8.3. Cultural Resources

This section of the Small Power Plant Exemption (SPPE) Application determines whether cultural resources are present and could be affected adversely by the construction and operation of the Chevron Refinery Power Plant Replacement Project (PPRP, or the Project). The significance of any potentially affected resources is assessed, and measures are proposed to mitigate potential adverse Project effects. This study was conducted by Clint Helton, M.A., RPA (Registered Professional Archaeologist), a Cultural Resource Specialist who meets the qualifications for Principal Investigator stated in the Secretary of the Interior's standards and guidelines for archaeology and historic preservation (USNPS, 1983).

This section is consistent with state regulatory requirements for cultural resources pursuant to the California Environmental Quality Act (CEQA). The study scope was developed in consultation with the California Energy Commission's (CEC's) cultural resources staff and complies with *Instructions to the California Energy Commission Staff for the Review of and Information Requirements for an Application for Certification* (CEC, 1992) and *Rules of Practice and Procedure & Power Plant Site Certification Regulations* (CEC, 1997).

Cultural resources include prehistoric and historic archaeological sites[1], districts and objects; standing historic structures, buildings, districts, and objects; and locations of important historic events, or sites of traditional/cultural importance to various groups.[2]

Section 8.3.2 discusses the laws, ordinances, regulations, and standards (LORS) applicable to the protection of cultural resources. Section 8.3.3 describes the cultural resources environment that might be affected by the Project. Section 8.3.4 discusses the environmental impacts of construction of the proposed development. Section 8.3.5 discusses whether there are any cumulative effects from the Project, and Section 8.3.6 presents mitigation measures that will be implemented to avoid construction impacts. Section 8.3.7 lists the agencies involved and agency contacts, and Section 8.3.8 discusses permits and the permitting schedule. Section 8.3.9 lists reference materials used in preparing this section.

Appendix 8.3-A provides the resume for Clint Helton. Appendix 8.3-B contains a copy of a previous comprehensive cultural resources assessment of the Chevron Richmond Refinery prepared by LSA (1990). Figure 8.3-1 depicts the ethnographic distribution in the Project area per CEC Data Adequacy requirements. Much of the information contained in this section is consistent with the analysis prepared by ESA Associates, Inc. in the *Chevron Energy and Hydrogen Renewal Project Administrative Draft EIR* (ESA, 2006).

The Project is subject to CEC and CEQA regulatory requirements. The Project does not require review under federal regulations such as the National Environmental Policy Act (NEPA) and the Archaeological and Historic Preservation Act (AHPA) of 1974 (16 USC 469), among others, because it is not a federal undertaking (federally permitted or funded).

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1 Site: "The location of a significant event, a prehistoric or historic occupation or activity, or a building or structure…where the location itself possesses historic, cultural, or archeological value." (USNPS-IRD 1991:15).

2 The "federal definition" of cultural resources is typically applied to non-federal projects (NHPA, Title III, Section 301).

8.3.1 Introduction

Chevron is proposing the PPRP to add an additional 60 megawatts (MW) net generation to its existing refinery electrical generation located within Chevron's Richmond Refinery in the City of Richmond (see Figure 1.2-1) in Contra Costa County, California. The proposed PPRP will be integrated into Chevron's plans to meet its growing refinery electrical load, and produce steam to replace an existing boiler plant that is approaching its end of life. The PPRP is a subset of the larger Richmond Refinery Renewal Project that is concurrently undergoing CEQA review by the City of Richmond. The CEC has jurisdiction for only the PPRP portion of the Renewal Project that is the subject of this application.

The PPRP will consist of the following components:

- A nominal 43-MW net, natural gas- or liquid petroleum gas (butane)-fired cogeneration train consisting of one combustion turbine generator (CTG), a refinery fuel gas-fired heat recovery steam generator, 13.8-kV switchgear and ancillary equipment.
- Shutdown of the existing No. 1 power plant refinery steam boilers currently providing steam to the Refinery.
- A 17-MW net extraction, condensing steam turbine generator (STG), an associated cooling tower, and 12-kV switchgear installed as part of the new hydrogen production facility (the remainder of the hydrogen plant is under CEQA review as part of the Renewal Project). The new hydrogen plant will be a net generator of steam for both the STG and the refinery steam system.
- Reconductoring of approximately 4,000 feet of existing onsite double-circuit overhead 115-kV transmission line to upgrade its ampacity. The reconductoring will reuse existing transmission line structures.
- Adjacent onsite service connections for fuel, reclaimed water, water, wastewater, steam, and electricity to existing piperacks, with the exception of the reconductoring noted above.

The Cogen 3000 portion of the PPRP will occupy approximately 0.5 acre within an existing 5.2-acre cogeneration facility, and the STG and associated equipment (H_2-STG) will occupy approximately 0.5 acre within a new 7.9-acre hydrogen plant that will be built as part of the Richmond Refinery Renewal Project. The PPRP will be located well within the heart of the existing 2,900-acre Richmond Refinery. Temporary construction laydown and parking for the PPRP will be provided in various existing laydown areas within the refinery that are currently used for ongoing maintenance and project laydown. A complete description of the PPRP is provided in Section 2.0.

8.3.2 Laws, Ordinances, Regulations, and Standards

Among the local LORS discussed in this section are certain ordinances, plans or policies of the City of Richmond. For informational purposes, this section reviews compliance of the Project with such requirements even though the Applicant understands that they are not applicable to the Project as a matter of law. (See Section 8.4, Land Use for a discussion of this issue.) The analysis of City LORS in this section is informational and does not address the jurisdictional issues which are discussed in Section 8.4, Land Use.

