project site. Table 5.4-5 lists all of the isolates that have been recorded to date in the Project site survey area.

Table 5.4-5 Isolates Recorded in PHPP Survey Area

Isolate #	Project Area Location	Previously Recorded?	Type/Age	Description and Current Condition
19-100024	Plant Site	Yes	Projectile point/prehistoric	Collected by survey crew in 1993
19-100025	Plant Site	Yes	Scraper/prehistoric	Collected by survey crew in 1993

The historic-period archaeological resources are distributed across the Project areas as shown in Table 5.4-6.

Table 5.4-6 Summary of Distribution of Archaeological Resources

Project Area	No. of Previously Recorded/Located Sites	No. of Newly Recorded PHPP Sites	Total No. of Sites Recorded/Located
Plant Site	4/0	1	5/1
Laydown Area	0/0	0	0/0
Reclaimed Water Supply Pipeline	4*/4	0	4/4
Natural Gas Supply Pipeline	5*/4	0	5/4
Sanitary Wastewater Pipeline	0/0	0	0
Electrical Transmission Line	3/2	5	8/7

* Four sites intersect both the reclaimed water supply pipeline and the natural gas supply pipeline, and are included in both totals.

Main PHPP Plant Site

No prehistoric archaeological sites or isolates were identified during WSA's survey of the 377-acre plant site. One previously unknown historic-period archaeological site was recorded. The site (PHP-1) consists of a sparse scatter of historic trash, covering an area of approximately 140 by 250 feet, that appears to be associated with a single dumping episode. Artifacts include sanitary cans, hole-in-top evaporated milk cans, two three-hinged tobacco tins with strikers and two double-hinged tobacco tins, some ceramic and glass tableware fragments and a few other random household items. The site appears to date to the mid-20th century and does not appear to contain subsurface deposits. The site does not appear to be eligible for the CRHR because it does not have the potential to yield important historical information. Therefore, the plant site does not contain potential significant archaeological resources that must be considered when evaluating impacts to cultural resources during the construction of the plant site.

There are four previously recorded historic-period archaeological sites that are not on the plant site, but are within the 200-foot buffer of the plant site, and are on restricted Air Force Plant 42 property. The sites (19-2722, 19-2723, 19-2724, and 19-2726) are all historic trash scatters of similar materials and date. None of these sites could be visited during the survey because of security restrictions associated with the Air Force facility. All four of the sites have been recommended ineligible for the CRHR (Shaver, 1996a, 1996b, 1996c, 1996d). No significant impacts would occur as a result of the PHPP.

Laydown Area

No archaeological sites or isolates were identified during the survey of the 50-acre laydown area. Therefore, the laydown area does not contain potential significant archaeological resources that must be considered when evaluating impacts to cultural resources during construction-related use of the laydown area.

Reclaimed Water Supply Pipeline Corridor

No prehistoric archaeological sites or isolates were identified during the survey of the 7.4-mile-long reclaimed water supply pipeline corridor. Four previously recorded historic-period sites were located, and no new historic-period sites were recorded.

5.4 Cultural Resources

One of the previously recorded sites (19-180638) is a portion of the Southern Pacific Railroad (SPRR) that consists of standard gauge tracks on a raised grade. The tracks are still in use and were last replaced in 1995. The recorders concluded that this portion of the SPRR tracks did not meet criteria for CRHR (O'Brien, 1998). The tracks appear unchanged since they were last recorded.

Three other historic-period sites (19-3703, 19-3704, and 19-3705) are trash scatters that consist primarily of modern trash mixed with some historic trash. Site 19-3703 covers an area of approximately 150 by 60 feet, 19-3704 covers an area of approximately 20 by 10 feet, and 19-3705 measures approximately 1,200 by 140 feet. All three sites are located along 10th between Lockheed and Rancho Vista roads, and they are probably associated with each other, separated only by a meandering seasonal drainage. Recorded artifacts include historic sanitary cans and glass, including bottles with Owens-Illinois maker marks, sun-colored amethyst glass, Duraglas, and soda bottles. All three sites are relatively unchanged since last recorded, and all three sites have been recommended ineligible for the CRHR (Craft et al., 2007; Craft and Mustain, 2007; Mustain, 2007).

Therefore, the reclaimed water supply pipeline corridor does not contain potentially significant archaeological resources that must be considered when evaluating impacts to cultural resources during construction of the reclaimed water supply pipeline.

Natural Gas Supply Pipeline Corridor

No prehistoric archaeological sites or isolates were identified during the survey of the 8.7-mile natural gas supply pipeline corridor. Four previously recorded historic-period sites were located where the natural gas supply pipeline parallels the reclaimed water supply pipeline (19-180638, 19-3703, 19-3704, and 19-3705). These are discussed above. Site LAN-2774 was not located and appears to have been destroyed by the construction of a new housing development. No new historic-period sites were recorded. Therefore, the natural gas supply pipeline corridor does not contain potentially significant archaeological resources that must be considered when evaluating impacts to cultural resources during construction of the natural gas supply pipeline.

Sanitary Wastewater Pipeline

No archaeological sites or isolates were identified during the survey of the one-mile-long sanitary wastewater pipeline corridor. Therefore, the sanitary wastewater pipeline corridor does not contain potentially significant archaeological resources that must be considered when evaluating impacts to cultural resources during construction of the sanitary wastewater pipeline.

Electrical Transmission Line Corridor

No prehistoric archaeological sites or isolates were identified during the survey of the 35.6-mile-long electrical transmission line corridor. Two previously recorded historic-period sites were located, and five new historic-period sites were recorded. One previously recorded historic-period site (19-2713) was not located during the survey. The site was situated near the intersection of M Street and 30th Street, and appears to have been destroyed or covered by road widening and improvements at this location. This site was recommended as ineligible for the CRHR (Shaver, 1996e).

One of the previously recorded sites (LAN-1534H) is the historic Palmdale ditch that runs from Littlerock Dam to Palmdale Lake. According to Love (1989), the Palmdale ditch was constructed between 1918 and 1919, and was designed to convey water from Littlerock Creek to replenish Palmdale Lake. A portion of the

linear site crosses the transmission line corridor. The ditch was located during the survey. When the ditch was recorded in 1989 it was still being used to convey water (Love, 1989). Today, the portion of the ditch that crosses the transmission line corridor may still function as a seasonal drainage. It consists of a concrete-lined channel that is slightly degraded and partially filled with sediments. A concrete and rock bridge over the channel stands just outside the survey corridor. The Palmdale ditch has been determined to be eligible as a contributor to a district for listing in the NRHP and is listed on the CRHR (California OHP, 2007). The Palmdale ditch was originally recommended eligible under criteria A and C for its association with the Littlerock Dam (previously listed on the NRHP but removed from the Register in 1994 due to a loss of integrity [Shackford, 2008]). On its own, the ditch is considered eligible solely under criterion A as it was important to the early development of the irrigation, agriculture and settlement in this area (Rogers 1994a, 1994b; Widell 1995).

