BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
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California Energy Commission
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APPLICATION FOR CERTIFICATION FOR THE HIDDEN HILLS SOLAR ELECTRIC GENERATING SYSTEM

Docket No. 11-AFC-02

ENERGY COMMISSION STAFF CULTURAL RESOURCES FINAL STAFF ASSESSMENT SECTION DELINEATION (STAFF EXHIBIT #331)

The Cultural Resources section to the HHSEGS Final Staff Assessment was composed from three sub-disciplines: archaeology, ethnography and built environment. Each sub-discipline was provided by a uniquely qualified technical staff person. While all three staff stood behind the analysis, because the two technical staff responsible for archaeology and built environment could not agree with senior staff concerning the appropriate level of mitigation, they did not sign declarations that would have sponsored their respective sub-discipline testimonies; therefore, their staff assessments have been provided as comment. Staff ethnographer, Thomas Gates, signed a declaration supporting the ethnographic portions of the Cultural Resources section.

While most ethnographic sections are clearly identified by appropriately worded headings, there are other sections that are germane to all 3 resource types, or where archaeological or built environment texts are germane to ethnographic resources. However, per HHSEGS Committee direction provided on March 15, 2013, the Cultural Resources section text has been specifically delineated in the following fashion:

- Yellow* = specific ethnographic text, and text germane to ethnographic resources.
- Unmarked = text not germane to ethnographic portions of the cultural resources section

*while the Committee asked for the ethnographic test to be highlighted in red, staff has provided it in yellow for easy viewing purposes.

CULTURAL RESOURCES

Testimony of Thomas Gates, Ph.D[1]

SUMMARY OF CONCLUSIONS

Staff concludes that the proposed Hidden Hills Solar Electric Generating System project would have significant and unavoidable impacts to five historical resources: an archaeological landscape, three ethnographic landscapes, and a historic transportation corridor. Staff has proposed feasible mitigation in the recommended cultural resources Conditions of Certification **CUL-1** through **CUL-11**, with specific emphasis on **CUL-9** through **CUL-11**. However, the mitigation measures, individually or cumulatively, for impacts on the five historical resources (the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, the Salt Song Landscape, the Pahrump Paiute Home Ethnographic Landscape, the Ma-hav Ethnographic Landscape, and the Old Spanish Trail–Mormon Road Northern Corridor) would not reduce the impacts of the proposed project to a less than significant level.

ARCHAEOLOGY

The archaeological analysis for the Hidden Hills Solar Electric Generating System HHSEGS or Hidden Hills) project has identified the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, located just to the northeast of the facility site, as a historical resource assumed eligible for the California Register of Historical Resources (CRHR) with portions in both California and Nevada. This resource represents the aboriginal use of a locally significant ecological zone during still undetermined periods over probably at least the last 12,000 years. The visual impact of the proposed project on the landscape would severely degrade the ability of the resource to convey its association with aboriginal lifeways[2] of the Holocene epoch. Staff proposes Conditions of Certification **CUL-10**, in part, and **CUL-11** to reduce this impact, though not to a less than significant level. The subject landscape may also suffer indirect impacts if the proposed project draws down the local water table to a level that overly stresses or kills the mesquite woodland that is a central feature of the landscape. Staff places additional emphasis on the importance of the implementation of Conditions of Certification **BIO-23**, **BIO-24**, **WATER SUPPLY-6**, and **WATER SUPPLY-8** to avoid this further effect.

Staff has also concluded that the archaeological deposits found within the boundaries of the project site are not historically significant as individual resources and are not contributors to the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape.

[1] Thomas Gates' contribution to this cultural resources section only pertains to the ethnographic portions of this section, and therefore his testimony is limited to ethnographic resource subject matters.

[2] A "lifeway," as used herein, refers to any unique body of behavioral norms, customs, and traditions that structure the way a particular people carry out their daily lives (http://www.thefreedictionary.com/lifeway).

Staff has also proposed Conditions of Certification **CUL-1** through **CUL-8**, intended to ensure that all significant impacts to archaeological historical resources discovered during HHSEGS project construction (including the potential project use of borrow and disposal sites) and operation are mitigated below the level of significance.

ETHNOGRAPHY

The ethnographic analysis for the HHSEGS project has identified three ethnographic landscapes that are within the ethnographic project area of analysis (PAA) and assumed eligible for the CRHR:

1. Salt Song Landscape

2. Pahrump Paiute Home Landscape

3. Ma-hav Landscape

The impacts of the proposed project on these historical resources would be significant, and the mitigation recommended in **CUL-10** would not reduce impacts to a less than significant level for any of the landscapes. However, even with the adoption and implementation of the proposed mitigation, the project would still have significant and unmitigable effects on Native American spiritual practices dependent on the Salt Song landscape.

HISTORIC-PERIOD BUILT-ENVIRONMENT

One historic-period resource, the Old Spanish Trail-Mormon Road, has been identified in the HHSEGS built-environment PAA. Based on substantial evidence, including the National Register of Historic Places listing of the Nevada segments of the Old Spanish Trail, the National Historic Trail Feasibility Study and Environmental Assessment, and information provided by both the applicant and the Old Spanish Trail Association (OSTA) staff has determined that the Old Spanish Trail-Mormon Road is eligible for the CRHR. Staff has concluded that the impacts of the proposed HHSGS project to this Old Spanish Trail-Mormon Road Northern Corridor would be significant and, even with full implementation of **CUL-9, CUL-10**, and **VIS-6,** would not be mitigated to a less than significant level. The visual impacts on the setting and feeling to the segment of the OST-MR in the Pahrump Valley and NRHP-listed Nevada Segments[3] would remain significant and unavoidable. The impacts to the NRHP-eligible Emigrant Pass segment[4] would be less than significant as the project is not visible from Emigrant Pass (see Visual Resources Figure 17) as portions of the Nopah Mountain Range block these views.

[3] This specifically refers to the Stump Spring Segment, which is closest to the Nevada-California border.

[4] The Emigrant Pass segment NRHP nomination is currently in Draft-Internal Review format and is undergoing review by the Nevada BLM.

INTRODUCTION

This environmental assessment identifies the potential impacts of the HHSEGS project on cultural resources. The term “cultural resource” means any tangible or observable evidence of past human activity, regardless of significance, found in direct association with a geographic location, including tangible properties possessing intangible traditional cultural values. Historical resources are defined under California state law as including, but not necessarily limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency’s determination is supported by substantial evidence in light of the whole record” (Cal. Code Regs., tit. 14, § 15064.5(a)). Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic-period. Under federal and state historic preservation law, cultural resources must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the CRHR. A resource less than 50 years of age must be of exceptional historical importance to be considered for listing.

Prehistoric archaeological resources are associated with the human occupation and use of California prior to prolonged European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscapes and related features, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources are variations of natural resources and standard cultural resource types. They are subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users. The decision to call resources "ethnographic" depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their lifeways.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts and as historic vernacular landscapes.

For the HHSEGS project, staff provides an overview of the environmental setting and history of the project area from a cultural resources perspective, an inventory of the cultural resources identified in the project vicinity, and an analysis of the project’s

potential impacts to significant cultural resources, using criteria from the California Environmental Quality Act (CEQA) and CEQA Guidelines.

If cultural resources are identified, staff identifies which are historically significant (defined as eligible for the CRHR or by other significance criteria) and whether the HHSEGS would have a substantial adverse impact on those that are determined or assumed to be historically significant. Staff's primary concern is to ensure that all potentially significant cultural resources are identified, all potential project-related impacts to those resources are identified and assessed, and conditions are recommended that ensure that all significant impacts that cannot be avoided are mitigated to a less than significant level or to the extent feasible.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects subject to the Energy Commission's licensing process are reviewed and conditions of certification are imposed, as needed, to ensure compliance with all laws, ordinances, regulations, and standards (LORS); plans; and policies that are applicable to the proposed project and related facilities, or would be applicable but for the Energy Commission's exclusive authority. For this project, there is no federal project land in California. The federal involvement occurs in Nevada, outside Energy Commission jurisdiction;[5] therefore, most of the LORS subject to Energy Commission review are California state laws and local regulations.

CULTURAL RESOURCES Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	**Description**
State	
Public Resources Code (PRC), sections 5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until s/he confers with the Native American Heritage Commission-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.

[5] Cultural resources in California are also protected under provisions of the federal Antiquities Act of 1906 (Title 16, United States Code, Section 431, et seq.) and subsequent related legislation, policies, and enacting responsibilities, e.g., federal agency regulations and guidelines for implementation of the Antiquities Act.

Applicable Law	Description
PRC, sections 5097.99, 5097.991, and 5097.993–994	5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness of Native American remains or funerary artifacts. 5097.991 establishes a state policy requiring the repatriation of Native American remains and funerary artifacts. 5097.993–994 establishes that various forms of deliberate damage to historical resources on public or private land are subject to fines and imprisonment unless the damaging act occurred consistent with a number of defined exemptions.
Health and Safety Code, section 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. It also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Government Code, section 62544.10 – California Public Records Act	Provides for non-disclosure of records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency.
Local	
County of Inyo General Plan, Conservation/ Open Space Element (Chapter 8.7), Cultural Resources Policy CUL-1.3	CUL-1.3 Protection of Cultural Resources – Preserve and protect key resources that have contributed to the social, political, and economic history and prehistory of the area, unless overriding circumstances are warranted.

SETTING

Information provided regarding the setting of the proposed project places it in its geographical and geological context and provides the context for the evaluation of the historical significance of any identified cultural resources within the several PAAs.

PROJECT SITE AND VICINITY

The proposed project area includes approximately 3,277 acres of privately owned land in the Pahrump Valley in Inyo County, California, approximately 8 miles south of Pahrump, Nevada and approximately 45 miles west of Las Vegas (see Cultural Resources Plates 1-3). The Pahrump Valley lies in the eastern Mojave Desert, part of the Basin and Range physiographic province (Fenneman 1931), a broad region of

almost parallel, block-faulted mountain ranges that trend approximately north to south and are characteristically separated by internally draining, debris-filled structural basins. The erosion of the largely Cenozoic era ranges of the province (beginning 65 million years ago and continuing to the present) continues to contribute sediment to the poorly sorted gravel aprons or bajadas that predominate along the range flanks. The bajadas form most valley margins as they slope gradually down to the basin bottoms where seasonal lakes or playas often form. Low fault scarps and alluvial fans at the mouths of canyons periodically break the smooth, low-angle sweep of the bajadas (Eaton 1982; Thompson and Burke 1974). The elevation of the proposed project area varies from approximately 2,737 feet above mean sea level (amsl) along the eastern area boundary and 2,583 feet amsl along the western area boundary (HHSG 2011a, Appendix 2G: 1). Local elevations in this part of the Pahrump Valley range from a high of approximately 11,916 feet amsl (3,632 m) on Mount Charleston in the Spring Mountains, the dominant peak in the region, to approximately 2,516 feet amsl (767 m) on the floor of the valley bolson[6] in the center of Pahrump Dry Lake, approximately 4 miles to the west-northwest of the proposed facility site.

A bi-seasonal precipitation pattern in the eastern Mojave Desert delivers an average of six inches of annual rainfall from November through April and from July through September, with cool season precipitation being more significant (Hereford 2004). The Colorado River, flowing generally southwesterly from the Rocky Mountains, makes a significant bend within 75 miles of the project area that changes the course of the river towards the south and the Gulf of California. The largely alluvial parent material of the region's bajadas and valley bottoms, and the desert climate generally, support more weakly developed soil orders (Entisols and Aridisols) (NRCS 2007) where a Mojave Creosote Bush Scrub vegetation type predominates (BSE2007a:5.2-9).

The available archaeological evidence indicates a great deal of variability in the Native American use of different portions of the project vicinity through time. A relatively sparse veneer of toolstone acquisition debris on the present surface of the proposed facility site indicates a transitory Native American use of that area, while the presence and moderate frequency of fire pit ruins, stone tool production and maintenance debris, and fragmentary stone tools demonstrate a much more extensive use of the discontinuous mesquite woodland along the fault zone to the immediate northeast of the facility site, through which the transmission line and natural gas pipeline for the proposed project would be built.

The project vicinity also appears to have been subject to prospecting over the last approximately 160 years. Sporadic mineral prospecting near the project area continues today.

[6] A bolson is a semi-arid, flat-floored desert valley or depression, usually centered on a playa or salt pan. Bolson development may occur due to a number of different structural geologic scenarios.

ENVIRONMENTAL SETTING

Paleoclimate

The present climate in the proposed project area represents a moderately dry and harsh period in the climate of the region relative to the last 14,000 years, the minimum time frame for a human presence in the Mojave Desert. The climate of the Mojave Desert since late Pleistocene time (prior to 10,000 thousand years ago) can be split into three broad phases. The climate of the region during the Pleistocene was relatively much more moist or mesic than the present climate and led to the development of a number of large permanent lakes on the floors of the region's valleys. The lakes slowly evaporated during early Holocene time (10,000 years ago to present) as the climate progressively became more arid. The period from approximately 5,000 to 3,000 B.C. marks a time of extreme aridity, often referred to as the mid-Holocene Altithermal (Antevs 1948), one result of which was the final desiccation of the lakes in the region. The climate since approximately 3000 B.C. has typically been more mesic relative to conditions during the Altithermal, and there is evidence for particularly wet periods from approximately 1000 B.C. to A.D. 1, and again from approximately A.D. 500 to 1400 (Bamforth 1990:72).

Geology

The proposed project area is sited on the eastern margin of a bolson in Pahrump Valley in the Mojave Desert. Pahrump Valley is a closed, axial basin oriented roughly northwest to southeast. The geology of the valley reflects many of the closed basins in the region in that it has become filled with predominately fine-grained sediments with sporadic layers of stream-laid larger rocks. The valley is bounded by four principal mountain ranges, the Spring Mountains to the east, and the Kingston, Nopah, and Resting Springs Ranges, respectively, to the south-southwest, west, and, north-northwest. Valley elevations range from a high of approximately 11,916 feet (3,632 m) on Mount Charleston in the Spring Mountains, the dominant peak in the region, to approximately 2,516 feet (767 m) on the floor of the valley bolson in the center of Pahrump Dry Lake, approximately 4 miles to the west-northwest of the proposed facility site. The Spring Mountains form almost the entire eastern boundary of the valley. Primarily Paleozoic (ca. 542–251 million years ago (mya)) marine sedimentary rock predominates the geology of the range with intrusions of largely Tertiary (ca. 65.5–1.8 mya) volcanic rock found infrequently in the southern part of the range. The Kingston Range consists primarily of Mesozoic (ca. 251–65.5 mya) granitic intrusive with apparently uplifted suites of Cambrian (ca. 542–488.3 mya) and Precambrian (ca. 4,570–542 mya) rock that extend to the northeast. The Nopah and Resting Springs Ranges are Paleozoic marine sedimentary rock, predominately of Cambrian age. The Paleozoic rock includes numerous carbonate (limestone and dolomite) and siliciclastic (sandstone, mudstone, conglomerate) rock units (Jennings 1973).

Geomorphology

The proposed facility site is set on the broad, flat floor of a closed basin surrounded by a relatively diverse suite of landforms and subordinate deposits. The Pahrump-Stewart Valley fault system, the central segment of the State Line fault system, has three distinct subsegments in Pahrump Valley, the East Nopah, the Pahrump Valley, and the West

Spring Mountains fault zones, which, together, contribute to the structure of the valley (Workman et al. 2008). The Spring Mountains and Mount Charleston, the dominant peak of that range, bound the valley margin to the east of the proposed project area. A complex of coalescing alluvial fans forms a bajada that sweeps west down from the mountains toward the proposed project area. The bajada is subtly broken through its higher elevations by the West Spring Mountains fault zone which traverses the bajada in a roughly north-northeast direction (Workman et al. 2008).