A summary of LORS is provided in Table 8.3-1.

TABLE 8.3-1
Applicable Cultural Resource Laws, Ordinances, Regulations, and Standards

Law, Ordinance, Regulation, or Standard	Applicability	Project Conformity?
California Environment Quality Act Guidelines	Project construction may encounter archaeological and/or historical resources	Yes
Health and Safety Code Section 7050.5	Construction may encounter Native American graves; coroner calls the Native American Heritage Commission (NAHC)	Yes
Public Resources Code Section 5097.98	Construction may encounter Native American graves; NAHC assigns Most Likely Descendant	Yes
Public Resources Code Section 5097.5/5097.9	Would apply only if some Project land were acquired by the state (currently no state land)	Yes
City of Richmond General Plan	Project construction may encounter archaeological and/or historical resources	Yes

8.3.2.1 State of California Statutes

CEQA requires a review to determine if a project will have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group eligible for inclusion in the California Register of Historical Resources (CRHR).[3] CEQA equates a substantial adverse change in the significance of a historical resource with a significant effect on the environment (Section 21084.1 of the Public Resources Code) and defines substantial adverse change as demolition, destruction, relocation, or alteration that would impair historical significance (Section 5020.1). Section 21084.1 stipulates that any resource listed in, or eligible for listing in, the CRHR is presumed to be historically or culturally significant.[4]

Resources listed in a local historic register or deemed significant in a historical resource survey (as provided under Section 5024.1g) are presumed historically or culturally significant unless the preponderance of evidence demonstrates they are not.

3 The CRHR is a listing of "…those properties which are to be protected from substantial adverse change." Any resource eligible for listing in the California Register is also to be considered under CEQA.

4 A historical resource may be listed in the CRHR if it meets one or more of the following criteria: "(1) is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; (2) is associated with the lives of persons important to local, California or national history; (3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or (4) has yielded or has the potential to yield information important in prehistory or history (…of the local area, California or the nation)" (Public Resources Code §5024.1, Title 14 CCR, Section 4852). Automatic CRHR listings include NRHP listed and determined eligible historic properties (either by the Keeper of the NRHP or through a consensus determination on a project review); State Historical Landmarks from number 770 onward; and Points of Historical Interest nominated from January 1998 onward. Landmarks prior to 770 and Points of Historical Interest may be listed through an action of the State Historical Resources Commission.

A resource that is not listed in or determined to be eligible for listing in the CRHR, is not included in a local register of historic resources, nor deemed significant in a historical resource survey, may nonetheless be historically significant (Section 21084.1; see Section 21098.1).

CEQA requires a Lead Agency to identify and examine environmental effects that may result in significant adverse effects. Where a project may adversely affect a unique archaeological resource,[5] Section 21083.2 requires the Lead Agency to treat that effect as a significant environmental effect and prepare an Environmental Impact Review (EIR). When an archaeological resource is listed in or is eligible to be listed in the CRHR, Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental effect. Sections 21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Other state-level requirements for cultural resources management appear in the California Public Resources Code Chapter 1.7, Section 5097.5 (Archaeological, Paleontological, and Historical Sites), and Chapter 1.75, beginning at Section 5097.9 (Native American Historical, Cultural, and Sacred Sites) for lands owned by the state or a state agency.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and Sections 5097.94 and 5097.98 of the Public Resources Code, and falls within the jurisdiction of the Native American Heritage Commission (NAHC).

If human remains are discovered, the Contra Costa County coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native American so they can inspect the burial site and make recommendations for treatment or disposal.

8.3.2.2 Local Policies

As discussed above, among the local LORS discussed in this section are certain ordinances, plans or policies of the City of Richmond. For informational purposes, this section reviews compliance of the Project with such requirements even though the Applicant understands that they are not applicable to the Project as a matter of law. (See Section 8.4, Land Use, for a discussion of this issue.) The analysis of City LORS in this section is informational and does not address the jurisdictional issues which are discussed in Section 8.4, Land Use.

5 Public Resources Code 21083.2 (g) defines a unique archaeological resource to be: An archaeological artifact, object, or site, about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: (1) contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information; (2) has a special and particular quality such as being the oldest of its type or the best available example of its type; or (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

8.3.2.2.1 City of Richmond

The City of Richmond General Plan contains the following policies and implementation programs relevant to the proposed redevelopment program and its relationship to cultural and historic resources:

Policy LU-A.4: Require new development adjacent to historical sites to incorporate design elements so as to complement the character of the surrounding historical structures. (Note: Same as Policy OSC-E.4.)

Policy LU-A.5: Preserve and enhance existing cultural and artistic artifacts and resources in the City.

Policy OSC-E.1: Require archaeology reconnaissance surveys for all projects within an archaeological sensitivity area (as identified on maps on file with the Planning Department). When cultural resources are located, measures to deal with the historic resource shall be recommended by a qualified archaeologist….

Policy OSC-E.2: Protect notable historic, archaeological, and cultural sites from destruction.

Policy OSC-E.3: Support formulation of a plan for interpretive facilities on specific sites. Sites near local and regional recreation areas should be preferred. Sites should be included in parks, trails, and other facilities whenever possible.

Implementation Program OSC-E.1: City will continue to utilize environmental reviews under the California Environmental Quality Act to review developments for potential impacts on archaeological and historical sites. If sites of archaeological significance are present, the procedures established in Appendix K [now section 15064.5] of the CEQA Guidelines will be applied.

8.3.3 Affected Environment

In California, cultural resources extend back in time for at least 11,500 years. Written historical sources tell the story of the past 200 years. Archaeologists have reconstructed general trends of prehistory.