Another previously recorded site (19-187713) is the Angeles Forest Highway that crosses the transmission line corridor. The road was located during the survey; it consists of an active two-lane roadway that has been upgraded. The recorded portion of the roadway was recommended by the original recorders as not meeting the criteria for CRHR eligibility (Sander, 2003).

In addition to the previously recorded sites, five historic-period archaeological sites were newly recorded during the survey. Site PHP-2 consists of a dense scatter of historic and modern trash, measuring approximately 490 by 150 feet, found along a rural road. Historic artifacts are primarily several dozen hole-in-top milk cans. The site appears to date to the mid-20th century, does not appear to contain subsurface deposits, and does not appear to be eligible for the CRHR because it does not have the potential to yield important historical information.

Site PHP-3 consists of a dense scatter of modern and historic trash, covering an area of approximately 1,200 by 620 feet, located along a seasonal wash. Historic artifacts include sanitary cans, hole-in-top milk cans, church key opened beer cans, paint cans, and meat tins. Glass and bottle fragments include beer, Clorox, medicinal, liquor, beverage and other miscellaneous fragments. Ceramics present are plate, cup and bowl sherds. Approximately 90 percent of the site can be considered a modern deposit, while 10 percent is historic. Overall, approximately 5,000 cans are present throughout the site, along with 500 to 600 glass and bottle fragments. There are approximately six to seven dense concentrations of artifacts and debris, ranging from several hundred to a thousand cans, bottles, ceramic fragments and other modern and historic refuse and debris. The oldest artifacts present within the site are consistent with the 1950s date; however, most of the deposit dates to the late 20th century. The site does not appear to contain substantial subsurface deposits. The site does not appear to be eligible for the CRHR because it does not have the potential to yield important historical information.

Site PHP-4 consists of both modern and historic artifacts, scattered on both sides of 100th Street, and covering an area of approximately 500 by 290 feet. This site is a light to moderate scatter of sanitary cans, hole-in-top cans, meat tins, larger tobacco tins, and church key opened beer cans. Amber, green, and clear bottle glass fragments are also present. The site contains a large quantity of modern trash, appears to date to the mid-20th century, and does not appear to contain subsurface deposits. The site does not appear to be eligible for the CRHR because it does not have the potential to yield important historical information.

Site PHP-5 consists of a dense scatter of historic trash, mixed with modern trash along a dirt road. The site measures approximately 890 by 680 feet. The 1,500 plus artifacts include hole-in-top milk cans, sanitary cans, tobacco tins, church key opened beer cans, bottle glass, ceramic fragments and other debris. The

site appears to date to the mid-20th century, does not appear to contain subsurface deposit, and does not appear to be eligible for the CRHR because it does not have the potential to yield important historical information.

Site PHP-6 consists of a sparse scatter of historic trash mixed with modern trash along a dirt road that is just off of Angeles Forest Highway (19-187713). The site covers an area of approximately 320 by 210 feet. Artifacts include hole-in-top milk cans, sanitary cans, church key opened beer cans, a cone beer can, and glass fragments. The site appears to date to the mid-20th century, site does not appear to contain subsurface deposits, and does not appear to be eligible for the CRHR because it does not have the potential to yield important historical information.

Except for the Palmdale ditch (LAN-1534H), the transmission line corridor does not contain significant archaeological resources that must be considered when evaluating impacts to cultural resources during construction of the transmission line. Although the Palmdale ditch has been listed in the CRHR, it is expected that the construction of new transmission line structures will be able to avoid the resource. Project cultural resources impacts along the transmission route would be less than significant.

Findings: Historic Structures Identified and Evaluated for Historical Significance

The SCCIC record search also indicated that there are 44 previously recorded historic structures within the one-mile record search radius of the plant site area and the ¼-mile record search radius of the linears that have been evaluated regarding their eligibility for listing on the CRHR. In addition to these, another 19 properties within the record search area are listed in the Directory of Properties in the Historic Property Data File for Los Angeles County of the OHP. The City of Palmdale General Plan (City of Palmdale, 1993) contains a list of potential historic structures. Thirteen of these structures are within the record search area; however, two of the addresses (38211 10th St E and 932 E Ave R) are described as vacant lots by the Los Angeles County Assessor's database.

Thirteen previously recorded historic structures were identified in the records search as being within the survey area (19-180680 [OHP #113394], -186817, -186818 [38147 10th St E], -186819, -186820, -186840, -186852, -186853 and -186854, 39302 10th St E [OHP # 135584], 37352 Sierra Highway, 38107 10th St E, and Bldg 145 [recorded in Trnka 1997]). One additional historic structure, a bridge associated with the Palmdale ditch (LAN-1534H), was also located during the survey. During the windshield surveys, nine of the previously recorded structures were determined to no longer exist (19-186817, 19-186818, 19-186819, 19-186820, 19-186840, 19-186852, 19-186853, 19-186854, and 37352 Sierra Hwy). A total of five potentially historic standing structures were identified within the Project area (Table 5.4-7). Of these, two are large buildings on Air Force Plant 42 property, two are single family residences along 10th Street, and one is a concrete-and-stone bridge spanning the historic Palmdale ditch. Although the bridge was not mentioned in the records of the Palmdale ditch, it is built into the ditch feature and, therefore, is part of it.

Table 5.4-7 Historic Standing Structures Identified during Architectural “Windshield” Survey

Structure	Project Area Location	Previously Recorded?	Site Type	Description and Current Condition	CRHR Status?
Bldg 145	E of plant site	Yes	Industrial Production/ Aircraft Manufacturing Building	Built 1954, concrete and metal structure, still standing and in use.	Not eligible
19-180680 (Bldg 150)	E of plant site	Yes	Industrial Production/ Aircraft Manufacturing Building	Built 1958, concrete and metal structure (Boeing), still standing and in use.	Eligible
38107 10 th St E	Within G-line survey area	Yes	Residence	Built 1930s, single-family stucco house still standing on parcel. Appears to have been renovated/replastered.	Not evaluated
39302 10 th St E	Within G-line survey area	Yes	Residence	Built 1954, single-family wood siding house still standing on parcel.	Not eligible
Bridge associated with LAN-1534H	N of T-line corridor	LAN-1534H is previously recorded, bridge is newly recorded	Bridge	Concrete and rock bridge spanning Palmdale ditch, good condition.	Ditch is Listed

Plant Site

Two historic structures were identified during the “windshield survey” of the one-mile buffer surrounding the proposed plant site. The two historic structures are on the Air Force Plant 42 property adjacent to the eastern boundary of the proposed plant site. Buildings 145 and 150 were both inventoried and evaluated for the US Department of the Air Force in 1997 (Trnka, 1997). Building 145 is a large aircraft production building that was constructed in 1954, but was recommended as not meeting the criteria for CRHR eligibility. Building 150 was constructed in 1958 and is another large aircraft production building. In 1974, an addition was made to the building to accommodate construction of the Space Shuttle. Because all six space shuttles constructed by the United States were built in this building, the building has been determined to be eligible for CRHR listing.