The Pahrump Valley and East Nopah fault zones define the major landform that is the primary physical context for the proposed facility site, the basin floor. The Pahrump Valley fault zone visibly interrupts the toe of the Spring Mountains' western bajada roughly 1.8 miles to the northeast of the proposed facility site, the northeastern boundary of which is coterminous with the California-Nevada border. This fault zone is a relatively wide band of faults that traverses the approximate center of Pahrump Valley. The zone extends to the northwest, past the Town of Pahrump, into the Stewart Valley fault zone. The Pahrump Valley fault zone manifests as three visible scarps in the vicinity of the proposed project area. The scarps step up in elevation from west to east at intervals of 0.25, 1.6, and 1.8 miles to the northeast of the boundary of the proposed facility site and the California-Nevada border (HHSG 2011c:64). The most westerly of the scarps, the one 0.25 miles from the northeastern facility site boundary, forms the eastern edge of the graben[7], on the surface of which the proposed facility is sited. The scarps are thought to be a barrier for the aquifer that appears to underlie the Spring Mountains' western bajada (HHSG 2011a:5.15-9) and have, through time, provided multiple outlets for the aquifer, outlets that have been variably evident as seeps, springs, and desert marshes. Wind-blown or eolian deposits of sheet and dune sand flank this margin of the basin and drape up and over the scarps of the fault zone. Native stands of mesquite (*Prosopis glandulosa*, *Prosopis pubescens*) anchor lines of coppice dunes along those scarps. The East Nopah fault zone, across the basin floor to the west, is a relatively narrow band of faults that defines the western edge of the graben and creates the eastern front of the Nopah Range (Workman et al. 2008), which delimits the western margin of Pahrump Valley.

The basin floor that now forms the surface of the Pahrump Valley graben is the ongoing result of many thousands of years of the water- and wind-borne deposition of sediments, as the structural block that makes up the landform has dropped in elevation. Basin sediments nearest the present surface are a deflated, massively bedded deposit of silts and clays (CH2 2012a:8–9). Calcium carbonate ($CaCO_3$) nodules are common. The remnant deposit appears to be late Pleistocene in age and appears to evidence the former presence of phreatophyte flats[8], which, on the basis of paleoenvironmental reconstructions for the region, were probably in existence from the late Pleistocene through the early Holocene. The $CaCO_3$ nodules indicate phreatic or near-surface groundwater conditions during that time. The original deposit is thought to have been

[7] A graben is a portion of the earth's crust, bounded on at least two sides by faults, that has dropped downward in relation to adjacent portions.

[8] A phreatophyte flat is a relatively level area of ground where the predominant type of vegetation is phreatophytic plants, deep-rooted plants that obtains water from a permanent ground supply or from the water table.

subject to significant erosion during the mid-Holocene, which left the present deflated deposit of late Pleistocene-age sediments. Layers of stream gravels are also found bedded in and on the surface of these sediments. The Spring Mountains are most likely the primary source of more recent basin sediments beneath the proposed facility site, sediments which originated as alluvium washed down the mountains in rainfall runoff and snow melt. Larger rocks in the Spring Mountain alluvium are typically limestone with rare chert nodules (HHSG 2011c:64). There is also basalt and other volcanic rock exposed in the alluvium toward the eastern margin of the basin floor. There are a couple of potential sources for this rock. One source may be from a former stream that may have once flowed north approximately 20 miles from Sandy Valley, near where volcanic formations are found, north through Pahrump Valley to a confluence with the Amargosa River. Tectonic uplift, most likely during the middle Pleistocene (ca. 500 thousand years ago (kya)), eventually isolated both Sandy and Pahrump valleys (HHSG 2011c:64). Another source for the igneous rock may be the Kingston Range approximately four miles to the south of the proposed facility site (Spaulding 2012c). During parts of the Pliocene and Pleistocene epochs, alluvial fans from the Kingston Range may have reached out to the northeast, through the proposed facility site to what may at that time have been the primary focus of alluvial deposition in Pahrump Valley. That alluvium, derived in part from a late Tertiary (ca. 65.5–1.8 mya) suite of volcanic rock, would have subsequently been buried on the basin floor by other sediment sources as the depositional environment changed. East of the Pahrump Valley fault zone, the hypothetical Kingston Range alluvial fans would have become buried by ongoing deposition along the western Spring Mountains bajada. Ultimately, the Kingston Range alluvium was re-exposed along the scarps of the fault zone and subject to erosion. The Nopah Range contributes alluvial sediments to the basin along the western margin of the valley. Additional sedimentary deposits on the basin floor in the vicinity of the proposed facility site include the suite of lacustrine deposits associated with the playa, Pahrump Dry Lake, approximately four miles to the west-northwest of the proposed facility site.

The eastern portion of the basin floor is draped with a sequence (Qa) of relatively small alluvial fans that appear to emanate from the Pahrump Valley fault zone (Lawson et al. 2012, fig. 1). The sediment sources for the fans are small drainage basins through the zone where Paleozoic rocks and sediments erode from the toe of the western Spring Mountains bajada, late Tertiary volcanic rock erodes from older re-exposed fan deposits, and eolian sands and tufa erode from locales in the fault zone on and adjacent to surface seeps and springs, and near-surface water sources. This is the bulk of the inventory of the sediments that make up older dormant fans (Unit Qa2), and younger active ones (Unit Qa1). The particular proportions of the sediment types in each fan vary with the unique character of the portion of the fault zone from which each fan draws sediment.

CULTURAL RESOURCES INVENTORY

A project-specific cultural resources inventory is a necessary step in staff's effort to determine whether the proposed project may cause significant impacts to historically significant cultural resources (i.e., historical resources) and would therefore, under

CEQA, have a significant adverse effect on the environment.

The development of a cultural resources inventory entails working through a sequence of investigatory phases. Generally, the research process proceeds from the known to the unknown. These phases typically involve doing background research to identify known cultural resources, conducting fieldwork to collect requisite primary data on not-yet-identified cultural resources in the vicinity of the proposed project, assessing the results of any geotechnical studies or environmental assessments completed for the proposed project site, and compiling recommendations or determinations of historical significance (see "Determining the Historical Significance of Cultural Resources," below) for any cultural resources that are identified.

This subsection describes the research methods used by the applicant and Energy Commission staff for each phase and provides the results of the research, including literature and records searches (California Historical Resources Information System (CHRIS) and local records), archival research, Native American consultation, and field investigations. Staff provides a description of each identified cultural resource, its historical significance, and the basis for its significance evaluation. Assessments of the project's impacts on historically significant cultural resources; potential impacts on previously unidentified, buried archaeological resources; and proposed mitigation measures for all significant impacts are presented in separate subsections below.

PROJECT AREA OF ANALYSIS (PAA)

The PAA is a concept that staff uses to bound the geographic area in which the proposed project has the potential to affect cultural resources. The effects that a project may have on cultural resources may be immediate, further removed in time, or cumulative. They may be physical, visual, auditory, or olfactory in character. The geographic area that would encompass consideration of all such effects may or may not be one uninterrupted expanse. It may include the project area, which would be the site of the proposed plant (project site), the routes of requisite transmission lines and water and natural gas pipelines, and other offsite ancillary facilities, in addition to one or several discontiguous areas where the project could be argued to potentially affect cultural resources.

The configuration of the PAAs for staff's consideration of the HHSEGS project reflects the limitations that CEQA places on dual-state projects. Due to the variety of resources considered by each of the cultural resources specialist, multiple PAAs have been established: the Archaeological PAA, the Ethnographic PAA, and the Built-Environmental PAA. Staff presently sees the core of all of the PAAs **(see Cultural Resources Figure 1)** as the project site, which includes the areas of Solar Plant 1 and Solar Plant 2, the Common Area, and the Temporary Construction Area (HHSG 2011a, Figure 2.1-2). The eastern boundary of the project site is coincident with the California-Nevada border. Elements of the project proposed for construction in Nevada, such as a transmission line and a natural gas pipeline, are not assessed by staff for environmental effects within Nevada. However, impacts, regardless of where they occur, resulting from project activities in California, are evaluated and mitigated to the extent feasible. Therefore, the PAAs for the present project extend over the California border and into Nevada.

Archaeological Resources PAA

Staff is presently aware of two areas in Nevada that qualify as discontiguous components of the HHSEGS cultural resources PAA. One of these areas encompasses the portion of the shallow step fault zone that defines the eastern edge of the project site. Portions of the step fault zone, which are part of the State Line fault system, appear to have been the focus of relatively intense Native American activity for thousands of years. This activity has been related to the periodic presence of surface springs and seeps and to mesquite woodlands that have become encased in an archipelago of sand dunes along the zone. The portions of the fault zone that are coincident with these woodlands and the surface springs and seeps, and the archaeological deposits that relate to the use of these natural resources, qualify as an archaeological landscape.[9]

A second area in Nevada that staff has identified as a discontiguous component of the PAA encompasses Mount Charleston and other prominent peaks of the Spring Mountains. On the basis of early consultation with local Native American communities, and relying also on the basic tenants of ethnogeography, it is reasonable to assume a relatively high probability that these peaks are important elements of the mythologies and religions of different Native American groups in the region.

There also appear to be areas to the west of the project site that are likely to be additional discontiguous components of the PAA. On the basis of Native American consultation to date, prominent peaks of the Nopah Range also appear to be places known and named in local Native American mythological and religious repertoires. Among the lower reaches of the range, there may also be places where the visual presence of the HHSEGS power tower would degrade the ability of key places and trails to convey their respective associative values.

Ethnographic Resources PAA

The Ethnographic PAA encompasses the western side of the Spring Mountains including Stirling Mountain and Potosi Mountain, Mesquite Valley, the Northern side of the Kingston Range, the Nopah Range, the Resting Spring Range, the Last Chance Range and the Ash Meadows Spring area. However, the Salt Song Trail landscape is a multi state resource with a segment in the project vicinity.

Built-Environment PAA

The Built-Environment PAA primarily includes the project site (Solar Plant 1 and Solar Plant 2, the Common Area, and the Temporary Construction Area) as well as the Old Spanish Trail-Mormon Road Corridor in the Pahrump Valley from the Spring Mountains to the east and to the Emigrant Pass to the west. Discontinuous areas of this PAA include the NRHP-listed Old Spanish Trail/Mormon Road Historic District in Nevada and the Old Spanish Trail National Historic Trail (OSTNHT). The OSTNHT is a multi-state resource with segments on the project site.

[9] An archaeological landscape is a constellation of passively and/or actively managed natural features and material culture remains.

DATA COMPILATION FOR PROJECT AREA OF ANALYSIS

Record, File, and Database Searches

Identification of cultural resources in the PAA and analysis of the significance of those resources and the potential project-related impacts requires resource information specific to the project area and vicinity. Various repositories in California hold compilations of information on the locations and descriptions of cultural resources that have been identified and recorded in past cultural resources surveys. Consistent with the Energy Commission's Data Regulations, the applicant conducted background inventory research and provided the results as part of the HHSEGS Application for Certification (AFC) and in Data Responses to Energy Commission staff's Data Requests, Set 1D.

The applicant's literature and records search portions of the background research for archaeological resources attempted to gather and interpret archival evidence of the known archaeological resources in the applicant's project area of analysis, which was more narrowly defined and was universal across the sub-disciplines of cultural resources. The California source for the present effort was the Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS) in Riverside. The Nevada sources for the research were the Nevada Cultural Resource Information System (NVCRIS) of the Nevada State Historic Preservation Office (NSHPO) in Carson City, the Harry Reid Center for Environmental Studies (HRC) in Las Vegas, and the Southern Nevada District Office of the Bureau of Land Management (BLM), also in Las Vegas.

Energy Commission staff also conducted additional archival and literature research to supplement information provided by the applicant; partially due to the fact that staff's PAA was larger than the PAA presented in the AFC. This included reviewing documents obtained on the internet; subject-specific books from local venues, the Shoshone Museum, and the Nevada Historical Society Museum in Tonopah; books and manuscripts on file at the Pahrump Public Library, the California State Archives, Sacramento State University Library, and University of California-Berkeley Bancroft Library; historic photographs from the University of Nevada-Las Vegas; and photocopy and original documents provided by the Pahrump Paiute Tribe.

CHRIS Records Search

Methods

The applicant's background research on the archaeological resources in the applicant's PAA encompassed a number of separate efforts in both California and Nevada, the number and timing of which are not entirely clear. The cultural resources consultant to the applicant, CH2M HILL, conducted an in-person records search at the EIC on May 17, 2010 (CRTR 2011b: 48). The record search was limited to the area in California within a one-mile radius around the proposed facility site and the adjacent temporary construction laydown and parking area. CH2M HILL made a request to NSHPO on April 18, 2011, to provide the results of a database search of NVCRIS for the one-mile portion of the Applicant's PAA that extends into Nevada from the northeastern boundary of the proposed project, which is also the California-Nevada state border. CH2M HILL also conducted an in-person record search on this same area at the HRC on April 21,

2011, and sought archaeological resource information on the area from BLM staff, information which may not necessarily be found in the NVCRIS or the HRC. The applicant, in response to an advance draft of staff's second round data adequacy comments on the AFC, provided new information in Supplement B to the AFC (HHSG 2011c:25 and 26) on archaeological sites beyond the facility site in both California and Nevada. The source of much of the information is cited as largely having been the HRC. The searches provided information on the location and the character of known prehistoric and historical archaeological resources in the record search area and provided technical reports for previous cultural resources surveys that have taken place wholly or partly within 0.25 miles of the area subject to survey for the AFC and the technical reports for any previous archaeological excavations that have taken place anywhere in the record search area.

Results

The results of the applicant's record searches in California and Nevada indicate that six investigations were wholly or partially conducted in the Applicant's PAA between 1975 and 2005 (**Cultural Resources Table 2**). The combined results of these previous investigations in this area provided information on a total of approximately 548 acres, or 16.7 percent (CH2 2012a:19) of the approximately 3,276-acre area in California that encompasses the facility site and the adjacent temporary construction laydown and parking area.

CULTURAL RESOURCES Table 2
Previous Cultural Resources Investigations in the Records Search Area

Type of Investigation[10]	***Number of Investigations of Type***	***Date(s) of Investigation Reports***	***Document Identification Nos.***
Class II, Phase I motor and pedestrian surveys of Groundshakers Championship Desert Motorcycle Race course, CA and NV (N), and of Frontier 500 off-road vehicle race, NV (P)	2	September 1975, June 1982	5-84 (BLM), 5-1043 (BLM)

[10] N = negative survey results, P = positive survey, Resource ID No. = project area resource in CA, or n/a

Type of Investigation[10]	***Number of Investigations of Type***	***Date(s) of Investigation Reports***	***Document Identification Nos.***
Class II, Phase I pedestrian survey of Hidden Hills Ranch for proposed agricultural program, CA (CA-INY-2492)	1	October 1979	IN-0069 (EIC)
Class III, Phase I pedestrian survey of Old Spanish Trail-Mormon Road, National Historic Preservation Act Section 110 study, NV (NV-CK-3848)	1	July 1989	5-1950 (BLM)
Class III, Phase I pedestrian survey for electric transmission line pole replacement, CA (N)	1	June 2005	IN-0053 (EIC)
Class I, Phase I archival research for broader environmental resource assessment of parcels, CA and NV (n/a)	1	July 2005	IN-816 (EIC)

The record searches identified two archaeological resources in the Energy Commission regulatory record search area. Only one of these two resources is known to be on the facility site. That archaeological site, CA-INY-2496, is reported as a relatively small (10 x 20 m) scatter of chipped stone, a lithic scatter in the east-central portion of the proposed facility site (WESTEC 1979:12). The other resource identified in the subject record search area is the Old Spanish Trail-Mormon Road (NV-CK-3848). The resource is documented from the Las Vegas area, through Stump Spring roughly two and a half miles to the east of the proposed facility site, to a place on the California-Nevada border to the east-southeast of the site very near where the Old Spanish Trail Highway crosses the border.