8.3.3.1 Regional Setting

The Project is situated within the existing Chevron Richmond Refinery site in the City of Richmond, Contra Costa County, California. The Refinery, located in Richmond's West Shoreline area at 841 Chevron Way, is the largest in the Bay Area, and occupies an estimated 2,900 acres, including a major portion of the Point San Pablo Peninsula. The Refinery consists of several plants that process crude oil into a variety of products, including LPG, gasoline, aviation gasoline, jet fuel, diesel fuel, and lube oils. The Refinery also produces steam, electricity, gas, and hydrogen, primarily for its own use.

8.3.3.2 Prehistoric Period

The general trend throughout California prehistory has been an increase in population density over time, coupled with greater sedentism and the use of a greater diversity of food resources. There is abundant evidence that humans were present in the New World for at least the past 11,500 years. There is also fragmentary, but growing, evidence that humans were present long before that date. Linguistic and genetic studies suggest that a date of 20,000 to 40,000 years ago

for the human colonization of the New World may be correct. The evidence of this earlier occupation is not yet conclusive, but it is beginning to be accepted by archaeologists. The Meadowcroft Rockshelter in Pennsylvania and Monte Verde in Chile, for instance, are two early sites that have produced apparently reliable dates as early as 12,500 years before present. These earliest known remains indicate very small, mobile populations, apparently dependent on hunting of large game animals as the primary subsistence strategy.

Although the Project area is urbanized with a history of industrial and maritime uses since the early 20th century, prehistorically it was a biologically rich upland and beach surrounded by intertidal flats and marsh. Natural marshland biotic communities along the edges of bays and channels were the principal source for subsistence and other activities from the middle Holocene until the contact period in the San Francisco Bay region.

This section discusses general trends in California prehistory. The general trend throughout California prehistory was the increase in population density over time, coupled with greater sedentism and the use of a greater diversity of food resources. Chartkoff and Chartkoff (1984) identified three major periods of prehistory observed throughout California: Pre-Archaic, Archaic, and Pacific. These patterns are roughly correlated with the Paleoindian, Archaic, and Emergent periods developed by Fredrickson (1994) for west-central California. As Chartkoff and Chartkoff observe, culture change occurred in different ways and at different times throughout California. These changes nevertheless followed a broad pattern, outlined below.

8.3.3.2.1 Pre-Archaic Period (Prior to 11,000 years before present [BP])

Evidence throughout California and the western United States generally suggests that Pre-Archaic (or Paleoindian) populations were small and their subsistence economies included the capture of big game such as now-extinct large Pleistocene mammals including mammoth and mastodon. Recent research in the Great Basin, which offers better preservation of Pre-Archaic sites than does California, indicates that the economies of the Pre-Archaic peoples of the far western United States were based on a wide-ranging hunting and gathering strategy, dependent to a large extent on local lake-marsh habitats (Willig, 1988).

Large, fluted lanceolate projectile points known as Clovis points, which are the most widely recognized markers for this time period, have been found in the Clear Lake locality at the Borax Lake Site to the north of the Project area (Meighan and Haynes, 1970), the Tulare Lake Basin to the south (Wallace and Riddell, 1988), and sporadically elsewhere in California. There are no known Pre-Archaic sites in the Bay Area.

8.3.3.2.2 Early to Middle Archaic Period (11,000-6,000 years BP)

During the Early and Middle Archaic periods, northern California prehistoric cultures, as elsewhere, began to put less emphasis on large game hunting. Subsistence economies probably diversified somewhat, and Archaic-era people may have begun to use certain ecological zones, such as the coast littoral, more intensively than before. Advances in technology, such as the advent of milling stones, indicate that new food processing methods became important during the Archaic period, enabling more efficient use of certain plant foods including grains and plants with hard seeds. A model of early Holocene adaptation devised for the eastern Great Basin (Price and Johnston, 1988) may be applicable to California. According to this model, this was a period of gradual warming and drying that

supported a specialized economy based largely on marsh, lake, and stream resources. It supported higher population densities and a greater degree of sedentism than the Pre-Archaic period.

The earliest Archaic sites from west-central California are from the Los Vaqueros Reservoir area in eastern Contra Costa County, where two sites have recently produced artifact assemblages and human burials dated between 9,870 and 6,600 years BP. Prior to the Los Vaqueros excavations, Early to Middle Archaic deposits in the Bay-Delta areas were limited to isolated human burials. No sites dating to these periods have been found in the immediate Project vicinity. However, the lack of sites from these periods may reflect the alluvial environment as well as the extensive urban development that may have destroyed or covered sites. It is possible that as-yet undiscovered Early and/or Middle Archaic sites lie deeply buried or beneath existing paved and landscaped surfaces in the Project area.

8.3.3.2.3 Late Archaic Period (6,000-4,000 years BP)

One important technological advance during the Late Archaic was the discovery of a process for removing the tannins from acorns, which made it possible to exploit this abundant and nutritious, though labor intensive, resource (Chartkoff and Chartkoff, 1984). Prehistoric trade networks also began to diversify and develop during the Late Archaic, bringing raw materials and finished goods from one region to another. Resource exploitation during this period, as well as during the Early and Middle Archaic, was generally seasonal. Bands moved between established locations within a clearly defined and defended territory, scheduling the harvest of particular resources according to the time of their availability. Aggregations of food resources, such as occurred at the shores of a large body of water or along a major fish-producing river, allowed for larger aggregations of people, at least seasonally. Dispersed resources, such as large and small mammalian game during the winter, meant dispersal across the landscape into small family groups for more efficient food harvesting. The spear thrower (atl-atl) may have been introduced or increased in importance during this period, accounting for the change in projectile point styles from the Western Stemmed series to the Pinto and Humbolt series, which are generally stemmed or have indented bases, or both. There was also an increase in the importance of seed grinding (Price and Johnston 1988).