Electrical Transmission Line Corridor

A historic bridge that is associated with the historic Palmdale ditch (LAN-1534H) was identified during the “windshield survey” of the ¼-mile buffer surrounding the proposed transmission line. The bridge is located 30 feet north of the transmission line survey corridor. It is constructed with rock and concrete and spans the concrete-lined historic ditch. The bridge appears to be in good condition and accommodates a dirt road that crosses the ditch. The Palmdale ditch is listed on the CRHR, but the bridge is not mentioned on the site records.

5.4 Cultural Resources

Reclaimed Water Supply Pipeline Corridor

No historic structures were identified within the reclaimed water supply pipeline corridor or within a ¼-mile (rural) or one-parcel (urban) buffer of it.

Natural Gas Supply Pipeline Corridor

Two historic residences were identified during the “windshield survey” of the one-parcel buffer of the natural gas supply pipeline along 10th St E. One structure is located at 38107 10th St E. It was built in the 1930s, and is a single-family stucco house that is still standing on the parcel. The house appears to have been renovated or at least replastered since its construction. The house has been listed in the City of Palmdale General Plan as a potential historic structure, but was not evaluated with regard to CRHR eligibility. The other structure is located at 39302 10th St E. It was constructed in 1954 and is a single-family wood-and-stucco sided frame house that is still standing on the parcel. The residence is listed in the OHP directory of properties, and it has been determined to not be eligible for CRHR listing.

Sanitary Wastewater Pipeline Corridor

No historic structures were identified within the sanitary wastewater pipeline corridor or within the ¼-mile buffer of it.

Laydown Area

No historic structures were identified within the laydown area or within a one-mile buffer.

Findings: Ethnographic Resources Identified and Evaluated for Historical Significance

As noted above in Section 5.4.2.5, on June 17, 2008, WSA sent a letter to the NAHC asking that the database of Native American sacred lands be searched for any known properties with a ¼-mile radius of the Project area. On June 20, 2008, the NAHC responded that no known Native American cultural resources were found in the sacred lands database for the Project site area. On June 23, 2008, eight Native American representatives on the NAHC-provided list were informed about the proposed Project and asked to provide information on any cultural resources that could be affected by the proposed Project. The following individuals were contacted: Charles Cooke, Ron Andrade (Director, LA City/County Native American Indian Commission), Beverly Salazar Folkes, Delia Dominguez (Kitanemuk & Yowlumne Tejon Indians), James Ramos (Chairperson, San Manuel Band of Mission Indians), John Valenzuela (Chairperson, San Fernando Band of Mission Indians), William Gonzalaes, (Cultural/Environmental Department, Fernandeno Tataviam Band of Mission Indians), and Randy Guzman-Folkes.

As discussed earlier, the above listed Native American representatives were contacted by telephone on July 10, 2008. Charles Cooke stated that he had not received the letter and requested it be re-sent; the letter was re-sent the same day. Beverly Salazar Folkes requested that a monitor be present, either on-site or on standby, during all ground disturbing activities through previously undisturbed soil, in both developed and undeveloped areas. She noted that on previous projects within the surrounding area, Native American burials had been uncovered in developed areas within native soil existing beneath layers of previously disturbed soil. Messages were left for the remaining contacts.

5.4.3 Environmental Impacts

5.4.3.1 Definition and Use of Significance Criteria

CEQA regulations contain provisions regarding the preservation of historic (and prehistoric) cultural sites. Section 15126.4 of CEQA directs public agencies to “avoid damaging effects” on an archaeological resource whenever feasible. If avoidance is not feasible, the importance of the site shall be evaluated to determine impact and develop mitigation measures.

In considering impact significance under CEQA, the significance of the resource is determined first. CEQA Section 15064.5 states: Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the following criteria for listing on the California Register of Historical Resources (PRC Section 5024.1, Section 4852):

- a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- b) Is associated with the lives of persons important in our past;
- c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- d) Has yielded, or may be likely to yield, information important in prehistory or history.

The historical integrity of the resource must also be considered. According to CEQA guidelines, the significance of an historical resource is materially impaired when it has been destroyed or materially altered so that its physical characteristics no longer convey the historical significance, which justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources.

CEQA Section 15064.5 also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC Section 5097.98.

Impacts on “unique archaeological resources” are considered under CEQA, as detailed under PRC 21083.2. A unique archaeological resource implies that an archaeological artifact, object or site meets one of the following criteria:

- a) Contains information needed to answer important scientific questions, and there is demonstrable public interest in that information;
- b) Has a special and particular quality, such as being the oldest of its type or the best example of its type;
or
- c) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological artifact, object, or site is one that does not meet any of the above criteria. Impacts on non-unique archaeological artifacts, objects or sites receive no further consideration under CEQA.

Archaeological site evaluation assesses the potential of each site to meet one or more of the criteria for “significance” or “uniqueness” based upon visual surface and subsurface evidence (if available) at each site location, information gathered during the literature and record searches, and the researcher’s knowledge of and familiarity with the historic or prehistoric context associated with each site. Potential impacts on identified cultural resources need only be considered if the resource is “significant” or “unique” under the provisions of CEQA cited above.

5.4.3.2 Assessment of Project Impacts on Archaeological and Historical Resources

Direct/Indirect Impacts and Mitigation

Direct impacts to cultural resources are those that are associated with project development, construction, and co-existence. Ground disturbing construction activities, such as vegetation removal, demolition of overlying structures, grading, excavation, may result in direct impacts to archaeological resources by damaging or destroying intact deposits. Construction may have direct impacts on standing historic structures when project plans require their removal or when vibration from construction activities impairs the structural integrity of nearby historic structures. New structures can have direct impacts on nearby historic structures when the new structures are stylistically incompatible with the historic structures and their setting, or when new structures produce byproducts, such as emissions or vibrations, which are damaging to the structural integrity of historic structures. Ground disturbance from construction has the potential to directly impact archaeological resources at the plant site and along linear routes that remain unidentified at this time.

A project may produce indirect impacts to cultural resources that are not directly related to project construction or co-existence. Such impacts include increased erosion from vegetation clearing, damage or vandalism to archaeological sites due to increased accessibility. Similar impacts can result to standing historic structures, such as vandalism or increased exposure to weathering.