Beyond the regulatory record search area but within the broader PAA, the applicant provided rather spare and disjointed bits of information on a number of other archaeological resources in Pahrump Valley (HHSG 2011c:25 and 26; CH2 2012a:14–16). Relatively complex prehistoric and historic archaeological deposits are noted in association with many of the major spring mounds[11] along the Pahrump Valley fault zone, such as Mound Spring and Bolling Mound, adjacent to former artesian-fed stream beds, such as the Bowman site, Manse Spring, and Stump Spring, and, like the Hidden Hills Ranch Spring site, on or partially embedded in the coppice dunes that shroud portions of the fault zone. The applicant notes other types of archaeological deposits in Pahrump Valley, such as rockshelters, cleared circles, roasting pits, rock art, and rock rings, but, despite staff's request for landscape contexts and complete archaeological descriptions of representative deposits (Data Request 109, CEC 2011h), the applicant declined to provide a substantive interpretative context for the archaeology of the broader PAA (CH2 2012a:14–16; ESH 2011a:8 and 9).The useable results of the record search efforts provide a site frequency for the proposed facility site and the adjacent temporary construction area of one site per 548 acres. The extrapolation of that number predicts a total of approximately six archaeological resources for the whole of that area. In consideration of the fact that the only type of archaeological resource that has been identified to date in the project area is a prehistoric lithic scatter (WESTEC 1979:9 and 12), the probability is rather high that those six resources would be predominantly of that type. Beyond the facility site, where the applicant's efforts to identify historical resources has been less intensive, it would be reasonable to anticipate relatively complex and potentially significant prehistoric and historical archaeological deposits along those portions of the Pahrump Valley fault zone where spring mounds, former artesian-fed stream beds, or coppice dunes are present.

Local Agency and Organization Consultation
California counties and cities may recognize particular cultural resources as locally historically important by ordinance, in general plans, or by maintaining specific lists. Consistent with the Energy Commission's Data Regulations, the applicant and Energy Commission Cultural Resources staff contacted local planning agencies and historical and archaeological societies to acquire information on locally recognized cultural resources specific to the vicinity of the project.

Local Historical Societies

The applicant's consultant, CH2MHill, contacted historical societies in the Pahrump, Nevada, and Sandy Valley, California areas, including the Pahrump Valley Historical Society, Goodsprings Historical Society, and the Nevada State Museum and Historical Society. They also sent letters and maps describing the project to these organizations, requesting information about historical features and structures near the project area and inviting comment on the project.

[11] A spring mound is a formation largely composed of $CaCO_3$ precipitates from spring water that combine in complex interactions with microbial, and plant and animal life to form a relatively durable mound that grows slowly over time.

Old Spanish Trail Association

CH2MHill also contacted the Old Spanish Trail Association (OSTA) as part of their organizational outreach. Staff also made contact with OSTA and met with Scott Smith and other representatives on December 1, 2011 at the project site. During the tour of the site, the group discussed both the visual and cultural impacts of the project to the Old Spanish Trail (OST). The OSTA members showed staff segments of a footpath they assert is part of the OST. OSTA prepared a report[12] on the history of the Old Spanish Trail and submitted it to the Energy Commission on April 30, 2012.

Native American Heritage Commission

The Governor's Executive Order B-10-11, executed on September 19, 2011, directs state agencies to engage in meaningful consultation with California Indian Tribes on matters that may affect tribal communities. The Energy Commission Siting Regulations require applicants to contact the Native American Heritage Commission (NAHC) for information on Native American sacred sites and a list of Native Americans interested in the project vicinity. The applicant is then required to notify the Native Americans on the NAHC's list about the project and include a copy of all correspondence with the NAHC and Native Americans and any written responses received, as well as a written summary of any oral responses in the AFC (CEC Regs 2007:App. B(g)(2)(D):87).

The NAHC is the primary California government agency responsible for identifying and cataloging Native American cultural resources, providing protection to Native American human burials and skeletal remains from vandalism and inadvertent destruction, and preventing irreparable damage to designated sacred sites and interference with the expression of Native American religion in California. It also provides a legal means by which Native American descendents can make known their concerns regarding the need for sensitive treatment and disposition of Native American burials, skeletal remains, and items associated with Native American burials.

The NAHC maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American ethnographic resources. The NAHC's Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. Their Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas.

Both the applicant and staff requested information on the presence of sacred lands in the vicinity of the HHSEGS project area, as well as a list of Native Americans to whom inquiries should be sent to identify both additional cultural resources and any concerns the Native Americans may have about the proposed project.

[12] http://www.energy.ca.gov/sitingcases/hiddenhills/documents/others/2012-04-27_Jack_Prichett_OSTA_Cultural_Rsources_Report.pdf

Staff contacted the NAHC on April 25, 2011, and requested a search of the Sacred Lands File and a Native American contacts list. The NAHC responded in May, 2011, with a list of Native Americans interested in consulting on development projects in the project area. Staff sent letters to all of the NAHC listed tribes on May 25, 2011, inviting them to participate in a field trip to the proposed project area and encouraging tribes to provide additional cultural resources information to staff (see **Cultural Resources Figure 2** for general map of tribal government office locations and territories).

On behalf of the applicant, CH2MHill also contacted the NAHC on May 27, 2011, and requested a search of the Sacred Lands File and a Native American contacts list. The NAHC responded on June 1, 2011, with a list of Native Americans interested in consulting on development projects in the HHSEGS project area. Letters to tribes and individuals listed on the NAHC contact list were mailed or faxed by CH2MHill on June 7, 2011. Copies of the contact letters were provided in Appendix 5.3A of the HHSEGS AFC. A detailed summary table of the results of consultations with the individual Native American organizations on the NAHC contact list was also included. CH2MHill received a response from the Timbisha Shoshone that indicated they would discuss the project at the next tribal meeting. A second response was received from Bill Helmer, Tribal Historic Preservation Officer for the Big Pine Band of Owens Valley Paiute stating that the tribe would like to discuss the project with staff. Staff followed up with all NAHC listed tribes, including the two tribes that formally responded, via subsequent phone conversations and face-to-face meetings.

The NAHC's record searches of the Sacred Lands file, conducted by both CH2MHill and staff, did not indicate the presence of Native American cultural resources on or within one mile of the HHSEGS site. However, the Sacred Lands file only contains those resources that tribes are willing to publically identify and cannot be considered a comprehensive list of places and objects that Native Americans consider sacred or otherwise important.

Field Investigations

In support of the broader research effort to identify historical resources in a PAA, the Energy Commission's Data Regulations require applicants to conduct field surveys to both relocate and identify cultural resources in or near proposed project areas, where prior surveys are more than five years old. These prescribed surveys include pedestrian archaeological surveys and built-environment windshield surveys. Additionally, staff may ask applicants to undertake geoarchaeological investigations or conduct additional fieldwork to support CRHR eligibility evaluations of the archaeological resources present in a PAA.

For the present siting case, the applicant provided field survey information as part of the AFC and in a confidential Cultural Resources Technical Report (CRTR), and additional survey and geoarchaeological information in response to staff's Data Requests. **Cultural Resources Table 3** lists the field investigations consulted or conducted by staff for the present analysis. The field methods and results of these investigations are detailed below. This information was augmented by staff's independent research and ethnographic resource study.

CULTURAL RESOURCES Table 3
Cultural Resource Investigations by Staff
Consulted for the Present Analysis

Investigation Type	*Results*	*Report Reference*
Geoarchaeological and Evaluation Phase Archaeological Investigations	Documentation of near-surface stratigraphy of the project site	CH2 DR128
Initial Intensive Pedestrian Cultural Resources Survey of the Facility Site	One previously recorded prehistoric archaeological site revisited, and ten new prehistoric[1], one new historical, and one new indeterminate-age archaeological site found	CRTR 2011a
Intensive Pedestrian Cultural Resources Surveys of the Transmission Line and Natural Gas Pipeline Alignments	Not available	Not available
Intensive Historic Trails and Roads Survey	One previously recorded historic trail, one previously recorded historic road, and 6 new roads/trails.	CH2 DR125
Ethnographic Resource Study	Three ethnographic landscapes: 1. Salt Song Landscape 2. Pahrump Paiute Home Landscape 3. Ma hav Landscape	HHSEGS Ethnographic Report prepare by Energy Commission staff.
The Old Spanish Trail National Historic Trail: A Report on Cultural and Visual Resource in the Near Vicinity of the Proposed Hidden Hills Solar Energy System Plant, Inyo County, California	Old Spanish Trail National Historic Trail	OSTA 2012

Investigation Type	*Results*	*Report Reference*
Draft National Historic Trail Feasibility Study and Environmental Assessment	Old Spanish Trail National Historic Trail	NPS 2000b

[1] The technical report for this survey documents a total of 13 new archaeological sites. Energy Commission staff, on the basis of a field examination, determined that one of the newly recorded prehistoric archaeological sites (Temporary No. S-2) was actually the result of recent historic activity.

Archaeological Field Investigations

Geoarchaeological Research

The original *Cultural Resources* section of the AFC does not include a subsection on the geoarchaeology of that portion of Pahrump Valley in which the proposed project is sited (HHSG 2011c). Supplement B to the AFC, in response to staff concerns during data adequacy about the interpretation and documentation of resource integrity, provides general information on the present and past climates of the project area, narrowly focused geologic and geomorphic contexts, and local surface and near-surface hydrology. This information is the result of background research, the applicant's geomorphic reconnaissance, and data from unrelated geotechnical and paleontological investigations for the proposed project. Staff requested that the applicant provide supplemental geologic and geomorphic information for different portions of the project area of analysis to, variably, finalize research on some issues and to assess whether other issues would require further research. The applicant, in the context of responses to staff data requests, ultimately provided adequate information on various aspects of the project site. A geoarchaeological field investigation, done in conjunction with an investigation to support historic significance evaluations of prehistoric archaeological deposits on the project site (Lawson et al. 2012), was one such source of information. Additional information that staff believes is necessary to our understanding of the character of a number of cultural resources in the broader PAA, beyond the project site, has not yet been provided and is presently unavailable to staff.

Geoarchaeological Field Investigation

Methods

The primary purpose of the geoarchaeological field investigation of the proposed facility site was to help assess the likelihood that archaeological deposits would be found buried there. The focus of the investigation was the excavation of three backhoe trenches in the small alluvial fan sequences (Units Qa1, Qa2) (see the *Geomorphology* subsection, above) that blanket the northeastern portion of the facility site (Lawson et al. 2012:12 and 13). The floor of the basin to the west was not subject to excavation, because those sediments are thought to be of late Pleistocene age (see *Geomorphology* subsection, above). The three trenches on the fan sequences were oriented to be perpendicular to the local former or active direction of surface flow for precipitation runoff. The trenches were approximately three feet in width and were 150 to 300 feet in length. Trench excavation was routinely to a depth of five feet and is reported to have been monitored by one archaeologist. The trench monitor made careful observation of trench walls in an effort to discern stratigraphic characteristics such as soil horizons, man-made sedimentary deposits, contacts between natural

sedimentary layers, and variations in sediment composition. Three- to five-cubic-foot samples of trench fill were screened for every 50 feet of excavated trench. Profile drawings and photographic documentation of trench stratigraphy were also made every 50 feet.

Results

The information gathered as a result of the excavation of the three geoarchaeological trenches provides support of the interpretations of the geomorphology of the proposed facility site that have been made previously on the basis of surface observation (see *Geomorphology* subsection, above). Trenches 1 and 3 provide information on the relatively older, more stable alluvial fan surfaces of units Qa2 and Qa1, respectively. Trench 2 investigates the sedimentary profile of an active unit Qa1 ephemeral stream where it debouches onto the basin floor at the toe of that particular alluvial fan lobe.

Trench 1 was placed in the northeastern portion of the proposed Unit 2 heliostat field near the northernmost boundary of unit Qa2. The trench was excavated to a length of 150 feet. It was not excavated further because the monitor judged the excavated deposits to lack the potential for buried cultural remains. The initial 50–70 cm of the trench profile revealed a sandy, gravelly alluvium that displayed a great deal of variability along the trench in the depositional energy responsible for the observed sedimentary deposits. Individual depositional events were evident in sedimentary sequences that began with coarse gravels that rapidly changed to sands toward the top of each sequence, or fining-upward sequences. The profiles of multiple former stream channels are evident in the trench profile and cross-cut one another. No artifacts, anthropogenic features, fossils, or organic matter were found in the profile of this portion of a unit Qa2 alluvial fan lobe. The monitor notes the presence of a probable Pleistocene age deposit at 50–70 cm below the excavated surface. The description of that deeper deposit is unavailable.

Trench 2 was placed in the southeastern portion of the proposed Unit 1 heliostat field near the southwestern boundary of unit Qa1. The trench was excavated to a length of 300 feet in order to capture a more comprehensive sweep of stratigraphic information on a relatively broad unit Qa1 ephemeral stream channel and a low alluvial terrace associated with it. The trench revealed a profile that is characteristic of deposition in a stream environment, or fluvial deposition. Better sorted and more rounded gravels that are characteristic of stream channel deposits were observed in trench profiles, as were thicker fining-upward sequences where layers of fine sand and silt are more prominent and indicate stream channel and near-stream channel deposition. No artifacts, anthropogenic sedimentary deposits, fossils, paleosols, or organic matter were found in the profile of this portion of a unit Qa1 alluvial fan toe. What appear to be charcoal flecks were noted in the trench profile, and several of these were collected.

Trench 3 was placed in the northeastern portion of the proposed Unit 1 heliostat field in unit Qa1. The trench was excavated to a length of 150 feet. It was not excavated further because the monitor judged the excavated deposits to lack the potential for buried cultural remains. The upper approximately 1.4 m of the trench profile revealed a sandy, gravelly alluvium where multiple, moderately thick fining-upward sequences of gravel and sand, here thicker than analogous sequences in Trench 1, are thought to indicate

wider stream channels on the surface of this particular alluvial fan lobe. No artifacts, anthropogenic features, fossils, paleosols or organic matter were found in the profile of this portion of a unit Qa1 alluvial fan lobe. The base of this fan lobe unit terminates abruptly approximately 1.4 m below the present surface on an undulating surface of the late Pleistocene-age sediments of the basin fill (Qbf). The undulating surface appears to be consistent with a mid-Holocene period of marked erosion.

The results of the geoarchaeological field research support the interpretations of the geomorphology of the proposed facility site that had been previously made (see *Geomorphology* subsection, above), but are unable to negate the potential presence of buried archaeological deposits in the alluvial fans along its eastern margin. The identification of the strongly eroded, mid-Holocene contact between the Pleistocene-age basin fill and the overlying alluvial fan deposits well supports the interpretation of the fans as Holocene, most likely late Holocene, landforms. The applicant interprets the absence of artifacts, archaeological features, anthropogenic sedimentary deposits, or paleosols to indicate the absence of potential subsurface archaeological sensitivity (Lawson et al. 2012:13). Staff interprets that data differently. In consideration of the fact that the archaeological deposits that have been found to date on the surface of the proposed facility site are all relatively sparse scatters of chipped stone, staff would anticipate any buried archaeological deposits to be similar, and, therefore, difficult to discern in a backhoe trench profile. The difficulty of identifying buried archaeological deposits in Trenches 1 through 3 was undoubtedly compounded by the fact that only one of the trenches, Trench 1, fell inside the known cluster of archaeological sites centered in the northeastern portion of the proposed Unit 2 heliostat field (see *Prehistoric Archaeological Resources on the Proposed Facility Site* subsection, below), an area probably more likely to have such buried deposits. Staff believes that the alluvial fan sequence along the eastern margin of the proposed project site is young enough in age, post mid-Holocene, and has sedimentary portions, or facies, that are of low enough depositional energy to bury material culture remains and to preserve the original spatial associations among them. Staff interprets the subject alluvial fan sequence, absent finer resolution data, to most likely contain buried, intact archaeological deposits. The extremely small subsurface data set for the proposed facility site precludes a meaningful assessment of the potential frequency of these deposits.