It appears that the shell mound sites along San Francisco Bay were first occupied during the Late Archaic. Shell mound sites excavated in the Coyote Hills area contain Late Archaic components. Most of these sites have produced intact human burials and a great variety of artifacts, a reflection of the diverse subsistence practices. Acorns and other nut and berry crops appear to have been the primary plant resources targeted during this period. At sites along the Bay, the abundant remains of marine animals, including shellfish, fish, and mammals, reflect the occupants' early adaptation to the marine and bayshore estuarine environment. Obsidian from the North Coast Ranges and eastern Sierra also appears at these sites, reflecting the early existence of extensive trade networks.

8.3.3.2.4 Early and Middle Pacific Periods (4,000-1,500 years BP)

According to Chartkoff and Chartkoff (1984), the beginning of the Pacific Period is marked by the advent of acorn meal as the most important staple food resource for most California Indians. Increasing population densities throughout the period made it desirable and necessary for California populations to produce more food from available land and to seek more dependable food supplies. The increasing use of food processing techniques, such as

seed grinding and acorn leaching, developed during the Archaic, allowed for the exploitation of more dependable food resources. Increasing use of previously neglected ecological zones may also have been part of this trend.

In the Bay Area, Early and Middle Pacific sites are typically composed of well-developed midden deposits with human burials and residential features, representing long-term permanent villages. During this period, archaeological evidence indicates an increase in the use of the estuarine and marine zones and fully developed exploitation of these areas. Site assemblages are characterized by a well-developed bone tool and ornament industry; shell beads, ornaments, and pendants; and both unshaped and well-shaped mortars and pestles. Stone tools are manufactured of both locally available chert and imported obsidian. The predominant projectile point type is the shouldered lanceolate form, although side-notched and stemmed points and large lanceolate-shaped bifaces also occur. Burials are typically in a flexed position.

8.3.3.2.5 Late and Final Pacific Period (1,500 years BP-Historic Era)

A.D. 500 (1,500 years BP) is a cultural watershed throughout California. Sometime near this date, the bow and arrow replaced the spear thrower and dart as the hunting tool and weapon of choice. The most useful markers for this period tend to be the small projectile points used as arrow tips. The date of bow and arrow introduction is a point of some controversy, but most authors place it between A.D. 500 and 600. Others believe bows and arrows were introduced as early as A.D. 250 (750 years BP; Hughes, 1986) or as late as A.D. 700 (1,300 years BP; Bennyhoff et al., 1982).

During the Final Pacific Period, populations became increasingly sedentary and dependent on stored staple foods. Staple foods were stored for the winter in permanent settlements with populations as high as 1,000 persons. At the same time, there is evidence of continued diversification of the resource base. By the Final Pacific Period, every available ecological niche was exploited, at least on a seasonal basis. There was full exploitation of the marine/estuarine zone and further development of long-distance trade networks and more complex social and political systems.

Late and Final Pacific period sites are generally well-developed midden deposits, some with surface components. The midden deposits contain both cremated and intact human burials and residential features, including house floors, reflecting the increasingly sedentary populations. Bedrock mortar milling stations were first established in the Bay Area around 1,300 years ago. Although portable mortars and pestles continued to be used, smaller specimens were preferred. Changes in the size of ground stone tools reflect the dramatic increase in the use of small-seeded plant resources. Olivella and clamshell disc beads, frequently found in burials, appear to have been manufactured at Bay Area sites. Small unmodified obsidian pebbles and large flake blanks were imported almost exclusively from the Napa Valley. There is evidence that, during this period, inhabitants of the Bay Area had well-established trade relations with the Yurok, the Maidu, the Miwok, and several other interior groups. This period has its end in the late 18th century with the arrival of Euroamericans in the Project area.

8.3.3.3 Archaeology and Archaeological Sensitivity of the Project Area

Upland areas near watercourses were favored locations for prehistoric occupation. In the San Francisco Bay Area, the Bay margins are also high sensitivity areas for archaeological resources, due to their proximity to fish and shellfish resources in the Bay. The Project area is of sensitivity for prehistoric archaeological deposits, because this boundary area was a frequent site for villages and temporary camps.

Along the shores of San Francisco Bay, including the Project area, occupation was intermittent and sparse prior to around 5,000 to 7,000 years ago. In addition, evidence for occupation prior to 7,000 years ago was hidden by rising sea levels or buried under sediments caused by natural and man-made Bay marshland infilling along estuary margins.

The first formal archaeological study in the San Francisco Bay Area was conducted by Max Uhle, who, in 1902, excavated a trench into a shell mound site on the eastern shore of the Bay at Emeryville (Site CA-Ala 309). At that time, it was assumed that prehistoric California Indian culture had been primitive and unchanging. Although Uhle found stratigraphic differences in mortuary patterns and artifactural assemblages, other scholars largely ignored the evidence of social complexity and maintained the assumption that no meaningful changes took place during California's prehistory (Uhle, 1907; Kroeber, 1925).

Nels Nelson was the first person to carry out formal archaeological research in the Bay Area. He surveyed the prehistoric shell mounds of the Bay Area and identified more than 400 mounds around the Bay. Some of the largest Nelson sites included Uhle's Emeryville mound (1,000 by 300 feet and 32 feet deep), the Stege mounds (240 by 160 feet and 350 by 250 feet), and the Ellis Landing mound (460 by 245 feet and more than 30 feet deep). Unfortunately, Nelson did not formally record or accurately map these sites and their approximate locations have been inferred from site remnants, topographic indications, and other lines of evidence.