Identification and Assessment of Direct Impacts on Cultural Resources

Plant Site

Construction-related activities that potentially could have direct impacts on cultural resources include the following:

- Surface ground disturbances related to vegetation removal, grading and leveling, and preparation of drainage features would destroy all known cultural resources on the plant site and have the potential for impacting buried archaeological resources not identified at this time.
- Excavations for foundations, footings, and trenches for pipelines and transmission line structures have the potential for impacting buried archaeological resources not identified at this time.
- Installation of security fencing around the plant site has the potential for impacting buried archaeological resources not identified at this time.

During the course of the survey of the plant site, one historic-period archaeological site was identified (PHP-1, a historic trash scatter). No prehistoric archaeological sites or ethnographic resources were identified. Site PHP-1 will be destroyed during site preparation for the construction of the plant site. This site does not meet the CEQA criteria for CRHR eligibility, so its destruction would not be a significant adverse impact requiring mitigation. The extent of the proposed ground disturbance during plant site construction could potentially lead to the discovery of additional archaeological resources that would require identification, assessment, and mitigation to reduce Project impacts to a less than significant level.

Laydown Area

Mass grading and vegetation removal to prepare the laydown area for use during construction could have direct impacts on cultural resources. Leveling would cut into portions of the area and potentially could lead to the discovery of additional archaeological resources that are buried at present. Discovery of new archaeological resources would require identification, assessment, and mitigation to reduce Project impacts to a less than significant level.

During the course of the survey of the laydown area, no prehistoric or historic-era archaeological sites or ethnographic resources were identified. The extent of the proposed ground disturbance during laydown area preparation could potentially lead to the discovery of additional archaeological resources that would require identification, assessment, and mitigation to reduce Project impacts to a less than significant level.

Reclaimed Water Supply Pipeline Corridor

Excavation of a trench for a new 7.4-mile reclaimed water supply pipeline potentially could impact archaeological resources to the extent of the area and depth of the trench in the native soils of the route.

During the course of the survey of the reclaimed water supply pipeline corridor, four historic-period archaeological sites were identified (19-180638, 19-3703, 19-3704, and 19-3705). Site 19-180638 is a portion of the Southern Pacific Railroad that will not be directly impacted by construction of the reclaimed water supply pipeline. The other three historic-period sites (19-3703, 19-3704, and 19-3705) are trash scatters located along 10th Street between Lockheed and Rancho Vista roads. Excavation of a trench through these sites would destroy those excavated portions. All three sites have been determined to not meet the CEQA criteria for CRHR eligibility, so destruction of site components would not be a significant adverse impact requiring mitigation.

During the course of the survey of the reclaimed water supply pipeline corridor, no prehistoric archaeological sites or ethnographic resources were identified. However, the extent of the proposed excavation could potentially lead to the discovery of additional buried archaeological resources that would require identification, assessment, and mitigation to reduce Project impacts to a less than significant level.

Natural Gas Supply Pipeline Corridor

Excavation of a trench for a new 8.7-mile natural gas supply pipeline could potentially impact archaeological resources to the extent of the area and depth of the trench in the native soils of the route.

During the course of the survey of the natural gas supply pipeline corridor, four historic-period archaeological sites were identified (19-180638, 19-3703, 19-3704, and 19-3705). Site 19-180638 is a portion of the Southern Pacific Railroad that will not be directly impacted by construction of the natural gas supply pipeline. The other three historic-period sites (19-3703, 19-3704, and 19-3705) are trash scatters located along 10th Street between Lockheed and Rancho Vista roads. Excavation of a trench through these sites would destroy those excavated portions. All three sites have been determined to not meet the CEQA criteria for CRHR eligibility, so destruction of site components would not be a significant adverse impact requiring mitigation.

During the course of the survey of the natural gas supply pipeline corridor, no prehistoric archaeological sites or ethnographic resources were identified. The extent of the proposed excavation could potentially lead to the discovery of additional buried archaeological resources that would require identification, assessment, and mitigation to reduce Project impacts to a less than significant level.

Sanitary Wastewater Pipeline

Excavation of a trench for a new one-mile sanitary wastewater pipeline could potentially impact buried archaeological resources, unidentified at this time, to the extent of the area and depth of the trench in the native soils of the route. During the course of the survey of the sanitary wastewater pipeline corridor, no prehistoric or historic-era archaeological sites or ethnographic resources were identified. The extent of the proposed ground disturbance during sanitary wastewater pipeline construction could potentially lead to the discovery of additional archaeological resources that would require identification, assessment, and mitigation to reduce Project impacts to a less than significant level.

Electrical Transmission Line Corridor

PHPP construction-related activities that could potentially have direct impacts to cultural resources include the following:

- Surface ground disturbances related to vegetation removal, grading and leveling in preparation for transmission structure construction have the potential for impacting buried archaeological resources not identified at this time.
- Excavations for foundations of footings for construction of new transmission structures have the potential for impacting buried archaeological resources not identified at this time.
- Ground disturbances by heavy equipment at any pulling sites have the potential for impacting buried archaeological resources not identified at this time.

During the course of the survey of the electrical transmission line corridor, seven historic-period archaeological sites were identified (LAN-1534H [the Palmdale ditch], 19-187713 [Angeles Forest Highway], PHP-2, PHP-3, PHP-4, PHP-5, and PHP-6 [all historic trash scatters]). No prehistoric archaeological sites or ethnographic resources were identified. None of the resources will be impacted by Project transmission structure construction. Surface grading would destroy sites PHP-2, PHP-3, PHP-4, PHP-5, and PHP-6. These sites do not appear to meet the CEQA criteria for CRHR eligibility, so their destruction would not be a significant adverse impact requiring mitigation. Site 19-187713 (the Angeles Forest Highway) will not be impacted by transmission line construction. Site LAN 1534H (the Palmdale ditch) has been listed in the CRHR, so any destruction of site components could be viewed as an adverse impact. The site should be easily avoidable during transmission line construction, and avoidance of the resource would reduce the Project impact to a less than significant level.

The extent of the proposed ground disturbance during transmission line construction potentially could lead to the discovery of additional archaeological resources that would require identification, assessment, and mitigation to reduce Project impacts to a less than significant level.

Summary of Direct and Indirect Impacts on Significant Cultural Resources, All Project Areas

Only one significant historical-period site, previously recorded LAN-1534H (the Palmdale ditch), could be impacted by the construction of the proposed electrical transmission line. Direct impacts could include damage or destruction of portions of the historic concrete-lined ditch; indirect impacts could include damage from vibration or erosion which could result from proposed construction and the movements of heavy equipment within the corridor. Mitigation should be provided to avoid this resource, or to protect this resource if it cannot be avoided during project construction. No other significant impacts to archaeological resources are anticipated as a result of Project construction.