Intensive Pedestrian Cultural Resources Survey

Archaeologists for the applicant conducted an intensive pedestrian survey on the site of the proposed facility in an effort to construct a more complete inventory of the cultural resources on which the construction and operation of the facility would have potential effects (CRTR 2011b). The results of the survey provide information on the location and the character of the cultural resources on the present surface of the facility site, and contributes to the analysis of the proposed project's potential direct physical effects on them.

Intensive pedestrian cultural resources surveys for the proposed project's transmission line and natural gas pipeline alignments are presently underway in Nevada. The applicant has made preliminary and incomplete draft results of these surveys available to staff as personal communications from the applicant's environmental consultants.

Methods

The methodology of the applicant's intensive pedestrian cultural resources survey reflected their attempt to comply with the Energy Commission's siting regulations (Cal. Code Regs., tit. 20, § 1701 et seq., app. B, subd. (g)). The requisite survey of built-environment resources, however, from the edge of the 200-foot buffer zone out to one half of a mile from the project site boundary was not an aspect of this survey and was conducted at a later date (CH2 2012a) (see *Built-Environment Field Activities* subsection, below). The survey of the HHSEGS facility site was conducted sporadically during March through June, 2011, over a total of approximately 19 field days (CRTR 2011b:1). The survey area was the entire proposed facility site, the construction laydown area adjacent to the western boundary of that site, and a 200-foot buffer area around both the facility site and the laydown area. The archaeologists for the applicant report that survey transect intervals varied from 10–15 m in width (CRTR 2011b:49-50) across the relatively flat expanse of alluvial sediments that characterize the vicinity of the proposed facility site. No explanation is available for transect interval variability. The visibility of the ground surface during the survey is reported to have been excellent. Visibility was approximately 90 percent or higher. Evidence of the subsurface structure of the local natural sedimentary deposits was limited to the odd rodent borrow and sporadic, shallowly incised ephemeral stream channels. Rodent borrow fill and exposed stream bank cuts were observed, when present. Survey crews navigated through the survey area with hand-held Trimble GeoXT submeter global positioning system (GPS) units. The units were loaded with survey area geographic information system overlays and overlays of previously recorded cultural resources. The actual survey transects were mapped in the field with the GPS units, as were the newly found and previously recorded sites. Notes were taken on and photographs were made of both newly found and previously recorded sites. Constituent site artifact and ecofact assemblages were also documented in this manner, but not collected. For the purposes of this survey, the definition of an archaeological site was any group of five or more artifacts or ecofacts on the same landform, where each specimen was no greater than 50 m apart. Archaeological features, whether isolated or associated with other features or with artifacts and ecofacts, were also documented as archaeological sites. Groups of five or more artifacts less than 50 m apart but spread across different landforms were split into separate archaeological sites by landform. Groups of four or fewer artifacts were documented as Isolated Occurrences (IOs).

Results

One previously recorded and 13 new archaeological sites and 49 IOs were found as a result of the intensive pedestrian cultural resources survey (**Cultural Resources Table 7**, see Inventory of Cultural Resources in the Project Areas of Analysis, below). The 14 archaeological sites were originally reported (CRTR 2011b:53 and 54) to include 12 prehistoric sites, one historical archaeological site, and one site of indeterminate age. Subsequently, staff determined, on the basis of field examination, that one of the newly recorded archaeological sites (site S-2) was primarily the result of recent historic activity and dropped it from further consideration. The archaeologists for the applicant also made the determination during the Phase II field investigation of a subset of the prehistoric sites (Lawson et al. 2012x) that archaeological sites S-10 and S-11 qualify as a single archaeological site under the definition in use for the present analysis. The

adjusted archaeological site count leaves a total of 12 archaeological sites, 10 of which are prehistoric, one of which is historic-period, and one of which is of indeterminate age. No ethnographic resources were identified in conjunction with this survey, nor were any intact structures found in the survey area (CRTR 2011b:53). The trails and roads that relate to the project area of analysis are discussed below as built-environment resources (see Built-Environment Field Activities, below).

Archaeological Resource Inventory of the Proposed Facility Site

Prehistoric Archaeological Resource Inventory

Prehistoric archaeological resources make up the bulk of the cultural resources inventory on the proposed facility site. The prehistoric archaeological *sites* (as distinct from prehistoric IOs of four or fewer artifacts) cluster in an area that ranges from the far southeastern corner of the proposed heliostat field for Unit 1 across the majority of the northeastern heliostat field for Unit 2 and into the proposed Common Area (**Cultural Resources Figure 3**). These sites are all relatively sparse (1 artifact/0.7–344 m^2) surface scatters of chipped stone, or relatively sparse lithic scatters. Half of the sites are scatters of nothing other than stone flakes, or debitage, 20 percent include debitage and stone cores from which flakes have been detached, and 30 percent of the sites include debitage, cores, and one to three flake tools. The debitage on these sites is predominately large (~ 3–7 cm), primary and secondary flakes that most likely represent the testing and initial reduction of surface cobbles to produce toolstone-quality flakes. Tertiary, or interior flakes are a minor component of the assemblages, when present at all. Typical cores appear to indicate flake detachment in multiple directions (multidirectional core), and the rare flake tools appear to largely reflect the use of unmodified, expediently-produced flakes. The reported material types include rhyolite, chert, welded tuff, and indeterminate igneous stone. The archaeological sites for which chert is reported as the most common material type cluster along the eastern boundary of the Common Area. The sites further to the west, out where the Unit 1 and Unit 2 heliostat fields are proposed, contain little or no chert.

The distribution of prehistoric IOs (N=31) mirrors, in part, the distribution of the prehistoric archaeological sites (**Cultural Resources Figure 3**). The majority (N=23) of the prehistoric IOs were found in a zone that subsumes the cluster of prehistoric sites in the east-central portion of the proposed facility site. The IOs in this zone are predominantly (N=21) unmodified and non-utilized flakes plus one edge-modified flake and one utilized flake. The balance of the prehistoric IOs (N=8) are spread out in a very sparse, narrow zone across the extreme southern end of the facility site, south of the proposed location of the Unit 2 power tower. This artifact group is again predominately (N=6) flakes, but also includes a fragmentary bifacial tool, and a fragmentary and a whole metate which were found together, the latter being the only artifacts found on the proposed facility site that were not chipped stone.

The inventory of prehistoric archaeological resources on the proposed facility site indicates a marginal and transitory use of the floor of Pahrump Valley. Although alluvial fan and eolian sand deposition along the eastern side of the facility site have probably buried archaeological deposits during the Holocene epoch and thus reduced the material signature of past human behavior on the surface of that area, the small number and extremely sparse character of the known prehistoric archaeological sites, and the

sparse distribution of the prehistoric IOs strongly suggest that the use of this area was quite infrequent and transitory. The prehistoric archaeological sites overwhelmingly appear to represent the fortuitous collection, assaying, and initial reduction of surface cobbles in search of toolstone-quality material, presumably for the production of expedient flake tools. The concentration of prehistoric sites and IOs toward the east-central portion of the proposed facility site most likely owes its location to the particular character of the outcrops of pre-Holocene alluvium immediately to the northeast of the facility site boundary. The outcrops are gravelly deposits that include Paleozoic era (ca. 542–251 mya) limestone gravels and cobbles, and rare chert nodules. These Paleozoic rocks presumably eroded out of and down the Spring Mountains, became incorporated into the alluvial fan deposits which were subsequently re-exposed along the Pahrump Valley fault zone, and eroded back out and over the facility site boundary. The distribution of the sparse smear of prehistoric IOs across the extreme southern end of the facility site may be related to the presence of desert pavements there in various states of development. The locations of the artifact group and the pavement area appear to roughly co-vary (**Cultural Resources Figure 4**). The alluvium in which the pavements have developed contains basalt and other volcanic rock from a former stream that may have once flowed north from Sandy Valley. The desert pavements, like the eroding outcrops of gravelly pre-Holocene alluvium to the east, appear to have served as convenient and incidental local toolstone sources. The collection and use of the chert nodules and the various igneous rocks found on the facility site appear to have most likely been incidental pursuits as people traversed the area on their way to other places, down from the Spring Mountains, through the mesquite woodland-shrouded sand dunes just up off of the basin floor to the east, to the former lake that is now Pahrump playa, and into the Nopah Range.

Historical Archaeological Resource Inventory

The historical archaeological component of the cultural resources inventory for the proposed facility site is quite limited. The historical archaeological resources include one archaeological site, an apparent 1960s refuse scatter, and 18 historical archaeological Isolated Occurrences. The one historical archaeological site was found in the near vicinity of the proposed Unit 2 power tower. It is a relatively small, sparse scatter of tin cans and bottle glass adjacent to a dirt road. The IOs are eleven pieces of historic refuse recorded as nine resources, and nine General Land Office (GLO) benchmarks dated 1933 and 1934. The historic refuse includes seven tin cans that range in date from approximately the 1880s to the 1960s, two hinged lid tobacco tins, a mule shoe, and an embossed bottle cap. These items are spread extremely sparsely across the eastern half of the proposed facility site and most likely represent incidental discards over the last approximately 130 years. The GLO benchmarks are all found along the dirt road that delimits the northeastern boundary of the facility site.

An Indeterminate Archaeological Resource

The archaeologists for the applicant found one archaeological resource the age of which is presently indeterminate. The resource is a relatively small cairn of 26 cobbles and boulders in the Common Area of the proposed facility site. No artifacts or other material evidence of human behavior was found in association with the cairn. There is no reliable evidence to establish a date or a function for the resource.

Intensive Pedestrian Cultural Resources Surveys of the Transmission Line and Natural Gas Pipeline Alignments

The results of intensive pedestrian cultural resources surveys for the proposed project's transmission and natural gas pipeline alignments are presently not available. The locations of these alignments, all of which are in Nevada, have been fluid since the August 2011 filing of the original AFC. Staff's consideration of any archaeological resources found along the alignments would, due to the limitations of the Energy Commission's jurisdiction, focus only on the effects that the construction and operation of the facility site in California would have on significant archaeological resources in Nevada. The effects that the construction and operation of the transmission and natural gas pipelines in Nevada would have on significant archaeological resources in Nevada would be beyond the Energy Commission's jurisdiction.

Summary of the Character of the Archaeological Resource Inventory for the California Portion of the Proposed Project Area

The archaeological resource inventory for the facility site and adjacent temporary construction area comports relatively well with the character of the inventory that one would anticipate on the basis of the results of prior investigations on the floor of Pahrump Valley. The extrapolation of the results of those previous efforts indicate a site frequency in the vicinity of the proposed project area of approximately one site per 548 acres with prehistoric lithic scatters as the only archaeological site type. The results of the intensive pedestrian cultural resources survey for HHSEGS documents a site frequency for the facility site and temporary construction area of one site per approximately 252 acres, or roughly twice the frequency that would reasonably have been anticipated, and prehistoric lithic scatters, at approximately 84 percent, as the predominate archaeological site type. Historical refuse deposits and indeterminate archaeological sites round out the actual cultural resources inventory at approximately eight percent each. At a relatively coarse level of resolution, the cultural resources inventory for the California portion of the proposed project area is relatively consistent with the reasonably anticipated character of that inventory. Staff believes, therefore, that the archaeological research efforts for this portion of the larger project area of analysis have produced results reliable enough to support an Energy Commission decision on the application for the project. Information on the cultural resources inventory in the broader PAA, outside of the proposed facility site and temporary construction area, has not yet been made available to staff.

Summary of the Character of the Archaeological Resource Inventory beyond the Proposed Facility Site in California and Nevada

The Archaeological Resources PAA extends well beyond the proposed facility site and temporary construction area in California and the different alternative routes of the transmission lines and the natural gas pipeline in Nevada that would serve the facility and distribute the energy that the facility would produce. The broad extent of the scope of the present analysis reflects the broad reach of the proposed project's potential visual effects. The applicant's reluctance during the present siting case to provide information on potential historical resources beyond the facility site precludes staff's ability to comment with a high degree of confidence whether and where the proposed project

may significantly degrade the visual integrity of archaeological resources further from the facility site. There may be archaeological resources on the more prominent peaks of the Nopah Range to the west of the proposed project and among the lower eastern reaches of that range. There may also be such resources on Mount Charleston and other prominent peaks of the Spring Mountains and along the western shoulder of the range above the proposed facility site. Information on the cultural resources inventory in these areas of the PAA have not yet been made available to staff. On the basis of staff's informal field reconnaissance of the facility site and of east to west transects across the central portion of Pahrump Valley, staff has been able to identify and initiate the documentation of what staff refers to as the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape. The landscape is largely in Nevada adjacent and parallel to the northeastern boundary of the facility site in California. It has been identified by staff as an archaeological landscape and an historical resource under CEQA. The landscape appears to date from a presently undetermined point in prehistory through at least the early twentieth century and includes archaeological sites, springs, mesquite groves which aboriginal cultures have used and quite probably tended for millennia, and assemblages of flora and fauna unique to the variety of mesquite woodland association that is the focus of the landscape. The landscape, as presently bounded, encompasses the relatively complex prehistoric and historic Native American archaeological resources that are known along the Pahrump Valley fault zone, types of archaeological deposits found by staff during the reconnaissance of the landscape, and, in consideration of the spare documentation of the landscape to date, most likely other unknown types of archaeological deposits. Staff has been able to take this landscape into account and address its historic preservation under CEQA, and takes any archaeological resources in the Spring Mountains or the Nopah Range to be beyond the pragmatic scope of the present analysis.

Ethnographic Field Activities

Native American Consultation
Energy Commission Cultural and Visual Resources staff held a pre-filing Native American consultation and outreach meeting on August 2, 2011, in conjunction with the applicant and BLM staff. The meeting was attended by representatives of the Pahrump Band of Southern Paiute and the Las Vegas Paiute. The purpose of the meeting was to introduce the Energy Commission staff, present the project, explain the roles of the different agencies, talk about the visual resources and cultural resources analyses, and visit the project vicinity. Although a visit to the facility site did not occur, attendees could examine photos and photo simulations of key observation points (KOPs) in the vicinity of the project.

On December 2, 2011, Energy Commission staff met for a second time with representatives of the Pahrump Band, Las Vegas Paiute, and Timbisha Shoshone in Pahrump, Nevada. Also in attendance was Kathleen Sprowl of BLM's Southern Nevada District Office. The discussion was not limited to cultural and visual resources and a wide range of questions were asked about the project in general, including potential impacts to water. The group also visited the project site in the afternoon.

At the request of the tribes, a follow-up meeting with Energy Commission technical staff, including Cultural Resources, Visual Resources, Biological Resources, Water

Resources, Alternatives, and Soils specialists, occurred on January 19, 2012, in Shoshone, California, with representatives from the Pahrump Band, Las Vegas Paiute, Timbisha Shoshone, Lone Pine Paiute, and the Moapa, to discuss specific tribal concerns regarding several aspects of the project.

Several additional meetings were held to exchange general information with affiliated tribes and to gauge tribal interest in participating in further project-related ethnographic studies. Specific tribal government representatives and individual traditional Native American practitioners were invited, based on the May, 2011 listing of tribes interested in consulting on development projects in their ancestral territories, provided by the NAHC to Energy Commission staff.

General Meeting 1 was held on January 19, 2012, in Shoshone, California, and was attended by various Energy Commission staff technical experts in the areas of Water Resources, Biological Resources, Cultural Resources, and Planning, as well as representatives of management. Participating tribes included the Pahrump Paiute Tribe, Moapa Paiute Tribe, Las Vegas Paiute Tribe, Timbisha Shoshone Tribe, and the Lone Pine Tribe of Paiute and Shoshone. The tribal attendees were a combination of tribal cultural resources and environmental protection staff and several tribal elders. Staff provided the tribes with an overview of the proposed project and updates on how various natural and cultural resource studies were proceeding. Tribal attendees asked general and clarifying questions and made statements that expressed their concerns for how the project might impact their lifeways.