Nelson and other early researchers in the Bay Area believed that there were no important breaks in the cultural record of the Bay Area and no important cultural changes during the area's prehistory. Although Nelson found differences in shellfish species between upper and lower portions of the Ellis Landing mound, which he excavated, he attributed these differences to environmental causes (changes in the environment led to changes in the abundance of different shellfish species). More recent research in the Project area and archaeological excavations, largely conducted to mitigate the impacts of various construction projects, has disproven the theory that prehistoric culture was static in the Project area. Instead, we know that a series of prehistoric cultural developments occurred, as outlined above.

8.3.3.3.1 Richmond Area Prehistory

Large numbers of shell mounds were identified at this location and on Ellis Landing (near Brooks Island in Richmond) by Nelson (1909) and some have been re-evaluated recently (Broughton, 1997 and 1999). These sites provide diverse collections of artifacts and faunal remains along with human burials with rich grave offerings. Banks & Orlins (1981) conducted an extensive regime of augering throughout the Richmond Harbor, which included the areas that constituted Nelson's shellmound dimensions. The augering revealed that the area had been covered by approximately 2 to 3 meters of compacted fill, followed

by 3.5 meters of intact midden, in the case of Site CA-CCo-295. The dimensions of the shellmound were estimated to be 500 x 330 feet.

Native American archaeological sites located in western Contra Costa County are usually situated near seasonal and perennial freshwater sources and near the historic extent of bay tidal marshland. The Project site is within one-half mile of recorded prehistoric archaeological resources. As mentioned, the Ellis Landing Shellmound (CA-CCo-295), located near Brooks Island (approximately 2 miles east of the Chevron Refinery), represented one of the largest and most significant shellmounds in the San Francisco Bay region.

Also within the vicinity of the Project area is the Stege Mounds Archaeological District (CA-CCo-297, -298, -299, and -300). Originally recorded by Loud (1924), the Stege Mounds represented another example of long-term occupation of the salt marsh and tidal flats surrounding the Richmond Harbor. Two of the sites were re-evaluated (CA-CCo-297 and -298) by Banks & Orlins (1981), which verified that these sites were mostly intact at about 1 meter depths below landfill. The Stege Mounds are approximately five miles east of the Chevron Refinery.

8.3.3.3.2 Ethnographic Setting

Prior to Euro-American contact, the area of present-day Alameda County was occupied by the Ohlone (also known by their linguistic group, Costanoan). Politically, the Costanoan were organized into groups called tribelets. A tribelet constituted a sovereign entity that held a defined territory and exercised control over its resources. It was also a unit of linguistic and ethnic differentiation. Oakland, and a large area of the East Bay, is located within the territory of a people that spoke Chochenyo, one of several Costanoan languages.

The Ohlone economy was based on fishing, gathering, and hunting, with the land and waters providing a diversity of resources including acorns, various seeds, salmon, deer, rabbits, insects, and quail. The acorn was the most important dietary staple of the Costanoan, and the acorns were ground to produce a meal that was leached to remove the bitter tannin. Technologically, the Costanoan crafted tule balsa, basketry, lithics (stone tools) such as mortars and metates (a mortar-like flat bowl used for grinding grain), and household utensils. The Costanoan, like many other Native American groups in the Bay Area, likely lived in conical tule thatch houses.

In 1770, the Costanoan-speaking people lived in approximately 50 separate and politically autonomous nations or tribelets, and the number of Chochenyo speakers reached 2,000, substantially more than the typical size of a tribelet, which ranged from 40 to 200 members.

During the Mission Period (1770-1835), native populations, especially along the California coast, were brought—usually by force—to the missions by the Spanish missionaries to provide labor. The missionization caused the Costanoan people to experience cataclysmic changes in almost all areas of their life, particularly a massive decline in population due to introduced diseases and declining birth rate, resulting in large part from colonization by the Spanish missionaries. Following the secularization of the missions by the Mexican government in the 1830s, most Native Americans gradually left the missions and established rancherias in the surrounding areas.

Native American archaeological sites that could shed light on the Costanoan ways of life in the pre-mission era tend to be situated near the historic extent of the bay tidal marshland.

8.3.3.3.3 Historic Setting

In 1895, Augustin S. Macdonald visited Point Richmond and proposed a transcontinental rail terminal and ferry service, to provide a means for commerce and the transport of goods between Richmond and San Francisco. By 1901, Santa Fe had moved its shops to Richmond and the Standard Oil Company built its refinery here also in 1901 (City of Richmond, 2006). Richmond incorporated as a city in 1905.

During the early 20th century, the harbor and major terminal construction began in earnest and, with the advent of World War II, ushered considerable growth for the Kaiser Richmond shipyards. At war's end, the shipyards closed and were subsequently used for the post-war industrialization and production that followed (City of Richmond, 1995).

As industries grew in the area, the most prominent were in warehousing and distribution, and chemical and research facilities. During this phase, Standard Oil, now called Chevron, and its subsidiaries, Chevron Chemical and (later) Chevron Research, were the mainstays in local employment, and they remain so to this day.