Two potentially significant standing structures were identified during the survey. The site 19-180680 (Building 150 on Air Force Plant 42) would not be impacted by the proposed Project. The other structure, the concrete-and-stone bridge which is part of site LAN-1534H, will not be directly impacted by construction but could be indirectly impacted by vibration or erosion, which could result from proposed construction and the movements of heavy equipment along the corridor. Mitigation should be provided to avoid this resource, or to protect this resource if it cannot be avoided during Project construction.

No significant ethnographic resources, either previously recorded or newly disclosed in communications with Native Americans, were identified in the vicinity of the project. Consequently, the Project would have no direct significant impacts on ethnographic resources.

5.4.4 Mitigation Measures

Following are proposed mitigation measures that would ensure that PHPP impacts to potentially significant cultural resources are reduced to less-than-significant levels.

5.4.4.1 Construction

- CUL-1:** To avoid impacts to significant historic-period archaeological site LAN-1534H (the Palmdale ditch, including the associated concrete and stone bridge), this cultural feature should be protected from damage by avoidance. The project owner's construction manager, or person designated by the construction manager, will cordon off the resource at a distance of at least 100 feet to either side of the resource to ensure that the site is not impacted by construction activities.
- CUL-2:** If Project construction cannot avoid LAN-1534H (the Palmdale ditch), an archaeologist meeting the Secretary of the Interior's Standards will be retained to develop and implement a data recovery program for the site. This program might include at least a level of recordation that meets the minimum Historic American Engineering Record requirements for this type of resource.
- CUL-3:** The project owner will develop, submit for CEC review and approval, and implement an approved Cultural Resources Monitoring and Mitigation Plan (CRMMP), prepared under the direction of a qualified cultural resources specialist. The CRMMP will identify general and specific measures that will be implemented to minimize potential impacts to sensitive cultural resources.
- CUL-4:** The project owner will provide Worker Environmental Awareness Program (WEAP) training prior to construction to assist in worker compliance with cultural resource identification and protection procedures. The training will consist of illustrations and/or photographs of common types of historic and prehistoric artifacts that may be encountered during construction activities, and provide a protocol to be followed in the event of an unanticipated discovery of archaeological materials and/or human remains.
- CUL-5:** Should any previously unknown historic or prehistoric resources be discovered during grading, trenching, or other on-site excavation(s), ground-disturbing construction activities within 100 feet of these resources shall be stopped until a the Project's designated cultural resources specialist or another professional archaeologist meeting the Secretary of the Interior's Standards has an opportunity to evaluate the significance of the find.

- CUL-5:** If a find is determined to not be potentially significant by the Project's designated cultural resources specialist, construction activities within the area can continue.
- CUL-5:** If a find is determined to be potentially significant by the Project's designated cultural resources specialist, a mitigation plan meeting State requirements will be developed and implemented in consultation with the California Energy Commission. If the resource cannot be avoided, a data recovery plan, aimed at collecting sufficient data to address prehistoric or historic research questions, will be prepared and carried out.
- CUL-7:** A professional technical report detailing the data recovery methods and results, and a discussion of the findings in terms of the research questions provided in the data recovery plan, will be prepared by the consulting archaeologist. Copies of the report will be provided to the California Energy Commission, the South Central Coastal Information Center, and the curation facility for the artifacts.
- CUL-8:** All collected prehistoric and historic artifactual material will be curated at a qualified curation facility. Copies of field notes, and other relevant documentation, will also be provided with the artifact collection.
- CUL 9:** All prehistoric and historic discoveries will be documented on appropriate Department of Parks and Recreation forms (Form DPR 523) and filed with the South Central Coastal Information Center in Fullerton.
- CUL-10:** In the event that Native American human remains or funerary objects are discovered, the provisions of the California Health and Safety Code should be followed. Section 7050.5(b) of the California Health and Safety Code states that all excavation or disturbance of the site or nearby area cease, and that the coroner of the county in which the human remains are discovered be contacted. If the remains are determined by the coroner to be Native American, the coroner must contact the Native American Heritage Commission. The Native American Heritage Commission will assign a Most Likely Descendant, who will make recommendations regarding the treatment of the remains.

5.4.4.2 Operations

No additional mitigation measures are required for PHPP operation.

5.4.5 References

Antelope Valley Indian Museum, 2006. Kitanemuk.

<http://www.avim.parks.ca.gov/people/ph_kitanemuk.shtml>. Accessed April 25.

Antevs, E., 1953a. On Division of the Last 20,000 Years. *University of California Archaeological Survey Reports* 22:5-8. Berkeley, CA.

Antevs, E., 1953b. The Postpluvial or Neothermal. *University of California Archaeological Survey Reports* 22:9-23. Berkeley, CA.

Antevs, E., 1955. Geologic-Climatic Dating in the West American. *Antiquity* 20(4):366-335.

- Bamforth, D., 1990. Settlement, Raw Material, and Lithic Procurement in the Central Mojave Desert. *Journal of Anthropological Archaeology* 9:70-104.
- Bean, L. J., and C. R. Smith, 1978. Serrano. In *Handbook of North American Indians, Vol 8: California*, R. F. Heizer (editor), pp. 570-574. Smithsonian Institution, Washington, D.C.
- Benedict, R., 1924. A Brief Sketch of Serrano Culture. *American Anthropologist* 26(3):366-392.
- Bettinger, R. L., and R. E. Taylor, 1974. Suggested Revisions in Archaeological Sequences of the Great Basin and Interior Southern California. *Nevada Archaeological Survey Research Papers* 5:1-26. Reno, NV.
- Blackburn, T. C., and L. J. Bean, 1978. Kitanemuk. In *Handbook of North American Indians, Vol 8: California*, R. F. Heizer (editor), pp.564-569. Smithsonian Institution, Washington, D.C.
- Brock, James and John F. Elliott, 1990. A Cultural Resources Assessment of the Little Rock Reservoir Area, Angeles National Forest. Prepared by Archaeological Advisory Group, Newport Beach, CA, for Woodward-Clyde Consultants, Oakland, CA. On file at the Angeles National Forest.
- California OHP (Office of Historic Preservation), 2007. Archaeological Determinations of Eligibility, Los Angeles County, December 2007. On file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- California State Military Department, 2008. Historic California Posts: Air Force Plant 42, Palmdale (Palmdale Army Air Field). California State Military Department, The California Military Museum. <<http://www.militarymuseum.org/AFPlant42.html>>. Accessed June 2008.
- California State Mining Bureau, 1896. *Thirteenth Report (Third Biennial) of the State Mineralogist for the Two Years Ending September 15, 1896*. Superintendent State Printing, Sacramento, CA.
- Campbell, Elizabeth W., 1931. An Archaeological Survey of the Twenty-nine Palms Region. *Southwest Museum Papers* 7:1-93. Los Angeles, CA.
- Campbell, Elizabeth W., 1935. Archaeological Problems in the Southern California Deserts. *American Antiquity* 1(4):295-300.
- Campbell, Elizabeth W., and William H. Campbell, 1935. The Pinto Basin Site: An Ancient Aboriginal Camping Ground in the California Desert. *Southwest Museum Papers* 9:1-51. Los Angeles, CA.
- Campbell, Elizabeth W., W. H. Campbell, E. Antevs, C. A. Amsden, J. H. Barbieri, and F. D. Bode, 1936. The Archaeology of Pleistocene Lake Mohave. *Southwest Museum Papers* 11. Los Angeles, CA.
- Chartkoff, J., and K. K Chartkoff, 1984. *The Archaeology of California*. Stanford University Press, Palo Alto, CA.
- City of Palmdale, 1993. City of Palmdale General Plan. Adopted by City Council Resolution 93-10, January 25, 1993. Palmdale, CA.