Specific concerns were expressed regarding the proposed project's water use; impacts to the water-related biomes, such as the local springs that support plants and animals in the nearby coppice dunes mesquite grove complexes; and mention was made that Paiute ceremonies, generally referred to as "Salt Song Trails," occurred or were centered in, around, and running through the project area. Additional concern was expressed regarding impacts to Indian trails, including the Old Spanish Trail, and possible impacts to on-site plants, animals, and cultural resources, including possible burial or cremation sites. Cultural Resources staff proposed that an ethnographic study be conducted. Tribes agreed that an ethnographic study would be one desired action to pursue. They also indicated that the Pahrump Paiute Tribe should be central to that study and that the other tribes could provide support to the Pahrump Paiute Tribe. However, participating tribes also requested exclusive follow-up meetings with Energy Commission Cultural Resources staff.

General Meeting 2 was held on February 11, 2012, at the Hidden Hills project site and in Pahrump, Nevada. Energy Commission staff ethnographer, Thomas Gates, met with various Pahrump tribal members as a group near the project site. The membership had assembled to get clarification and a better general understanding of the proposed project parameters. The ethnographic study and the confidentiality of information that the tribe might provide were two topics discussed. Several off-project cultural resource areas were visited, including a looted Pahrump Paiute cemetery.

General Meeting 3 was held on February 12, 2012, at the Hidden Hills project site and at Sandy Valley (an alternative project site). Mr.Gates, the Energy Commission

ethnographer, met with the Moapa Tribe cultural resources staff and committee members. One Moapa tribal council person also attended, as did Pahrump tribal representatives. General HHSEGS project parameters were discussed. Some Moapa participants are descendants of Paiute families that originated from the Pahrump Valley vicinity. Cultural values attached to the Sandy Valley area were discussed. Moapa Tribe staff reiterated their previous statements that the Moapa Tribe would support the Pahrump Tribe and was interested in reviewing the ethnographic report prior to finalization. They also reiterated concerns voiced at the first general meeting about impacts to water, springs, plants, and animals, and the Salt Song ceremonies.

General Meeting 4 was held on February 14, 2012, with the Owens Valley Indian Water Commission. Representatives from the Uta Gwaitu Paiute Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Fort Independence Paiute Tribe, Lone Pine Paiute and Shoshone Tribe, and Timbisha Shoshone Tribe participated. The general HHSEGS project, as proposed, was discussed and the ethnographic study concept was presented. Participants agreed that the project area was within Southern Paiute Territory (as contrasted with Owens Valley Paiute territory) and that the Pahrump Tribe was the most affiliated tribe to work with, but that some Southern Paiute families had ended up as tribal members in Owens Valley Paiute Tribes. Individual families were identified.

General Meeting 5 was held on May 12, 2012, with the Pahrump Paiute Tribe. A draft of the ethnographic report was generally reviewed and the Energy Commission project review process was discussed. Sections of the ethnographic report included in this analysis were identified by staff and the Pahrump Tribe as non-confidential and form the basis of staff's conclusions and recommended mitigation measures.

Since May, 2012, staff has continued to consult with the Pahrump Tribe on possible ways to mitigate the project's impacts on tribal cultural and religious practices and the traditional use of ancestral lands. Staff will continue to consult with the Tribes during the licensing process.

Ethnographic Study

Ethnographic Methods

An ethnography, at its best, takes years to complete. Ethnographers can spend a lifetime studying another culture and still find that their cross-cultural knowledge of their "second" culture is incomplete. Minimally, it is advised to spend at least one year in studying another culture so that one can learn about the various seasonal variations and adaptations. Academic and self-funded anthropologists may have such luxury. However, the merits of ethnography, when employed to understand project impacts to ethnographic resources, often require less than optimal study durations. One method, called "Rapid Cultural Assessment" (RCA) was developed in the 1930s to assist sociologists' understanding of American rural agricultural community responses to socioeconomic impacts ensuing from evolving environmental conditions.

The National Park Service (NPS) has developed similar methods for understanding ethnographic resources within the shortened time frames related to project review. The NPS method, called Rapid Ethnographic Assessment Procedures (REAP), was generally followed for this project-related ethnographic study. REAP consists of a

selection of ethnographic methods that relies on interview, observation, and research techniques to describe a way of life common to a group of people, including their knowledge, customs, beliefs, social habits, technology, arts, values, and institutions. REAP involves active participation of people in a cultural group to render representations of a way of life from a community's point of view. Unlike traditional ethnography, REAP focuses investigations and resultant descriptions on solving specific problems or issues that may arise as a result of proceeding with a development project (NPS 2007).

REAP's methods are:

1. Group meetings/interviews where the ethnographer explains the project to the group, answers general questions, and solicits immediate responses, fears, apprehensions, benefits, or other general perceptions from the participants concerning the project, the area where the project is being proposed, and the general connections of traditional people to the project area. Often issues of confidentiality are discussed. The ethnographer may be successful in scheduling follow-up activities with specific individuals to increase ethnographic understanding.

2. Areas worth further ethnographic inquiry are identified; a research design, including research/interview questions, is developed; and specific people are scheduled by the ethnographer and the group for follow-up interviews. Follow-up interviews should be conducted according to the protocols of documentation and confidentiality identified during the group meeting/interview. Interview notes, however recorded, should be vetted with the source individuals to verify accuracy and to gather additional nuanced information.

3. Follow-up interviews with the same or additional people often occur while both the ethnographer and the community begin to further think about the project, the project effects, and additional information that is necessary for fully identifying, evaluating, assessing effects, or otherwise considering impacts to ethnographic resources.

4. As Steps 1 through 3 are being conducted, a parallel archival "search, retrieve, and assess" process should be undertaken to provide supporting or conflicting information to what is being discovered through the interview process. In addition to archive, book store, and other informational repositories (e.g., the internet), the people themselves or other ethnographers with previous experiences with the same people, may provide source materials.

5. Field visits help the ethnographer triangulate between what people currently say, what people have written in the past, and what is actually or perceived to be in the project area as a potential ethnographic resource.

Research Design

Based upon these general meetings, an abbreviated research design was developed for the HHSEGS project ethnography that generated various research questions or directives. The following research design provided general guidance for preliminary archival research and allowed staff to prepare for interviews.

- Research specific Pahrump Valley Native American history and culture beyond what is generally provided in the CH2MHill Cultural Resources report prepared for the HHSEGS AFC.
- Determine what plants and animals that have Southern Paiute cultural significance are or may be located in the project area. Plants and animals determined to have attached Southern Paiute cultural values should be further studied to understand ethno-botanical and ethno-zoological details.
- Research the history of Southern Paiute water knowledge and use in the Pahrump Valley and surrounding mountains.
- Research and understand the importance of springs, mesquite groves, and the surrounding coppice dune environs in the project area for the continuance of Southern Paiute lifeways.
- Research and understand the Round dance, Harvest dance, and Cry ceremonies performed in the Pahrump Valley and specifically the ceremony held in 1933 at Hidden Springs Ranch. Determine to what extent these ceremonies are still practiced today and to what extent the proposed project would impact such ceremonies.
- Research and further understand the history, practices, and meaning of the Salt Song trail; deer and big horn sheep mourning songs; and Coyote and Wolf legends, with emphasis on ethno-geography and specific attention paid to the nature of the trail aspects of these songs and related ceremonies.
- Research the history of Southern Paiute horticulture in the project area from pre-contact to current times.
- Research and map, to the extent feasible, Native American trails located in and near the project area that are not necessarily “Salt Song Trails.”
- Understand to what extent the Old Spanish Trail is also a Native American trail.
- Particularly research the Native American slave traffic that occurred along the Old Spanish Trail.
- Inquire and document the importance of Charleston Peak, Spring Mountains, Kingston Mountains, Nopah Mountains, the Last Chance Mountains, and other surrounding landforms in general and as view- or auditory-sheds in relation to the project area and to other landforms.
- Research traditional and current Southern Paiute burial practices, including cremation.
- Inquire as to the interrelation of Paiute and Shoshone culture in general and specifically in project area.
- Research the history of tribal governments: Moapa, Las Vegas, Pahrump, Timbisha Shoshone, Lone Pine, Independence, Big Pine, Bishop, and Benton.

Interviews

Staff determined, based upon limited time, budget constraints, and the general attitude of most Native Americans who participated in the general meetings that an open-ended question/answer dialogue style of interviewing would be more effective than a formal interview style that would require protracted review of the research questions, the possible need to develop a formal questionnaire, and other methods of recordation. Instead, hand-written notes were taken by the ethnographer. These notes were then typed up within a few days and returned to the person interviewed for further review with instructions to make changes including deletions and additions. The ethnographer also asked interviewees to identify what information in the interviews should remain confidential.

Interviews were conducted with the following Southern Paiute and Shoshone individuals:

- Clarabelle Jim, Elder Pahrump Paiute Tribe
- Lorraine Jim, Elder Pahrump Paiute Tribe
- Cynthia Lynch, Elder Pahrump Paiute Tribe
- Richard Arnold, Traditional Religious Practitioner Pahrump Paiute Tribe
- George Ross, Elder Pahrump Tribal Member
- Vernon Lee, Moapa Tribal Member of Pahrump Paiute ancestry
- Juanita Kinlichine, Elder Moapa Tribal Member of Pahrump Paiute ancestry
- Lalovi Miller, Elder Moapa Tribal Member of Pahrump Paiute ancestry
- Philbert Swain, Elder Moapa Tribal Member
- Barbara Durham, Tribal Historic Preservation Officer for the Timbisha Shoshone Tribe and Timbisha Shoshone Tribal member

Follow-up interviews were conducted with Clarabelle Jim, Cynthia Lynch, and Richard Arnold.

An interview with Don Hendricks was conducted on May 8, 2012, in Pahrump. Mr. Hendricks is a retired nuclear physicist, formerly employed by the Atomic Energy Commission and the Environmental Protection Agency. Mr. Hendricks is also a respected local historian, archaeologist, and member of various local and state historic societies and associations. The purpose of this interview was to further verify conflicting written and oral history dates, people, and events.

Ethnographic Method Constraints

There were inherent constraints to the ethnographic methods described above. Five such constraints are identified and further described:

1. Confidentiality of sensitive Information;

2. Abbreviated time period in which to conduct thorough ethnography;

3. Language barriers in expressing and understanding information;

4. Seasonal prohibitions against divulging certain types of information; and

5. Some seminal archival information not obtainable (Isabel Kelley's 1934 field notes).

The confidentiality of Native American sensitive cultural information—key to obtaining critically important information necessary for the completion of a thorough cultural resources analysis—became problematic due to shifting comfort levels among contributing Native Americans in understanding how the information would be used. This fact initially inhibited staff's ability to collect pertinent information in a timely manner. Once information was presented in a completed study report, the Pahrump Paiute Tribe and Energy Commission staff came to an agreement on what could be shared publically. What was finally determined sensitive and not to be shared with the public is redacted in the publically available ethnographic report (Gates 2012).

The Southern Paiute culture, and particularly traditional cultural practices related to epistemology (belief systems), world view, and religion, are extremely complex to understand within the limits of a three-month study. One Pahrump Paiute stated:

> Admittedly and with all due respect, the abbreviated ethnographic approach being used in this project appears to be designed to collect only a limited amount of information. The open-ended interviews are good for collecting certain kinds of general data, but cause concern when trying to synthesize the data.

A Moapa Paiute stated a broader concern with language barriers to cross-cultural understanding:

> English language will never get to the bottom of such things like Salt Song Trails. When we speak our language to one another, we automatically know what the other is saying. Paiute language gets right to it. In English, we have to say it a bunch of different ways, and we still are not sure if the other person understands. With Paiute, it is either yes or no, do or not do. There is no ambiguity.

Well-documented in the literature and re-stated for this study by various interviewees is a general cultural prohibition against telling culturally significant and traditional stories outside of the winter period (Fowler 1971:21, Kelly 1964:120). The Pahrump Paiute winter time is generally defined as the months of November, December, and January. Interviews were conducted in February and March.

Finally, it was determined early in this study that Isabel Kelly conducted ethnographic research among the Southern Paiute in 1932. Her research was partially recorded in her personal field notes. However, only the eastern Southern Paiute (those Paiute residing in Utah and northern Arizona) were discussed in Kelly's seminal work *Southern Paiute Ethnography,* published in 1964. While staff was able to incorporate some comparative information from that ethnography into this report, Kelly's information for

the western Southern Paiute was not obtainable, although several efforts were made by Energy Commission staff to obtain copies of her field notes.

Constraints were either *surmountable*, *partially surmountable,* or *not surmountable* as described below.

1. A confidentiality agreement was struck between Energy Commission staff ethnographer and the Pahrump Paiute Tribe representatives that guaranteed confidentiality of information provided. *Constraint Surmounted*.

2. Rapid Ethnographic Assessment Procedures (REAP) were adapted to this ethnographic study. While REAP cannot replace the quality of long-term ethnography, it does provide some ability to include consideration of ethnographic resources in the Energy Commission environmental project assessment of HHSEGS, for which Energy Commission staff had only a few months to conduct independent research. *Constraint Partially Surmounted*.

3. The cultural resources staff author of the publically available ethnographic report does not speak or understand Southern Paiute, and there are few other non-Southern Paiute that speak the language. Four of the Southern Paiute interviewees spoke English as a second language. However, their English language skills were proficient enough to convey partial understanding and some interviews were followed up with second interviews to verify previously recorded information. However, information conveyed in this report is provided in the English written language only. *Constraint Not Surmountable*.

4. A prohibition prevents traditional stories, many of the stories holding embedded information sought for this study, from being told in entirety during the months that this research was conducted. Interviewees could tell pieces of stories or otherwise provide specific information without breaking the prohibition. In addition, some literature discovered through archival research further substantiated the fragments that were provided through interview. However, an exhaustive review of significant oral history was not possible. *Constraint Partially Surmounted*.

5. While previously recorded seminal ethnographic information was not obtained from Kelly's field notes, similar information was gathered from other sources, including a Southern Paiute section included in the *Smithsonian Handbook of North American Indians,* Volume 11, and written by Kelly and Fowler (Kelly 1982: pp. 368-397) that did rely on the field notes in question. *Constraint Partially Surmounted*.

Results of Ethnography

Attributes, Elements, or Features of Southern Paiute Lifeways

While a research design guided staff's initial inquiries, after interviews were conducted the information acquired showed consistent themes that grouped into seven attributes. Therefore the ethnographic report analysis divides Pahrump life-ways, and how those life-ways are intertwined with a landscape, into seven attributes: water, plants, animals, horticulture, trails, landforms, and ceremonies. It should be noted that there is crossover between categories. For example, trails are waterways, trails are songs, trails are

ceremony, trails are for hunting and gathering, and trails run through all of the landforms that allow Southern Paiute (and others) to travel among the mountains, valleys, gardens, plants and animals, and homes and camps. Likewise, any of the other attributes can be explained in terms of, or have overlaps with, the other attributes. The Pahrump Paiute world is one holistic phenomenon. This whole is segmented into attributes so that non-Paiute can understand something about the life-ways of a different people.

Paiute and Shoshone people from the various tribes consulted for this study continue to practice their traditional ways as best they can against the backdrop of a modern dominant society and the various developments that come with that modern society.

Ethnographic Landscapes

An ethnographic landscape is defined generally as a landscape containing a variety of natural and cultural resources that associated people define as heritage resources, as noted in this section's introduction. Ethnographic landscapes can have considerable overlap with what are called traditional cultural properties. Traditional cultural properties are synonymous with the term "place." Places and areas are types of cultural resources that can be synonymous with traditional cultural properties and ethnographic landscapes. The term ethnographic landscape will be used to generally refer to the types of resources that are considered in this report; however, staff, by using the term, ethnographic landscape, also intends that usage to mean an "area" or "place," per the CEQA definition of historical resource.