8.3.3.4 Resources Inventory

The Richmond Refinery was subjected to both an archival literature search at the Northwest Information Center of the California Historical Resources Information System (CHRIS) and a field reconnaissance by ESA archaeologist Dean Martorana (Martorana, 2006) in support of the larger *Chevron Energy and Hydrogen Renewal Project Administrative Draft EIR* (ESA, 2006), of which the CRPPRP is a part. These studies considered potential resources within the entire existing Refinery boundary, and in the case of the literature search, a quarter-mile buffer surrounding the Refinery. In addition, ESA found that fourteen cultural resource investigations have been conducted within the Project area. Most notably LSA (1990) conducted a historic resource evaluation of seven potentially historic properties on the Refinery grounds that constituted refinery process facilities, including the No. 1 Power Plant, and found that none qualified for the National Register of Historic Places or the California Register of Historical Resources. A copy of this report has been provided as Appendix 8.3-B.

In addition, on November 16, 2006 Clint Helton, RPA of CH2M HILL conducted a field reconnaissance and windshield survey of the PPRP components, as part of a guided site visit to the Chevron Richmond Refinery. No historic resources were noted.

Because all of the PPRP Project components fall within these previous study areas, no additional archival research or field survey was undertaken by CH2M HILL for the PPRP. This section summarizes the results of the technical study conducted by ESA (Martorana, 2006), the detailed and comprehensive study conducted by LSA (1990) and the field reconnaissance/windshield survey conducted by Clint Helton, RPA of CH2M HILL. The results of these resource inventories are presented in summary in the sections below.

8.3.3.4.1 Archival Research

ESA conducted a cultural resources records search of all pertinent survey and site data at the Northwest Information Center, Sonoma State University on July 13, 2005 (File No. 05-40). The City of Richmond's (2006) Historic Register and list of City Landmarks was also consulted. The Project Area was defined as the Chevron Richmond Refinery along with a quarter-mile radius around the facility.

Fourteen cultural resource investigations have been conducted within the Project area. Hupman and Chavez (1993) conducted an inventory report that covered the spatial extent of the current Project. No resources were identified. LSA (1990) conducted a historic resource evaluation of seven potentially historic properties on the Chevron Refinery grounds that constituted refinery process facilities, including the No. 1 Power Plant, and found that none qualified for the National Register of Historic Places or the California Register of Historical Resources.

Table 8.3-2 describes sites located within 1 mile of the Project. Table 8.3-3 describes the seven refinery facilities previously recorded and evaluated by LSA (1990) within the Chevron Richmond Refinery.

TABLE 8.3-2
Summary of Sites within One Mile of the Project Area of Potential Effects

Site Designation	Type	Description	Effect
CA-CCo-283	Prehistoric	Shellmound	None; outside APE
CA-CCo-506H	Historic	Chinese earthenware; misc. debris	None; outside APE
CA-CCo-765H	Historic	Submerged ship hull	None; outside APE
CA-CCo-276	Prehistoric	Shellmound	None; outside APE
CA-CCo-277	Prehistoric	Shellmound	None; outside APE
CA-CCo-278	Prehistoric	Shellmound	None; outside APE
CA-CCo-281	Prehistoric	Shellmound	None; outside APE
CA-CCo-282	Prehistoric	Shellmound	None; outside APE
CA-CCo-284	Prehistoric	Shellmound	None; outside APE
CA-CCo-423	Prehistoric	Shellmound	None; outside APE

Note:
APE = Area of Potential Effects

TABLE 8.3-3
Summary of Previously Recorded Refinery Facilities within the Chevron Richmond Refinery

Site Designation	Type	NRHP/CRHR Status	Effect
No. 10 Battery	Historic	Not Eligible	None; outside APE
No. 11 Battery	Historic	Not Eligible	None; outside APE
Vapor Recovery Plant	Historic	Not Eligible	None; outside APE
No. 3 Saltwater Station	Historic	Not Eligible	None; outside APE
No. 1 Power Plant	Historic	Not Eligible	None; outside APE
Aromatics Recovery Unit	Historic	Not Eligible	None; outside APE
LPG Boiler House	Historic	Not Eligible	None; outside APE

Notes:
APE = Area of Potential Effect
CRHR = California Register of Historical Resources
NRHP = National Register of Historic Places
Source: LSA 1990

8.3.3.4.2 Field Survey

On November 16, 2006 Clint Helton, RPA of CH2M HILL conducted a field reconnaissance and windshield survey of the PPRP components, as part of a guided site visit to the Chevron Richmond Refinery. CEC cultural resources specialist Dorothy Torres was also in attendance. All of the Project components are located within heavily developed areas of the Refinery with very little to no surface visibility. No archaeological resources, either prehistoric or historic, were noted, and the potential for such resources is considered to be extremely low. Most Project components are located within operational areas of the Refinery providing little or no native habitat or soils that would provide adequate visibility of archaeological materials, if present and intact. No architecturally significant structures were noted within any of the PPRP components. The No. 10 Battery and No. 11 Battery facilities previously recorded are immediately west of the proposed laydown area for the PPRP but they are not significant and fall outside of the area of impact. Similarly, the previously recorded Aromatics Recovery Unit is immediately west of the plant area but is not significant and falls outside the area of impact. Many, if not all, of the facilities in the Refinery have been subject to structural changes from maintenance and upgrading. Moreover, it was noted by Chevron personnel that many of the Project components sit on deep artificial fill.

Most recently a field reconnaissance was conducted by ESA archaeologist Dean Martorana, RPA to obtain a general impression of the area's potential to yield significant cultural resource sites and visually inspect Project areas in relation to known archaeological sites. ESA's field reconnaissance did not result in the identification of any additional historic resources, including unique archaeological resources (personal communication, January 5, 2007).

8.3.3.4.3 Native American Consultation

ESA contacted the NAHC by letter on October 26, 2005 to request information about traditional cultural properties such as cemeteries and sacred places in the Project area (Marorana, 2006). The NAHC provided a list of Native American organizations that should

be contacted concerning locations of importance to Native Americans in the Project area. ESA sent a letter to each organization on the NAHC list, providing information about the proposed Project and requesting information on locations of importance to Native Americans. No responses are known.