5.4 Cultural Resources

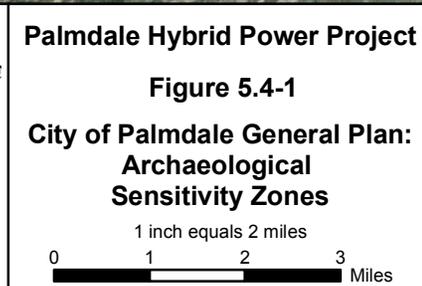
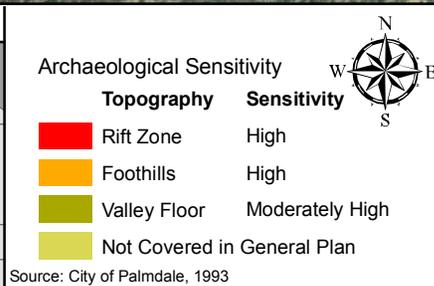
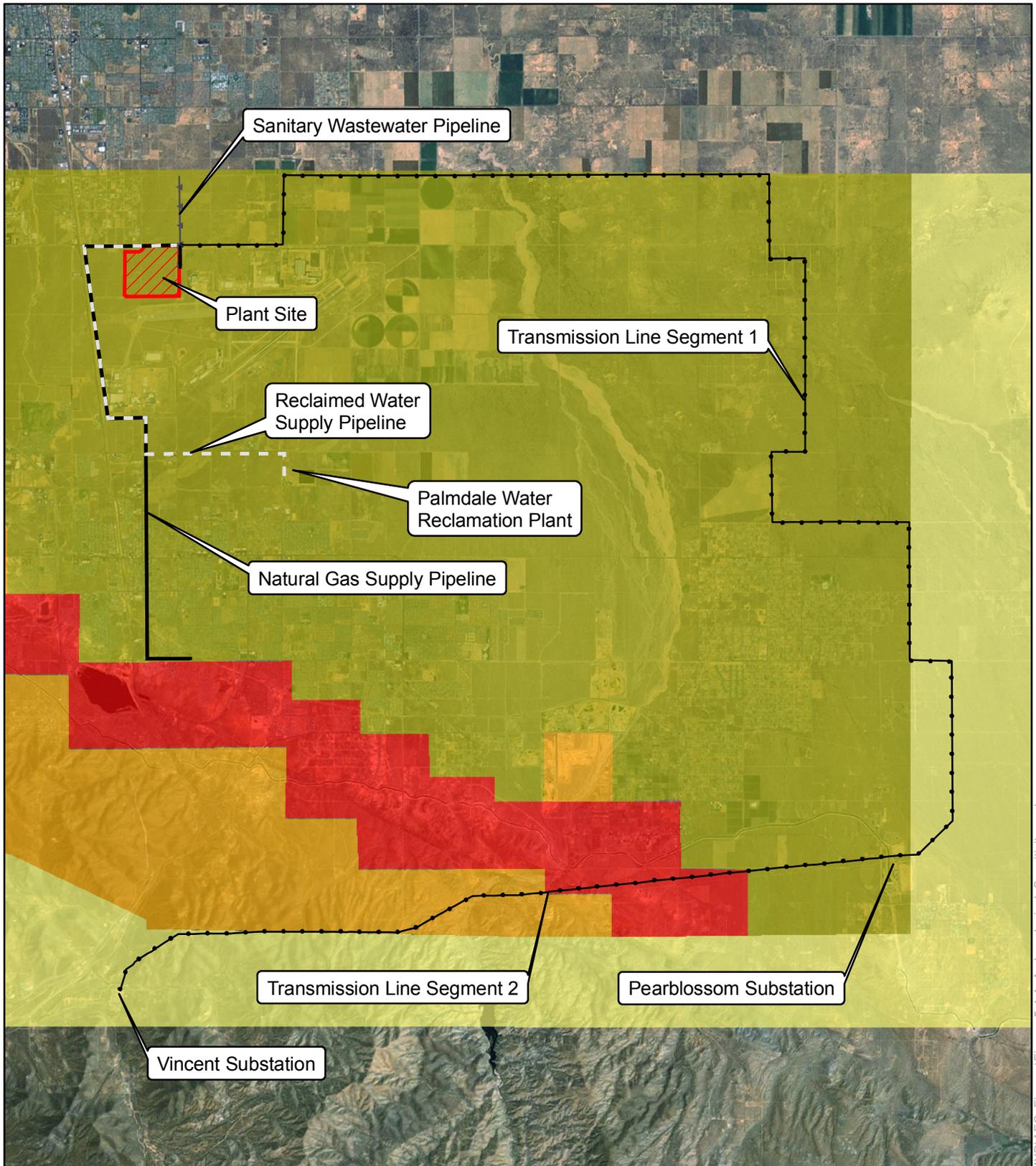
- City of Palmdale, 2008. About the Airpark. Joe Davies Heritage Airpark at Palmdale Plant 42. City of Palmdale. <<http://www.cityofpalmdale.org/airpark/about.html>>. Accessed June 2008.
- County of Los Angeles Public Library, 2007. Antelope Valley, Frequently Asked Questions. County of Los Angeles Public Library. <<http://www.colapublib.org/history/antelopevalley/faq.html>>. Accessed June 2008.
- Craft, Andrea M. and Soraya L. Mustain, 2007. DPR 523 Records for Site 19-3703. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Craft, Andrea M., Soraya L. Mustain, Theodore G. Cooley and Koji Tsunoda, 2007. DPR 523 Records for Site 19-3705. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Donnan, C. B., 1964. Suggested Culture Sequence for the Providence Mountains (eastern Mojave Desert). *University of California, Los Angeles, Archaeological Survey Annual Report, 1963-1964:1-26*. Los Angeles, CA.
- Drucker, P., 1937. Culture Element Distributions, V: Southern California. *University of California Anthropological Records* 1(1):1-52. Berkeley, CA.
- Earle, David, 2003. Mining and Ranching in Soledad Canyon and Antelope Valley. Santa Clarita Valley History in Pictures. <<http://www.scvhistory.com/scvhistory/earle-mining-0103.htm>>. Accessed June 2008.
- Gifford, E. W., 1918. Clans and Moieties in Southern California. *University of California Publications in American Archaeology and Ethnology* 14(2):155-219. Berkeley, CA.
- Glennan, W. S., 1971. *A Glimpse at the Prehistory of Antelope Valley – Archaeological Investigations at the Sweetser Site (Ker-302)*. Kern-Antelope Historical Society, Lancaster, CA.
- Hess, Frank L., 1910. *A Reconnaissance of the Gypsum Deposits of California*. Department of the Interior, United States Geological Survey, Bulletin 413. Government Printing Office, Washington D.C.
- Keeling, P. J., 1976. *Once Upon a Desert*. Mojave River Valley Museum, Barstow, CA.
- King, Chester and Thomas C. Blackburn, 1978. Tataviam. In *Handbook of North American Indians, Vol 8: California*, R. F. Heizer (editor), pp. 535-537. Smithsonian Institution, Washington, D.C.
- Kowta, M., 1969. The Sayles Complex: A Late Milling Stone Assemblage from Cajon Pass and the Ecological Implications of its Scraper Planes. *University of California Publications in Anthropology* 6. Berkeley, CA.
- Kroeber, A. L., 1925. Handbook of the Indians of California. *Smithsonian Institution, Bureau of American Ethnology Bulletin* 78. Washington, D. C.
- Kroeber, A. L., 1970. *Handbook of the Indians of California*. California Book Company, Ltd, Berkeley, CA.
- Kyle, D. E., 1990. *Historic Spots in California*. Stanford University Press, Palo Alto, CA.