As a result of staff's ethnographic study, staff identified three overlapping ethnographic landscapes that the HHSEGS project could impact. They have as their contributing attributes, elements, or features the following: water, plants, animals, horticultural gardens, trails, landforms, and religious practices. All three landscapes include the entire project area within their boundaries and are within the ethnographic PAA. The three landscapes are:

1. Southern Paiute Salt Song Landscape

2. Pahrump Paiute Home Landscape

3. Ma-hav Landscape

Cultural Resources Tables 4, 5, and 6, below, provide a listing of contributing features, a description, and other relevant information for understanding the natural and cultural make-up of the three landscapes.

CULTURAL RESOURCES Table 4
Contributing Features of the *Salt Song Landscape* Related to the Hidden Hills Solar Energy Generating Systems Project Vicinity (Figure 4)

FEATURE	DESCRIPTION
Water	Puha, Spirits, Springs, Creeks, Flats, Washes, Creeks.
Plants	Puha, Spirits, Plants along the trail and in project vicinity. There are 364 plants related to the Salt Song Trail.
Animals	Puha, Spirits, Animals, Insects. There are 174 animals related to the Salt Song Trail.
Horticulture	Puha, Spirits, Springs Horticulture is a secondary aspect of the primary aspect of water, specifically springs and the activities that occur near springs.
Landforms	Potosi Mountain, Sandy Valley, Kingston Mountains, Nopah Range, Resting Springs Range, Lizard Mountain, Sterling Mountain, Pahrump Valley Floor including Playa.
Trails	Puha, Spirits, Humans, Animals. All Southern Paiute living and deceased participate in the Salt Song Trail. The trail is a path on the ground, a corridor on and above the ground, and an auditory sound scape.
Ceremony	Puha, various types of ceremonies related to funerals and memorials. Ceremonies require aesthetically compatible viewsheds, noise free space and foreign-odor free space.

CULTURAL RESOURCES Table 5[13]
Contributing Features of the *Pahrump Home Landscape* Related to the Hidden Hills Solar Energy Generating Systems Project Vicinity (Figure 1)

	DESCRIPTION
Water	**FEATURE**
Plants	(See Staff's Ethnographic Report for a full-list)
Animals	(See Staff's Ethnographic Report for a full-list)
Horticulture	Corn, squash, gourds, pumpkins, melons, sunflower, amaranth, winter wheat, various beans, and Devil's claw. Irrigation systems Garden plots
Trails	Lateral trails along the valley floor Lateral trails along the valley spring escarpments Lateral trails along the mountain side Vertical trails that connect the valley floor with the high elevations of the Spring Mountains Trails that connect various districts/tribes and the larger Southern Paiute Nations These trails include the Old Spanish Trail and the later and overlapping Mormon Road.
Ceremony	All of the ceremonies identified in this analysis and the Ceremony section of the Ethnographic Report for the Hidden Hills project. Some ceremonies are site specific and some ceremonies can be held based upon a consensus of the involved practitioners and affiliated families

[13] The contributing features that are characterized as landforms is omitted from this table because the landforms list for the Pahrump Paiute Home Landscape are numerous, and those landforms related to the project vicinity are best described in the Ma-hav landscape table below.

CULTURAL RESOURCES Table 6[14]
Contributing Features of the *Ma-hav Landscape* Related to the Hidden Hills Solar Energy Generating Systems Project Vicinity (Figure 5)

FEATURE	DESCRIPTION
Water	Stump Spring, Hidden Hills Ranch Spring, Browns Spring, Weeping Rock Seep, and other unnamed springs within the Ma hav Landscape boundaries as depicted on Figure 5. Edge of the Playa (Pahrump Dry Lake Bed, washes and creeks within the boundaries of the Ma-hav Landscape.
Plants	(See Staff's Ethnographic Report for a full-list)
Animals	(See Staff's Ethnographic Report for a full-list)
Horticulture	Horticulture gardens at Weeping Rock, Browns, Hidden Hills and Stumps Springs. The garden area at Hidden Hills can still be discerned today. The exact garden locations at the other springs would require further historic and archaeological investigation to determine exact locations
Trails	Trails that connected the springs, and connected the spring areas to other destination points such as the springs to the north (Mound, Manse, Pahrump), Sandy Valley to the south, the playa, Mule Springs to the east, the Trout Canyon, and Resting Springs to the west. Smaller paths in and around each of the spring areas. Tribal members assert that the project area is a traditional hunting and gathering area and that procurement activities do not necessarily follow pre-established routes

[14] The contributing features to the Ma-hav Landscape generally referred to as Landforms is omitted from this table, because landform features are cross referenced in the other contributing element types and particularly the water feature category.

FEATURE	DESCRIPTION
Ceremony	Hidden Hills Cry ceremony and Salt Song memorial; Burials and Pahrump Paiute Cemetery. It is highly probable that similar ceremonies occurred at the other Springs. Also John Stumper, being a renowned medicine man, conducted personal religious activities at or near Stump Spring.
Archaeology	Various resource procurement locations, seasonal occupation, village and homestead sites, including historic sites such as Tank Sharpe's still are located throughout the Ma-hav landscape. Archaeological information included in this staff assessment provides additional parameters for considering an archaeological district that encompasses the Ma-hav Landscape

Southern Paiute, Pahrump Paiute, and Ma-hav Ethnographic Landscapes Generally Described

The Salt Song Landscape, as described in **Cultural Resources Table 4**, encompasses portions of present-day southern California, southern Nevada, northeastern Arizona, and southwestern Utah (see **Cultural Resources Figure 4**). The boundaries encompass the Pahrump Valley and surrounding mountain ranges that collectively form the Pahrump Valley. The Salt Song Landscape is ubiquitous throughout the project area and exceeds it and the PAA in extent. Numerous bands of Southern Paiute participate in this landscape. Only such description of this song landscape as is relevant to assessing the effects of the HHSEGS project on the Salt Song Landscape is included here.

The Pahrump Paiute Home Landscape, as described in **Cultural Resources Table 5**, is a part of the Salt Song Landscape and ensues from and radiates out from and around the Spring Mountains. This landscape, extending from the western side of the Spring Range and including Pahrump Valley, Last Chance Range, Nopah Range, and the Kingston Mountains, and areas further to the north, west, and south, far exceeds the area of the project and the PAA. **Cultural Resources Figure 1** provides a general sense of some of the area mentioned. This landscape's largest extent is slightly larger than the area encircled by Chief Tecopa's 1873 homeland journey. It can be easily asserted that some portion of the eastern side of the Spring Mountains is more directly affiliated with the Las Vegas Southern Paiute, but it is not necessary for staff to specifically delineate the boundaries of the Pahrump Paiute Home Landscape because the project is on the west side of the Spring Mountains, and the west side is more directly affiliated with the Pahrump Paiute homeland. The Pahrump Paiute Home Landscape consists of numerous component landscape areas with multiple contributing

attributes, but it is not necessary, for the purposes of this document, to further describe and delineate all of the component landscapes.

The proposed project is within the Ma-hav Landscape as described in **Cultural Resources Table 6**. **Cultural Resources Figure 5** provides a delineation of the Ma-hav Landscape. It is the ethnographic landscape that most closely fits the project area and the one on which the project's impacts are most direct. Based upon the preponderance of the ethnographic information collected for this landscape, there are four specific justifications for the boundary delineations:

1. Geology: The area represents a unique geological surface covering of clay that uplifted, eroded, and flowed towards and contributes to the Pahrump Valley Dry Lake bed. The playa itself is not included because it is formed from other eroded deposits that surround the playa on all sides. This unique clay surface has supported specific plant and animal communities that are hunted and gathered by Pahrump Paiute affiliated with the Ma-hav area.

2. Watershed: The area represents a specific lower portion of the watersheds of the Trout Canyon Creek and its main tributary, the Pahrump Valley Creek. These two creeks collectively drain the southwestern portion of Mount Charleston. These watersheds are separate and distinct from watersheds that drain the northwestern slopes of Mount Charleston and that flow towards the springs north of the Ma-hav Landscape such as Mound, Manse, and Pahrump Springs. These watersheds provided a corridor for travel from the valley floor to the heights of Mount Charleston.

3. People: The area represents the closely related Pahrump Paiute families of the Lees, Weeds, Haskins, Browns, Howells, Bruces, and Toms. While these families are inter-related to other Pahrump Paiute families, and other non-Pahrump Paiute people, they tended to reside, or frequent, in and around the Ma-hav, Hidden Hills, and Charleston View areas.

4. Unique Character: The Hidden Hills springs produced less water than others in the area and so attracted non-Indian development later. The larger Pahrump Valley ranches were first established to the north around Ash Meadows, Pahrump Spring, Manse Spring and Mound Spring. As a result the Hidden Hills area was known to have a more unique set of people that differentiated themselves from the larger valley population to the north and near the city of Pahrump. In addition, specific esoteric cultural and religious knowledge was formulated, instructed, and practiced within this delineated landscape and nowhere else in the Paiute landscape. Finally this landscape and the Pahrump Paiute people that occupied it during the Spanish Trail and Mormon road periods were subjected to some of the first contacts and related hostilities ensuing from trail-side encounters.

Given that the land is a contiguous whole, this delineation is conservative. The Ma-hav Landscape boundaries could be drawn up to the crest of Mount Charleston by including the Trout Canyon and Pahrump Valley creeks. However, the upper reaches of the aforementioned creeks are included in the Pahrump Paiute Home Landscape.

Built-Environment Field Activities

The applicant's consultant conducted a windshield survey of the Calvada Springs subdivision in Charleston View, south of the project site, on December 29, 2011, and concluded that a majority of the residences within a one-half mile radius of the project site are mobile homes. Two permanent residences are located on Carpenter Avenue. Other permanent structures include barns, sheds, and other outbuildings. Original construction dates were unavailable, but a review of maps and aerial photos indicated that none were built prior to 1968 (CH2 2012a: p. 23).

The applicant's consultant also identified six trails/roads within one mile of the HHSEGS project site, and Energy Commission staff identified one additional trail/road, all possibly of greater age than 50 years. These resources are listed in **Cultural Resources Table 7**, below.

On December 2, 2011, Energy Commission staff visited the project site after meeting with representatives of the Pahrump Band, Las Vegas Paiute, and Timbisha Shoshone in Pahrump, Nevada. A Built-Environment specialist was in attendance. Staff visited the project site again on April 25, 2012. On the same trip Staff surveyed the Sandy Valley Alternative site.

SUMMARY OF CULTURAL RESOURCES LOCATED IN THE HHSEGS PROJECT AREAS OF ANALYSIS, COMPILED FROM ALL SOURCES

Cultural Resources Table 7 lists the cultural resources, identified by staff from the applicant's and staff's investigations, and their CRHR eligibility of record or as recommended by investigators. In the Impact Analysis section, below, staff presents descriptions of these resources and its determinations of their eligibility.

CULTURAL RESOURCES Table 7
Inventory of Cultural Resources in the Project Areas of Analysis
Prehistoric Archaeological Resources

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source of Objective Data
CA-INY-2492 (1979/2011)	Lithic scatter of 5 yellow and brown chert flakes, and 4 light brown flakes of igneous stone	E-central portion of project area	Ineligible	CRTR 2011
Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape	Landscape thematically focused on collection and processing of mesquite and other plant resources unique to the mesquite woodland-coppice dune association during the entirety of woodland's existence. Landscape elements include the archaeological deposits, the mesquite population, ancillary floral and faunal populations, and, the structural features of the faults, dunes, and aquifer discharge locales	Largely just to the NE of the project area in Nevada. Several alternate transmission line and gas pipeline routes traverse this proposed landscape	Assumed eligible under Criterion 1 and 4 (see "Evaluations of Archaeological Resources" subsection, below)	Spaulding 2012b

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source of Objective Data
S-1	Lithic scatter (1 piece/9.4 m^2) with 1 utilized flake, 12 flakes, and 3 pieces of shatter in a 10 m x 15 m area amidst 3 apparent recent pot-hunters' holes.		Ineligible	CRTR 2011
S-3	Lithic scatter of 6 flakes, and 2 cores, mostly in a 1 x 1 m area. Flakes include 4 primary, 1 secondary, and 1 tertiary flakes of red rhyolite and a yellowish red "welded tuff." Site on flat, undisturbed floor of the project area bolson.	E-central portion of project area	Ineligible	CRTR 2011
S-4	Original technical report describes site as lithic scatter of 41 flakes. Majority of flakes reported as a "light brown igneous medium grained material."	SE portion of project area	Ineligible	CRTR 2011; CH2 DR128
S-5	Lithic scatter of 5, "red and black banded rhyolitic material" flakes in a 50 x 50 cm area. Overall site dimensions 10 x 10 m. Field archaeologists note the flakes' association with a 5 x 10 m shallow depression that they tentatively interpret as a former spring or seep.	E-central to central portion of project area	Ineligible	CRTR 2011

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source of Objective Data
S-6	A 25 x 30 m lithic scatter. Surface assemblage (1 piece/53.6 m^2) includes 3 multi-directional cores of green chert and a coarse mudstone, 1 poorly described utilized basalt flake, 9 flakes and a fragmentary flake of limestone or mudstone. No subsurface assemblage.	E-central to central portion of project area	Ineligible	CRTR 2011; CH2 DR128
S-10 and -11[15]	"Large, widely dispersed lithic procurement site or quarry." Surface assemblage (1 piece/2.5 m^2) includes 3 flake tools, 9 cores, and over 150 flakes, the majority of which is said to be "light brown chert." Subsurface assemblage (variably, 0 pieces/m^3, 100 pieces/m^3, and 310 pieces/m^3) appears to have maximum depth of 10 cm and includes chert flakes	E-central portion of project area	Ineligible	CRTR 2011; CH2 DR128
S-23	10 x 10 m scatter (1 piece/5.3 m^2) with 19 secondary and tertiary flakes of a "light yellow to brown igneous material, likely a welded tuff."	E-central to central portion of project area	Ineligible	CRTR 2011; CH2 DR128

[15] Archaeological sites temporary numbers S-10 and -11 were recorded in the original intensive pedestrian survey as separate resources (Helton, Lawson, and Fergusson 2011). Subsequent work on the sites to support evaluations of their respective historical significance (Lawson, Spaulding, and Helton 2012) determined, relative to the applicant's project definition of an archaeological site (see *Intensive Pedestrian Cultural Resources Survey* subsection, below), that the two resources were actually one.