The NAHC record search of the Sacred Lands file failed to indicate the presence of Native American cultural resources in the immediate Project area. The record search conducted at the Northwest Information Center of CHRIS also failed to indicate the presence of Native American traditional cultural properties.

8.3.4 Environmental Analysis

This section describes the environmental impacts of the Project's construction and operation.

CH2M HILL considered previous archival research and cultural resource investigation reports, and performed Native American consultation as well as a site visit and field reconnaissance. As a result of these activities, CH2M HILL did not detect within the Project area any significant prehistoric or historic archaeological remains, or any historically or architecturally significant buildings that have the potential to be impacted by the PPRP. No impacts on architectural resources are expected to occur.

In general, Project facilities and equipment would be constructed on disturbed soils within current and previously used process areas within the Refinery. There would be minor demolition activities (for example, pipe supports, concrete slabs) associated with proposed modifications to other Refinery units. These activities, as well as the management and disposal of the wastes from the various construction activities (for example, asbestos-containing insulation, lead-containing blasting grit from paint removal, containers from paint applied at new/modified units) would be conducted in accordance with established procedures and the applicable regulatory requirements. All construction would take place within the Refinery boundaries. Any required staging, fabrication, or laydown areas would also be within Refinery boundaries, and would not result in significant impacts to adjacent facilities. Temporary construction-related impacts are addressed in Sections 8.1, Air Quality; 8.5, Noise; and 8.9, Traffic and Transportation.

Both the CHRIS literature search and several previous field surveys have failed to identify significant archaeological sites or significant architectural resources. The seven architectural resources that were documented by LSA in 1990 are located outside of the area of potential effect of the PPRP components, and none were evaluated as architecturally significant. Therefore, no impacts to cultural resources are expected to occur.

8.3.4.1 Environmental Checklist

The checklist in Table 8.3-4 is used by the California Energy Commission to assess the significance of potential impacts.

TABLE 8.3-4
California Energy Commission's Environmental Checklist

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5?				X
d) Disturb any human remains, including those interred outside of formal cemeteries?		X		

8.3.5 Cumulative Effects

Because the Project will not affect known significant cultural resources, the Project will not likely cause significant cumulative impacts. If construction of the Project or its linear components were to encounter a large, stratified, buried prehistoric archaeological site or discrete filled-in historic period features, the possibility of cumulative impacts would arise because such sites might be highly significant, and many have been destroyed or damaged by commercial/industrial/residential development and agricultural activity in the Project vicinity. Given the low level of impact to such a site that the Project will cause, it is also unlikely that the proposed Project activities will lead to significant cumulative impacts, depending on the extent of Project impact to any such discovered archaeological deposits. Any potential impact to an unknown site would be minimized by a stop-work procedure if a site were uncovered. No impacts on architectural resources are expected to occur.

8.3.6 Mitigation Measures

Although significant archaeological and historical sites were not found during the previous field surveys, it is possible that subsurface construction could encounter buried archaeological remains. For this reason, the Applicant proposes to implement measures to mitigate any potential adverse impacts that could occur if there were an inadvertent discovery of buried cultural resources. These measures include: (1) procedures for halting construction in the event that there is an inadvertent discovery of unknown historical resources, including archaeological resources; and (2) procedures for contacting the Contra Costa County coroner in the event previously unidentified human remains are damaged.

8.3.6.1 Inadvertent Discovery of Unknown Historical Resources, Including Archaeological Resources

In the event that any prehistoric or historic subsurface cultural resources are discovered during ground-disturbing activities, all work within 50 feet of the resources shall be halted and Chevron and/or the lead agency shall consult with a qualified archaeologist to assess the significance of the find per CEQA Guidelines Section 15064.5. If any find is determined

to be significant, representatives of Chevron and/or the lead agency and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate mitigation, with the ultimate determination to be made by the lead agency. All significant cultural materials recovered shall be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis and professional museum curation, and documented according to current professional standards.

In considering any suggested mitigation proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the lead agency shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, Project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the Project site while mitigation for historical resources or unique archaeological resources is carried out.

8.3.6.2 Damage to Previously Unidentified Human Remains

In the event that human skeletal remains are uncovered during construction activities for the proposed Project, Chevron shall immediately halt work, contact the Contra Costa County coroner to evaluate the remains, and follow the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County coroner determines that the remains are Native American, the Project proponent will contact the NAHC, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section (PRC 5097.98), with the most likely descendents regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

8.3.7 Involved Agencies and Agency Contacts

Table 8.3-5 lists the state agencies involved in cultural resources management for the Project and a contact person at each agency. These agencies include the NAHC and, for federal lands, the Office of Historic Preservation.

TABLE 8.3-5
Cultural Resources Agency Contacts

Issue	Contact	Title	Telephone
Native American traditional cultural properties	Debbie Treadway NAHC	Associate Governmental Program Analyst	(916) 653-4082
Federal agency NHPA Section 106 compliance	Milford Wayne Donaldson Office of Historic Preservation	State Historic Preservation Officer	(916) 653-6624

8.3.8 Permits Required and Schedule

Other than certification by the CEC, no state, federal, or local permits are required by the Project for the management of cultural resources. Consultation with the State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (ACHP) would be required under Section 106 of the National Historic Preservation Act if, for example, as the result of a later project change, the Project were to become a federal undertaking and significant cultural resources were likely to be affected by the Project.