- Lantis, D. W., R. Steiner and A. E. Kariner, 1989. *California: The Pacific Connection*. Creekside Press, Chico, CA.
- Littlerock California Chamber of Commerce, 2003. Littlerock History, the Fruit Basket of the Antelope Valley, Established in 1893. Littlerock California Chamber of Commerce. <<http://www.littlerock-ca.us/littlerock%20History.htm>>. Accessed June 2008.
- Los Angeles County Department of Regional Planning, 2007. Los Angeles County Draft Preliminary General Plan. Prepared by the Los Angeles County Department of Regional Planning, CA.
- Love, Bruce W., 1989. Archaeological Site Record for LAN-1534H. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- McGroarty, John Steven, 1914. *Southern California Comprising the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura*. Issued by the Southern California Panama Expositions Commission, CA.
- McKenna, Jeanette A., 1993. Archaeological, Historical and Paleontological Investigations of the Proposed Business Park Center Specific Plan Project Area, City of Palmdale, County of Los Angeles, California. McKenna et al. (IC ID# LA 2837.) Report on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Moratto, M. J., 1984. *California Archaeology*. Academic Press, Orlando, FL.
- Moseley, M., and G. A. Smith, 1962. Archaeological Investigations of the Mojave River Drainage. *San Bernardino County Museum Association Quarterly* 9:3. Redlands, CA.
- Murphy, Thomas D., 1921. *On Sunset Highways, a Book of Motor Rambles in California*. The Page Company, Boston, MA.
- Mustain, Soraya L., 2007. DPR 523 Records for Site 19-3704. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Newell, F.H., 1890. *Report on Agriculture by Irrigation in the Western Part of the United States at the Eleventh Census: 1890*. Department of the Interior Census Office. Government Printing Office, Washington D.C.
- O'Brien, T., 1998. DPR 523 Records for Site 19-180638. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Oxford Enterprises, 2008. Antelope Valley. <http://www.california-land.com/html/antelope_valley.html>. Accessed April 2008.
- Palmdale City Library, 2006. A History of Palmdale. <<http://www.palmdalelibrary.org/history/part2.shtml>>. Accessed April 25.
- Palmdale City Library, 2008. Local History. Palmdale City Library. <<http://get.palmdalelibrary.org/?menu=1§ion=1&page=6>>. Accessed June 2008.

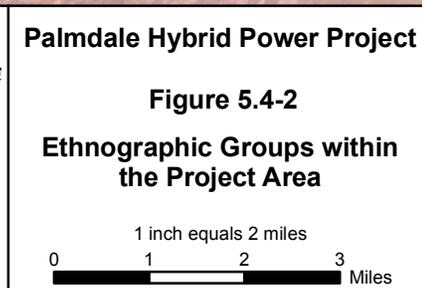
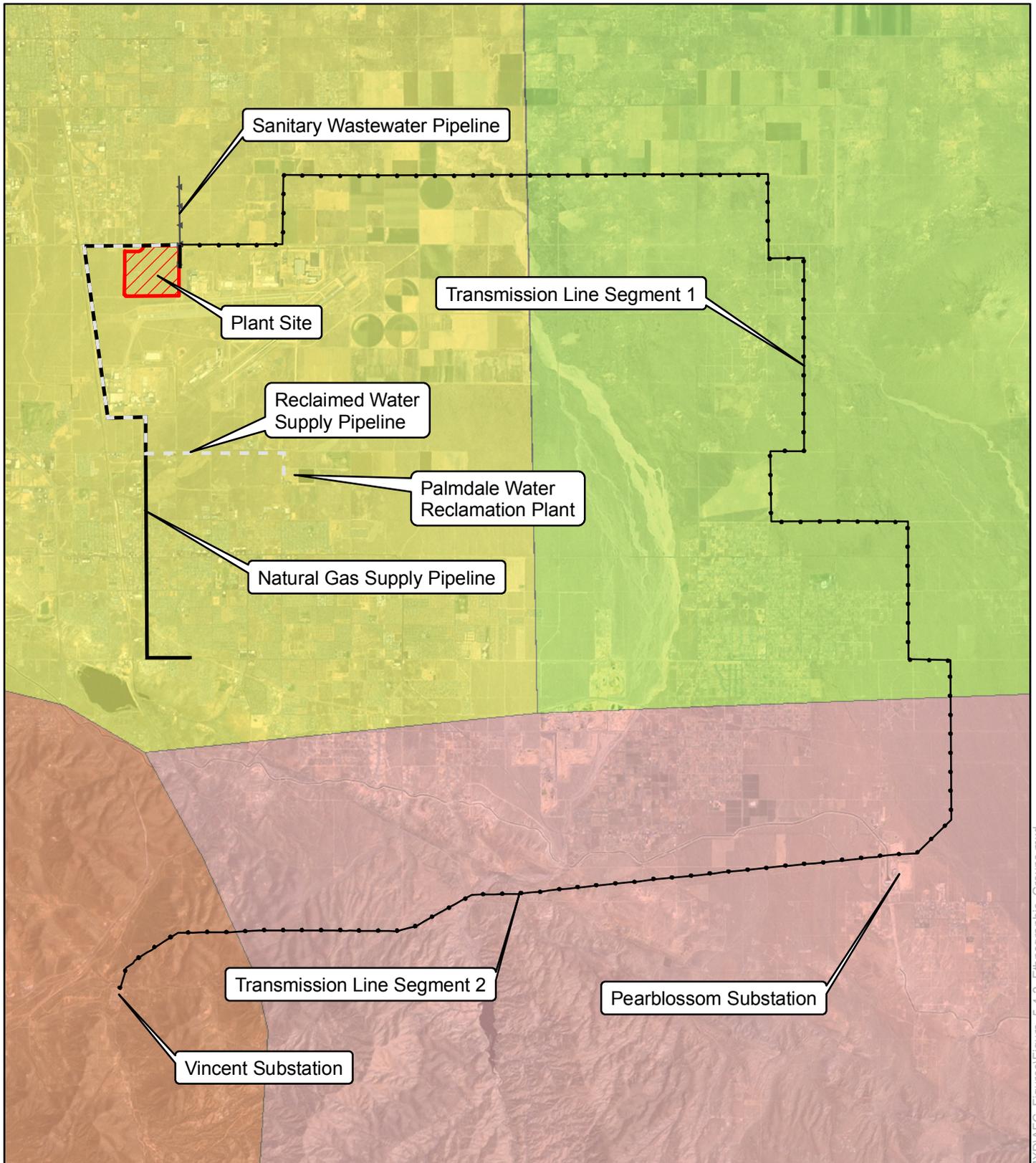
5.4 Cultural Resources