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source of Objective Data
S-AF-1	Lithic scatter, approximately 13 x 13 m, of approximately 25 chert flakes ranging from beige to light brown in color	Buffer area on Nevada side of E-central portion of project area	N/A	CRTR 2011
S-AF-2	4 m-diameter, 19 flake scatter (1.5 pieces/1 m^2) of material described as "caramel colored chert," surmised to have come from the same core.	SE portion of project area	Ineligible	CRTR 2011

Historical Archaeological Resources

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source
S-20	A 12-item scatter (150 m^2) of 1 "solder dot" can, 5 sanitary cans, 3 "soft top cans," and 3"-dia. bottle bases.	S-central portion of the project area	Ineligible	CRTR 2011

Archaeological Resources of Indeterminate Age

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source
S-8	22 x 33 in. rock cairn of 26 "fist- to soccer-ball-sized" stones.		Ineligible	CRTR 2011; CH2 DR128

Ethnographic Resources

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source
Salt Song Landscape	Ethnographic Landscape	General Location: Southeastern Utah, Southern Nevada, Northwestern Arizona, Southern California Specific Location: Corridor between Spring Mountains, Mount Charleston, Pahrump Valley, including Ma hav area, Playa and Nopah Range (**Figure 2**).	Recommended eligible under Criterion 1 at the regional level Recommended eligible under Criterion 3 at the regional level	HHSEGS Ethnographic Report

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source
Pahrump Paiute Home Landscape	Ethnographic Landscape	General location: area encompassed by the Chief Tecopa Journey around the Spring, Nopah, Resting Spring, and Providence Mountain Ranges Specific Location: Western Slopes of Spring Mountains, Pahrump Valley (**Figure 1**).	Recom-mended eligible under Criterion 1 at the regional level Recom-mended eligible under Criterion 2 at the regional level	HHSEGS Ethno-graphic Report

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source
Ma-hav Landscape	Ethnographic landscape	Ma-hav is an area of approximately 35 square miles that takes in the southeastern margins of the Pahrump Dry Lake bed, the washes that extend from the alluvial toes of Mt. Charleston down to the Pahrump Dry Lake bed, the spring areas in between that include Browns Spring, Hidden Hills Ranch Spring, Stump Spring, several unnamed spring discharge areas (including Weeping Rock Seep), the various vegetations including the Mojave Scrub, Shadscale Scrub, and the coppice dune mesquite woodland areas. The proposed project site is within the Ma-hav Landscape (**Figure 3**).	Recom-mended eligible under Criterion 1 at the local level Recom-mended eligible under Criterion 4 at the local level	HHSEGS Ethno-graphic Report

Historic-Period Built-Environment Resources

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source
The Old Spanish Trail[16]	The entire approximately 2,700-mile long trail	Extends from Santa Fe, New Mexico, to Los Angeles, California. Tracks/traces run through and near the project site.	Listed National Historic Trail, CRHR eligible	NPS 2000b
Old Spanish Trail/Mormon Road Historic District	Three segments in Nevada totally approximately 10 miles	Extends from the California-Nevada border east to Halfway Wash	NRHP-listed	BLM 2001
S-24	Historic road segment	Traverses the southeast corner of the project site	Potentially CRHR eligible (OST-MR)	CH2 DR125
S-25	Historic road segment	Runs north-south, clips a portion of the eastern boundary of the project site	Potentially CRHR eligible (OST-MR)	CH2 DR125
S-26	Trail/footpath	Bisects the project site (northeast to southwest)	Potentially CRHR eligible (OST-MR)	CH2 DR125
Track 1	Historic road	Parallels the California-Nevada border in the project site	Potentially CRHR eligible (OST-MR)	CH2 DR125

[16] Referred to throughout this document as the Old Spanish Trail/Mormon Road because these two resources come together on the project site.

Cultural Resource Type (Year of Initial Recordation)	Description	Location	CRHR Eligibility	Source
Track 4	Historic road	South of Tecopa Road (outside of the project site)	Potentially CRHR eligible (OST-MR)	CH2 DR125
Track 5	Historic trail/road	North of the project site, originating at Brown's Spring	Potentially CRHR eligible (OST-MR)	CH2 DR125
NOTE: 'Track' refers to historic transportation marks generally made by vehicles of the historic period.				

ANALYSIS OF IMPACTS TO CULTURAL RESOURCES

DETERMINING THE HISTORICAL SIGNIFICANCE OF CULTURAL RESOURCES

Under CEQA, "a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment" (Pub. Resources Code, § 21084.1). Consequently, the Energy Commission, as a lead agency, must evaluate the historical significance of cultural resources by determining whether they meet several sets of specified criteria. Under CEQA, the definition of a historically significant cultural resource is that it is a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR", or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of section 5024.1 (g) of the Public Resources Code," or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record" (Cal. Code Regs., tit. 14, § 15064.5(a)).

In general, to be considered historically significant under the CEQA Guidelines, a cultural resource must meet the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old,[17] a resource must meet at least one of the following four criteria (Pub. Resources Code, § 5024.1):

[17] *The Office of Historic Preservation's Instructions for Recording Historical Resources (1995) endorses recording and evaluating resources over 45 years of age to accommodate a potential five-year lag in the planning process.*

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

Historical resources must also possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance (Cal. Code Regs., tit. 14, § 4852(c)).

Additionally, cultural resources listed in or formally determined eligible for the National Register of Historical Places (NRHP) and California Registered Historical Landmarks numbered No. 770 and up are automatically listed in the CRHR and are therefore also historical resources (Pub. Resources Code, § 5024.1(d)). However, even if a cultural resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows a lead agency to make a determination as to whether it is a historical resource and, therefore, historically significant (Pub. Resources Code, § 21084.1).

The assessment of potentially significant adverse impacts to historical resources and the mitigation that may be required of a proposed project to reduce any such impacts depend on CRHR-eligibility evaluations.

California Register of Historical Resources Evaluations

Under CEQA, mitigation need only be developed for substantial project-related adverse impacts to historically significant cultural resources (historical resources). Consequently, staff seeks CRHR eligibility recommendations for those cultural resources subject to possible project impacts. The existing documentation for previously known cultural resources may include CRHR eligibility recommendations, and the applicant's cultural resources specialists often make CRHR eligibility recommendations for newly identified cultural resources they discover and record in their project-related surveys. Staff considers these prior CRHR eligibility evaluations and may accept them or conclude that additional information is needed before making its own recommendations.

When the available information on known or newly identified resources that could be impacted by the proposed project is not sufficient for staff to make a recommendation on CRHR eligibility, staff may ask an applicant to conduct additional research to gather the information needed to make such a recommendation, or staff may gather the additional information. For an archaeological resource, the additional research usually entails some degree of field excavation, called a "Phase II" investigation. For an ethnographic resource, the additional research may be an ethnographic study. For built-environment resources, the additional research would probably be archival. The object of this additional research is to obtain sufficient information to enable staff to validate or

make a recommendation of CRHR eligibility for each cultural resource that the proposed project could impact.

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE OF IMPACTS TO HISTORICAL RESOURCES

Under CEQA, "a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment" (Pub. Resources Code, § 21084.1). Staff analyzes whether a proposed project would cause a substantial adverse change in the significance of any historical resources identified in the Cultural Resources Inventory as CRHR- eligible, or as otherwise significant (Cal. Code Regs., tit. 14 § 15064.5(a)). The regulatory threshold for whether a proposed project would have a significant effect with respect to cultural resources is a finding that the project would materially impair the significance of one or more historical resources (Cal. Code Regs., tit. 14 § 15064.5(b)(1)). The CEQA Guidelines define material impairment, in part, as any project action that "demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA" (Cal. Code Regs., tit. 14 § 15064.5(b)(2)(C)). In order to assess whether a proposed project would materially impair the significance of a historical resource, one would therefore need to know and understand why that resource was eligible for inclusion in the CRHR. A resource's CRHR eligibility status has two parts, a value for which the resource is significant and integrity sufficient to convey that significant value (Cal. Code Regs., tit. 14 § 4852(c)). (Note that "significance" as used in relation to the determination of a resource's CRHR eligibility status is a much more narrowly focused technical use of the term than the broader sense of its use at, among other places, section 21084.1 of the Public Resources Code or section 15064.5(a) of the California Code of Regulations.) The significance component of a resource's eligibility status is determined, as noted in the Determining the Historical Significance of Cultural Resources subsection above, with reference to its potential associative, design or construction, or information values as set out in the CRHR's four significance criteria (Cal. Code Regs., tit. 14 § 4852(b)(1–4). A resource may be eligible under one or more of these values. The integrity component of a resource's eligibility status is determined with reference to "location, design, setting, materials, workmanship, feeling, and association" (Cal. Code Regs., tit. 14 § 4852(c). Which of these aspects of integrity are relevant in a determination of a resource's CRHR eligibility are dependent on the particular values for which that resource has been determined to be significant. The analysis of whether any of the potential impacts of a proposed project cross the threshold of a significant effect under CEQA, therefore, requires the consideration, primarily, of that project's impacts on each applicable aspect of integrity for each historical resource subject to any such impacts. Dependent upon the particular values for which a resource has been determined to be significant, the aspects of integrity under consideration may be mostly related to the characteristics of the resource itself, or they may also be related to the characteristics of the physical and visual contexts that envelope the resource and whether those contexts would retain the ability to convey the values for which the resource has been found to be significant.

The general procedure of staff's determination of the significance of project impacts to cultural resources, then, is to:

1. Establish the inventory of historical resources, a subset of the Cultural Resources Inventory;

2. Identify and consider the nature of each resource's significance relative to the CRHR's criteria;

3. Consider how subject resources' historical significance are manifested physically and perceptually, and assess the baseline integrity of those characteristics and contexts;

4. Assess, more specifically, those aspects of each resource's integrity that are critical to that resource's ability to convey its historical significance; and

5. Analyze whether potential project impacts would alter any historical resources to the extent that any such resource would no longer be able to convey its historical significance.

Assessment of Impacts and Recommended Mitigation

To identify construction-related impacts to cultural resources that would need to be mitigated, staff first identifies all historical resources and evaluates the potential project impacts to the significant cultural resources to determine if these impacts are substantial and adverse (see above). Staff must then recommend avoidance or other mitigation for substantial and adverse impacts to these historical resources. Staff also must assess whether the proposed project has the potential to impact as-yet-unknown buried archaeological resources and recommend mitigation for impacts to previously unknown but historically significant resources discovered during construction, if impacts to such resources cannot be avoided.

CEQA advises a lead agency to make provisions for archaeological resources unexpectedly encountered during construction, and a project owner may be required to train workers to recognize cultural resources, fund mitigation, and delay construction in the area of the find (Pub. Resources Code, § 21083.2; Cal. Code Regs., tit. 14, §§ 15064.5(f) and 15126.4(b)). Consequently, staff recommends that procedures for identifying, evaluating, and possibly mitigating impacts to archaeological resources discovered during construction be put in place through conditions of certification to reduce those impacts to a less than significant level or to the extent feasible.

Direct and Indirect Impacts

In the abstract, direct impacts to cultural resources are those associated with project development, construction, and operation (co-existence). Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic built-environment resources when, for example, those buildings or structures must be

removed to make way for the proposed project or when the vibrations of construction impair the stability of historic buildings or structures nearby. New construction can have direct impacts on historic built-environment resources when it is stylistically incompatible with their neighbors and the setting, and when the proposed project produces something harmful to the materials or structural integrity of the historic buildings and structures, such as emissions or vibrations.

Generally speaking, indirect impacts to archaeological resources are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic buildings and structures can suffer indirect impacts when project construction causes obsolescence and demolition or creates improved accessibility, making vandalism or greater weather exposure possible.

Ground disturbance accompanying construction at a proposed plant site, along proposed linear facilities, and at a proposed laydown area has the potential to directly impact unknown archaeological resources. The potential direct, physical impacts of the proposed construction on unknown archaeological resources are commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project. Placing the proposed project into this particular setting could have a direct impact on the integrity of association, setting, and feeling of nearby standing historic built-environment resources.

ANALYSIS OF IMPACTS TO ARCHAEOLOGICAL RESOURCES

Prehistoric Background

The prehistory of the eastern Mojave Desert is the narrative of how human populations have adapted to marked fluctuations in the local environment over the course of at least the last 12,000 years. The archaeological remains of the region's prehistory are relatively scarce. Sparse scatters of stone tools, chipped stone tool manufacturing debris, and isolated artifacts, resources that typically yield information of marginal value, account for 40–60 percent of the archaeological remains found in the Mojave and Colorado Deserts. A relative scarcity of intact buried archaeological deposits contributes further to the lack of information on the prehistory of the region (Lyneis and Macko 1986:52). The availability of water and the location of high-value resource patches in otherwise unproductive habitats appear to influence the distribution of human settlement and, consequently, of the archaeological sites that are on the desert landscape (Lyneis and Macko 1986:57; Sutton et al. 2007:230). The broad trajectory of cultural development in the Mojave Desert appears to be a steady decline in residential mobility as local populations come to occupy increasingly larger valley or basin-bottom base camps, in a few preferred locations, over longer periods of time, rather than working out of temporary camps in particularly productive environmental zones (Bamforth 1990:74).

Over the past seven decades, Mojave Desert archaeologists have developed and refined a broad sequence of approximately six artifact groups or assemblages, each with distinctive types of stone projectiles, that represent the material record of the peoples who once lived in the proposed project area (Bamforth 1990:72; Campbell 1936; Lyneis 1982; Rogers 1939; Sutton, et al. 2007; Warren 1984; Warren and

Crabtree 1986). Choosing what staff believes to be a cultural chronology applicable to the proposed project and acknowledging recent proposed refinements to the chosen chronology (Sutton, et al. 2007), the discussion here of the region's prehistory will rely primarily on Warren's 1984 chronology and Warren and Crabtree's 1986 chronology. Following Warren and Crabtree, the periods of the chronology below represent units of time during which particular artifact assemblages appear to prevail, rather than discrete, homogeneous past cultures.

Terminal Pleistocene Period (Prior to 10,000 B.C.)

The archaeological record of the Terminal Pleistocene Period in the Mojave Desert is particularly sparse. The most consistent evidence for human activity during this period are fragments of the characteristic fluted, concave-based, lanceolate spear or projectile point of the Clovis archaeological culture. The Clovis culture is a pan-Western Hemisphere archaeological phenomenon that manifests in diverse material patterns over North and South America. In the Mojave Desert, material culture assemblages that include Clovis projectile point fragments are typically sparse surface deposits (Lyneis and Macko 1986:41). The evidence from such deposits suggests only that human groups during this time were probably small in number, were highly mobile, and lived in small, temporary camps near what were then permanent water sources (Sutton, et al. 2007:234). It is unclear whether the Mojave Desert Clovis assemblages demonstrate a cultural continuity with the material remains of subsequent periods (Warren and Crabtree 1986:184).

Lake Mojave Period (10,000 to 5000 B.C.)

Lake Mojave Period artifact assemblages appear to represent a cultural phenomenon that is antecedent to subsequent cultural developments in the Mojave Desert (Warren and Crabtree 1986:184). Portions of archaeological sites or components that date to the Lake Mojave Period are typically sparse and vary little in assemblage composition (Bamforth 1990:73), although components that include extensive accumulations of residential debris have more recently been found (Sutton, et al. 2007:237). Lake Mojave components are most often found in the vicinity of high terraces above or on relict shorelines of what are now playas and along relict stream channels (Bamforth 1990:72; Lyneis and Macko 1986:41).

Lake Mojave Period assemblages include a relatively narrow range of stone tools and also represent a narrow range of site types. The index artifacts for the period are the local variants of the Great Basin stemmed series projectile point types—Lake Mojave and Silver Lake points. The balance of period assemblages may include bifaces, steep-edged unifaces, "small beaked gravers," "narrow concave scrapers," crescents, and occasional cobble-core tools and ground stone implements (Sutton, et al. 2007:234; Warren 1984:413). The assemblages primarily appear to represent temporary small camps and work stations. Infrequent accumulations of residential debris do indicate, however, that camps with longer use periods are also present.

The archaeological record of the Lake Mojave Period indicates that human populations during the Early Holocene were small, mobile groups practicing a hunting-and-foraging economy whereby groups shifted residency across the landscape among the most

productive environmental zones as the resources in those zones became depleted over time (Bamforth 1990:73; Lyneis and Macko 1986:41).

Pinto Period (5000 to 2000 B.C.)
The evidence of human activity found in Pinto Period archaeological sites indicates a behavioral continuity with Lake Mojave Period developments (Warren 1984:414). The Pinto Period witnesses the final desiccation of the Pleistocene pluvial lakes in the Mojave Desert and the adaptive transformation of local populations to the extreme aridity of the mid-Holocene Altithermal (see Antevs 1948). It is unclear whether the Pinto Period directly follows the Lake Mojave Period, or may represent a resumption of the desert's use after a hiatus during the worst of the mid-Holocene droughts (Warren and Crabtree 1986:184). Pinto Period components are typically surface deposits that are small in area and do not include midden deposits, constituent residential debris of ash, charcoal, and food and other organic residues, although larger components with broader ranges of artifacts and substantial midden deposits have more recently been found (Sutton, et al. 2007:238, Warren 1984:413– 414). Pinto Period components are generally found on the landscape in the same places as deposits of the Lake Mojave Period (Bamforth 1990:72; Lyneis and Macko 1986:41). The suggestion has been made that the components may actually overlap in time (Bamforth 1990:73; Sutton, et al. 2007:238).