8.3.9 References

Banks, P. and R. Orlins. 1981. *Investigations of Cultural Resources within the Richmond Harbor Redevelopment Project 11-A, Richmond, California.* On file at the Northwest Information Center, Rohnert Park, CA.

Bennyhoff, J. A., V. Bente, M. Hilderman-Smith, and T. Jones. 1982. *Emigrant Summit Trail: Archaeological Investigation and Historic Research of the Trail from Caples Lake to Maiden's Grave*. El Dorado National Forest, Placerville.

Broughton, J. M. 1997. *Widening diet breadth, declining foraging efficiency, and prehistoric harvest pressure: Ichthyofaunal evidence from the Emeryville shellmound, California*. Antiquity 71: 845–862.

Broughton, J. M. 1999. *Resource Depression and Intensification During the Late Holocene, San Francisco Bay: Evidence from the Emeryville Shellmound Vertebrate Fauna*, University of California Anthropological Records No. 32, Berkeley.

California Energy Commission (CEC). 1992. *Instructions to the California Energy Commission Staff for the Review of and Information Requirements for an Application for Certification.* California Energy Commission, Energy Facilities Siting and Environmental Protection Division, Sacramento.

California Energy Commission (CEC). 1997. *Rules of Practice and Procedure & Power Plant Site Certification*. Sacramento, CA.

Chartkoff, Joseph L. and Kerry K. Chartkoff. 1984. *The Archaeology of California*. Stanford University Press. Stanford, CA.

City of Richmond. 2006. City of Richmond website: http://ca-richmond.civicplus.com. Accessed on November 27, 2006.

ESA Associates, Inc. (ESA). 2006. *Chevron Energy and Hydrogen Renewal Project Administrative Draft EIR* (State Clearinghouse No. 2005072117). Prepared for City of Richmond, CA. October.

Fredrickson, D.A. 1994. Central California archaeology: The concepts of pattern and aspect. In: *Toward a new taxonomic framework to central California archaeology. Essays by James A. Bennyhoff and David A. Fredrickson.* Contributions of the University of California Number 52. Archaeological Research Facility. Berkeley, CA.

Hughes, Richard E. 1986. *Diachronic Variability in Obsidian Procurement Patterns in Northeastern California and Southcentral Oregon.* University of California Publications in Anthropology 17, Berkeley, California.

Hupman, J.M. and Chavez, D. 1993. *Archaeological Resources Investigations for the Chevron Reformulated Fuels Project EIR, Richmond, California.* On file at the Northwest Information Center, Rohnert Park, CA.

Kroeber, A.L. 1925. *Handbook of the Indians of California.* Smithsonian Institution, Bureau of American Ethnology Bulletin 78. (Reprinted by Dover, NY, 1976).

Loud, L.L., *The Stege Mounds at Richmond, California,* University of California Publications in American Archaeology and Ethnology, 17(6), 1924.

LSA Associates, Inc. (LSA). 1990. *Technical Appendix, Cultural Resources Assessment, Chevron Modernization Project.* Prepared for Fluor Daniel, Irvine, CA. On file at the Northwest Information Center, Rohnert Park, CA.

Meighan, Clement W., and C.V. Haynes, Jr. 1970. *The Borax Lake Site Revisited.* Science 167(3922):1213-1221.

Martorana, D. 2006. "Cultural Resource Technical Memorandum for the Chevron Energy and Hydrogen Renewal Project ADEIR." On file at Environmental Science Associates, Oakland, CA.

Nelson, N.C. 1909. Shellmounds of the San Francisco Bay Region. University of California Publications in American Archaeology and Ethnology, Vol. 7, No. 4.

Price, B.A. and S.E. Johnston. 1988. A model of Late Pleistocene and Early Holocene adaptation in eastern Nevada. In: *Early human occupation in far western North America: The Clovis-Archaic interface,* edited by J.A. Willig, C.M. Aikens, and J.L. Fagan, pp. 231-250. Nevada State Museum Anthropological Papers 2 1.

Uhle, M. 1907. *The Emeryville Shellmound*. University of California Publications in American Archaeology and Ethnology 7:1-106. Berkeley.

United States National Park Service (USNPS). 1983. "Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation." U.S. Department of the Interior. *Federal Register.* 44716-68, Washington DC.

Wallace, W.J. and F. Riddell. 1988. Prehistoric background of Tulare Lake, California. In: *Early human occupation in far western North America: The Clovis-Archaic interface,* edited *by* J.A. Willig, C.M. Aikens, and J.L. Fagan, pp. 87- 102. Nevada State Museum Anthropological Papers 21.

Willig, J.A. and C.M. Aikens. 1988. The Clovis-Archaic interface in far western North America. In: *Early human occupation in far western North America: The Clovis Archaic interface,* edited by J.A. Willig, C.M. Aikens, and J.L. Fagan, pp. 1-40. Nevada State Museum Anthropological Papers 21.

LEGEND

- Plant Area
- Laydown Area
- Transmission Line
- 1 Mile Buffer

Note: Project site is located entirely within Ohlone/Costanoan Cultural Area, which covers entire area depicted on this map.

FIGURE 8.3-1
OHLONE/COSTANOAN CULTURAL AREA
CHEVRON POWER PLANT REPLACEMENT PROJECT
RICHMOND, CA

CH2MHILL

BAO \\ZINFANDEL\PROJ\CHEVRONTEXACOPRODUCT\351572RICHMONDSPPE\GIS\MAPFILES\FIG_8_3_1_TERRITORY.MXD FIG_8_3_1_TERRITORY.PDF 1/5/2007 16:04:56
ES042007007SAC figure_8_3_1.ai 06/13/07 tdaus