- Palmdale Water District, 2004. Palmdale Water District History, 1890's to 1950's. <http://www.palmdalewater.org/YW/PH/ph_01trans.html>. Accessed June 2008.
- Pierson, E., 1970. *The Mojave River and its Valley*. Arthur H. Clark Company, Glendale, CA.
- Rogers, M. J., 1929. Report on an Archaeological Reconnaissance in the Mohave Sink Region. *San Diego Museum of Man Papers* 1. San Diego, CA.
- Rogers, M.J.,1938. Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Area. *San Diego Museum of Man Papers* 3. San Diego, CA.
- Rogers, Michael J., 1994a. Letter to Cheryl Widell, State Historic Preservation Officer, Office of Historic Preservation, October 27. On file at the Angeles National Forest.
- Rogers, Michael J., 1994b. Letter to Kathryn Gualtieri, State Historic Preservation Officer, Office of Historic Preservation, December 4. On file at the Angeles National Forest.
- Sander, Jay K., 2003. DPR 523 Records for Site 19-187713. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Schoenherr, A. A., 1995. *A Natural History of California*. University of California Press, Berkeley, CA.
- Shackford, Thomas, 2008. Lead Staff Researcher. South Central Coast Information Center. Personal communication with Angela Cook of William Self Associates. July 8.
- Shaver, Chris, 1996a. Archaeological Site Record for Site 19-2722. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Shaver, Chris, 1996b. Archaeological Site Record for Site 19-2723. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Shaver, Chris, 1996c. Archaeological Site Record for Site 19-2724. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Shaver, Chris, 1996d. Archaeological Site Record for Site 19-2726 Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Shaver, Chris, 1996e. Archaeological Site Record for Site 19-2713. Record on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Strong, W. D., 1929. Aboriginal Society in Southern California. *University of California Publications in American Archaeology and Ethnology* 26(1):1-358. Berkeley, CA.
- Susia, M. L., 1963. Tule Springs Archaeological Surface Survey, Carson City. *Nevada State Museum Anthropological Papers* 12.
- Sutton, Mark Q., 1980. Some Aspects of Kitanemuk Prehistory. *The Journal of California and Great Basin Anthropology* 2(2):214-225.

- Sutton, Mark Q., Mark E. Basgall, Jill K. Gardner and Mark W. Allen, 2007. Advances in Understanding Mojave Desert Prehistory. In *California Prehistory, Colonization, Culture, and Complexity*, Terry L. Jones and Kathryn A. Klar (editors), pp. 229-246. AltaMira Press, Lanham, MD.
- Trnka, Joseph, 1997. Historic Building Inventory and Evaluation, Air Force Plant 42, Palmdale, California. Earth Tech & Research Management Consultants, Inc. (IC ID# LA 4329.) Report on file at the South Central Coastal Information Center, California State University, Fullerton, CA.
- Tuohy, D. R., 1974. A Comparative Study of Late Paleo-Indian Manifestations in the Western Great Basin. *Nevada Archaeological Survey Research Papers* 5:91-116, Reno, NV.
- United States Department of Agriculture, Soil Conservation Service, 1986. Soil Survey of San Bernardino County, California, Mojave River Area.
- Wallace, W. J., 1962. Prehistoric Cultural Development in the Southern California Deserts. *American Antiquity* 28(2):112-123.
- Wallace, W. J., and E. Wallace, 1977. *Ancient Peoples and Cultures of Death Valley National Monument*. Acoma Books, Ramona, NM.
- Warren, C. N., 1967. The San Dieguito Complex: A Review and Hypothesis. *American Antiquity* 32(2):168-185.
- Warren, C.N., 1980. The Archaeology and Archaeological Resources of the Amargosa-Mojave Basin Planning Units. In C. N. Warren, M. Knack, and E. von Till Warren, A Cultural Resource Overview for the Amargosa-Mojave Basin Planning Units Cultural Resources Publications, Anthropology-History Riverside, CA. U.S. Bureau of Land Management, CA.
- Warren, C. N., and R. H. Crabtree, 1972. Prehistory of the Southwestern Area. In *Handbook of North American Indians, Vol 11: Great Basin*. Smithsonian Institution, Washington, D.C.
- Warren, C. N., and J. DeCosta, 1962. The San Dieguito Type Site: M. J. Rogers' 1938 Excavation on the San Dieguito River. *San Diego Museum Papers* 5:1-39. San Diego, CA.
- Warren, C. N., and H. T. Ore, 1978. Approach and Process of Dating Lake Mojave Artifacts. *The Journal of California Anthropology* 5(2):179-187.
- Widell, Cheryl, 1995. Letter to Michael J. Rogers, Forest Supervisor, Angeles National Forest, June 21. On file at the Angeles National Forest.
- William Self Associates, Inc. (WSA). 2008. Cultural Resources Technical Report, Palmdale Hybrid Power Project, Palmdale, CA, Prepared for ENSR Corporation. William Self Associates, Inc. Orinda, CA.
- Workers of the Writers' Program of the Work Projects Administration in Southern California (Writers' Program), 1941. *Los Angeles, A Guide to the City and its Environs*. American Guide Series. Hastings House, New York, NY.



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