The most important distinction between the artifact assemblages of the Pinto Period and those of the preceding Lake Mojave Period appears to be the relative abundance of ground stone implements or milling tools. More recent research has found milling tools to occur in moderate abundance in most Pinto Period deposits and, occasionally, in great frequency (Sutton, et al. 2007:238). The characteristic Pinto Period assemblage includes large and small leaf-shaped projectile points and knives, domed and elongated keeled scrapers, several forms of well-made flake scrapers, flat millingstones, and manos. Drills, engraving tools, and *Olivella* spp. shell beads also occur (Sutton, et al. 2008:238; Warren 1984:412; Warren and Crabtree 1986:187). The index artifact for the period is the stemmed, indented-base Pinto series projectile point, the Mojave Desert variety of which is markedly crude in form and manufacture (Warren 1984:411). A broad continuity in the chipped stone technology evident in both the Lake Mojave and Pinto Periods has been noted. Populations during these periods appear to make extensive use of toolstones[18] other than cryptocrystalline silica or obsidian, and they also make regular use of unifacial and bifacial core tool forms (Sutton, et al. 2007:238).

More recent research indicates that Pinto Period assemblages may reflect the emergence of a two-tier settlement pattern. The small temporary or seasonal camps that appear to have been the primary focus of Lake Mojave Period activity may have become more task-specific camps that were subordinate to more permanent residential base camps. The increase during the Pinto Period in the relative frequency of milling

[18] Toolstone is a type of stone used to manufacture stone tools. Generally speaking, tools that require a sharp edge are made using cryptocrystalline materials that fracture in an easily-controlled conchoidal manner. Cryptocrystalline tool stones include flint, chert, rhyolite, and obsidian. These materials fracture in a predictable fashion, and are easily resharpened.

tools suggests a corresponding increase in the reliance of local populations on plant resources (Sutton 2007:238–239).

Gypsum Period (2000 B.C. to A.D. 500)
Gypsum Period artifact assemblages, though scarce relative to earlier and later periods, appear to evidence a shift in the economy of local populations toward a much greater dependence on plant resources (Bamforth 1990:73; Warren 1984:419). Period components are ephemeral in character, relatively more scarce in the southern and eastern portion of the Mojave Desert, smaller yet more numerous than components of the preceding periods, and found in more diverse locations on the landscape (Sutton, et al. 2007:241).

Gypsum Period assemblages encompass a relatively broad array of artifact types. The index artifacts for the period include any combination of Gypsum (Gypsum Cave), Humboldt (Humboldt Concave Base), or Elko (Elko Eared, Elko Corner-notched) series projectile points (Sutton, et al. 2007:241; Warren 1984:414; Warren and Crabtree 1986:187). The balance of period assemblages may include leaf-shaped projectile points; rectangular-based knives; flake scrapers; T-shaped drills; occasional large scraper-planes; choppers; hammerstones; manos and millingstones; mortars and pestles; shaft smoothers; incised slate and sandstone tablets and pendants; fragments of drilled slate tubes; *Haliotis* spp. Rings; central California Middle Horizon bead and ornament types; *Olivella* spp. shell beads; and bone awls (Warren 1984:418). The greater presence of quartz crystals, paint, split-twig figurines, and rock art also indicates the elaboration of ritual activity during this period (Warren and Crabtree 1986:188–189). The influence of the Anasazi archaeological culture of the Southwest is apparent in the eastern Mojave Desert toward the end of the Gypsum Period with the introduction of Anasazi ceramic types to period assemblages, and evidence of the replacement of the atlatl with the bow and arrow, as the larger Gypsum, Humboldt, and Elko series dart points give way to smaller Eastgate and Rose Spring arrow point types in the subsequent Saratoga Springs Period (Warren 1984:414–415).

The relative scarcity of Gypsum Period data complicates discussions of period settlement patterns in the Mojave Desert. Available data indicates that the focus of Gypsum Period components was lowland concentrations of plant resources along streams and in the lake basins (Bamforth 1990:73; Sutton, et al. 2007:241). One such resource may have been mesquite. The introduction of the mortar and pestle during this period and the use of these tools in the historic period to process mesquite pods have been taken to indicate that mesquite was first used in the Gypsum Period (Warren 1984:419). Populations appear to have spent a substantial part of each year in residential base camps while dispatching task groups out to hunt (Bamforth 1990:73). The presence of shell ornaments in the assemblages of the period also indicates the establishment of relatively routine trade with the southern California coast (Warren 1984:419).

Saratoga Springs Period (A.D. 500 to 1200)
The artifact assemblages of the Saratoga Springs Period in the eastern Mojave Desert reflect the mixture of cultures that appears to have influenced the region.

Saratoga Springs Period assemblages encompass a broad, diverse array of artifact types, many of which appear to come from outside the region or reflect outside influences. The index artifacts for the period include Eastgate and Rose Spring projectile points. The core of the period assemblage includes millingstones and manos, mortars and pestles, incised stones, and slate pendants (Warren 1984:420). Other characteristic artifact types of the period include small triangular knives, scrapers, drills, hammerstones, choppers, pendants of green schist, and Pacific Coast shell ornaments, including *Olivella* Saucer beads, *Olivella* Barrel beads, and limpet rings (Warren 1984:367). Anasazi grayware ceramics of the Basketmaker III through early Pueblo Periods (Pecos Classification, see Cordell 1984:55–58) are a notable element of the Saratoga Springs Period assemblage as well.

The archaeological data for the Saratoga Springs Period appear to indicate that local populations were developing broader spheres of interaction with outside groups, perhaps even allowing settlements of outsiders, in the context of a general continuity in local settlement patterns. The basic settlement pattern for the period appears not to change markedly from the Gypsum Period through to the Protohistoric Period (see below). The size of residential base camps and seasonal population dispersions to acquire more remote resources may both have been in slow decline however. The overexploitation of large mammals, due, in part, to the introduction of the bow and arrow during this period and to a deteriorating climate, may have led to a shift in hunting emphasis to small animals and reinforced the primary dependence of local populations on plant seed resources such as mesquite (Bamforth 1990:74).

The Anasazi influence, presumably of the Virgin Branch (see Fowler and Madsen 1986:175–181), was marked in the eastern Mojave Desert during this period from at least A.D. 700 through A.D. 1150 (Warren 1984:373–373, 426–427). The distribution of Anasazi grayware ceramics, the key archaeological index of Anasazi influence, reaches from the lower Virgin River in southern Nevada into California as far west as the Cronise Basin in San Bernardino County. The primary focus of Anasazi influence in the vicinity of the proposed project area appears to have been the turquoise deposits in the area around Halloran Springs, roughly 30 miles southwest of the proposed project area. The sequence of ceramic types found at the turquoise mines in the area indicate that the period of Anasazi influence there was from approximately A.D. 700 to 900, during the Basketmaker III and Pueblo I Periods (Warren 1984:371–372). It remains unclear whether Anasazi peoples were actually in residence in the area (Warren 1984:422) practicing the Virgin Branch horticultural lifeway, in residence living on stores of provisions, or not in residence and managing the extraction of turquoise through proxy labor. The Anasazi influence over the eastern Mojave Desert ultimately terminates around A.D. 1150 (Warren 1984:426–427).

Protohistoric Period (A.D. 1200 to present)
The speakers of Numic languages appear to displace the local populations of the eastern Mojave Desert at the outset of the Protohistoric Period, and to decisively eradicate Anasazi influence in the region (Warren 1984:430).

The Protohistoric assemblage has been said to relate directly to the historic Paiute (Warren 1984:427). The characteristic index artifacts for assemblages of the more

northerly areas of the eastern Mojave Desert are Desert Side-notched projectile points and coarse, brownware ceramic types. The overall eastern Mojave assemblage strongly resembles assemblages across the northern Mojave Desert to Owens Valley and may derive from that region. Assemblages from the more southerly areas of the eastern Mojave Desert include Cottonwood Triangular projectile points, in addition to Desert Side-notched points, and the ceramic assemblage includes types representative of the Hakataya archaeological culture, a cultural unit of the Lower Colorado River and the Colorado Desert. Among the Hakataya ceramics in the Protohistoric Period assemblages of the eastern Mojave Desert are brownwares, buffwares, and red-on-buff wares (Warren 1984:427; Warren and Crabtree 1986:191).

Despite the apparent shifts in the local populations in the eastern Mojave Desert and the ebb and flow of outside influences during the Saratoga Springs and Protohistoric Periods, the basic economic milieu and the settlement patterns of the local populations continue, in the Protohistoric Period, to reflect the trends in desert adaptation that had been developing in the Mojave Desert for millennia. Among the final elaborations to the local economy of the populations in the Mojave Desert may have been the addition, during the late Saratoga Springs Period and into the Protohistoric Period, of small gardens in preferred areas, the produce from which may have supplemented local diets in a minor way (Lyneis and Macko 1986:41).

The influence of the Anasazi in the eastern Mojave Desert is supplanted by Hakataya influence from the Lower Colorado River and the Colorado Desert. Toward the end of the Saratoga Springs Period or the beginning of the Protohistoric Period around A.D. 1200, there is evidence of Hakataya influence or presence at the Halloran Springs turquoise mines lasting roughly a century. The Paiute have used the mines infrequently subsequent to the withdrawal of the Hakataya in about the fourteenth century (Warren 1984:372, 373).

Evaluations of Archaeological Resources

Evaluations of archaeological resources often require the execution of field research to gather the information necessary to adequately evidence whether and why particular resources possess historical significance. The most common purpose of evaluative archaeological field research, referred to as Phase II archaeological research in cultural resources management, is to record observations that establish the association of a resource with significant events, or that establish the resource as a potential source of significant historical information. This type of research focuses on the identification, documentation, and analysis of the information, the data sets that can be extracted from the material remains in archaeological deposits, and from the physical contexts of and the spatial associations among those remains.

Phase II archaeological research does not always require archaeological excavation. Archaeological deposits usually occur as either relatively thin, broad scatters of artifacts and ecofacts, or as layered, matrix-supported deposits of such materials. The evaluation of broad scatter-type deposits, solely on the basis of surface observation, is appropriate when it can be argued that they are almost entirely exposed at the surface, and that the landforms on the surface of which such deposits are found are older than the commonly accepted date of the initial human occupation of North America, or that

the exposed material remains indicate a light and transitory use of the ground surface. For archaeological deposits where such arguments cannot be compellingly made, excavation is necessary to identify and assess the spatial integrity of the data sets that any buried components of those deposits may contain.

Staff evaluations, below, of the archaeological resources in the PAA divide the adjusted total inventory of 12 archaeological resources found as a result of the intensive pedestrian cultural resources survey (see Intensive Pedestrian Archaeological Resources Survey subsection, above) and an additional archaeological resource identified by staff into two groups: those resources for which surface observations provide sufficient information to make recommendations of historical significance and those resources for which Phase II archaeological research has been necessary to inform such recommendations.

Evaluations of Archaeological Resources on the Basis of Surface Observation

On the basis of the results of the intensive pedestrian cultural resources survey (CRTR 2011b), several reconnaissance-level field surveys by staff, and numerous discussions among staff, the applicant's cultural resources consultants, and BLM Southern Nevada District Office staff (BLM staff), staff concluded that surface observation was sufficient for the evaluations below of four prehistoric archaeological sites, one historical archaeological site, one archaeological site of indeterminate age, and a prehistoric archaeological landscape.

Prehistoric Archaeological Resources

Individual Prehistoric Archaeological Sites

Site S-1

Site S-1 is a small prehistoric lithic scatter in the east-central portion of the proposed Unit 2 heliostat field. The artifacts were found in a relatively small (10 x 15 m) area on the surface of distal, Holocene-age sediments of a dormant local alluvial fan (Unit Qa2). The ground surface that supports the scatter is relatively level with a moderately dense lag deposit of pebbles and cobbles. The surface vegetation on the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., and unspecified native grasses. Surface visibility across the site is reported to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The actual spatial distribution and the character of the group of artifacts, the artifact assemblage that makes up site S-1 are presently unclear. The DPR 523A and C forms for the resource and one part of the revised technical report of the original intensive pedestrian cultural resources survey (CRTR 2011b:54,) state that the site is 10 m from north to south and 15 m from east to west. The sketch map of the DPR 523K form, however, depicts the artifact distribution to cover an area approximately 12 m from north to south and 11 m from east to west. The different available descriptions of the site artifact assemblage also do not match well. The applicant reports artifact material types differently in the revised technical report (CRTR 2011b) and on the DPR523 A form than

on the DPR 523C form for the resource. The revised technical report and the DPR 523A form state that the artifact assemblage of the site includes one utilized flake[19], twelve unmodified flakes, and three pieces of angular stone shatter[20]. Site artifacts are identified as being of "either a red and cream chert or a light brown igneous material." The DPR 523C form identifies the utilized flake as being of red rhyolite and eleven of the unmodified flakes as being simply of rhyolite. A note is made there that rhyolite at the site is a "deep red to a light red and yellow" color. No material type is given for one flake and the three pieces of shatter. The DPR 523C reports the utilized flake as a large (15 x 45 x 88 mm) primary flake with "one heavily chipped and used edge." The assemblage of moderately large (3–7 cm) flakes includes primary (N=6), secondary (N=3), and tertiary (N=3) flakes. Any patterns that may exist with regard to the differential distribution of artifact or material types are unreported.

The physical integrity of site S-1 appears to have been partially compromised. The applicant found evidence of what are described as "three small excavations" in unspecified locations on the site. The dimensions of one of the excavations was given on the DPR 523A and C forms as 60 x 77 cm at the surface and 10 cm in depth. The applicant notes that the unspecified number of flakes adjacent to this particular excavation appeared to have been arranged and no longer appeared to have been in situ. The balance of the site artifact assemblage did appear to the applicant to be in situ. The applicant states, apparently on the basis of the examination of the backfill from the three excavations and on the basis of a 10-cm-diameter and 10-cm-deep excavation by the applicant, that the subsurface sedimentary deposits at the site are devoid of artifacts.

On the basis of the available information, the artifact assemblage of site S-1 may represent one to several brief episodes during which people chose to stop and prepare one or several rocks for use as a source of flakes for tool production. The utilized red rhyolite flake in the site assemblage suggests that the production of expedient flake tools may have been the impetus for core preparation. The utilized flake may represent a discarded production failure, or its discard may have been incidental. . The light and transitory use of the site area that the material culture of the site indicates, and the facts that none of this material is of artistic value, nor provides information that would readily facilitate the placement of this activity in time or the association of it with significant events or persons, combine to indicate that the resource does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-1 is not eligible for listing in the CRHR.

Site S-3

Site S-3 is a small prehistoric lithic scatter in the east-central portion of the proposed Unit 2 heliostat field. The majority of the artifacts were found in an approximately one m square area on the surface of distal, Holocene-age sediments of a dormant local alluvial fan (Unit Qa2). The ground surface that supports the scatter is relatively level with a

[19] A utilized flake is a flake that has been detached from a core and used as a tool without further purposive modification to the flake.

[20] Shatter refers to small angular bits of stone that are produced as an incidental byproduct of chipping stone.

moderately dense lag deposit of pebbles and cobbles. The vegetation on the reportedly undisturbed surface is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., and unspecified native grasses, although no creosote is clearly visible in the applicant's overview photograph of the site. Surface visibility across the site is reported to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The actual spatial distribution and the composition of the group of artifacts, the artifact assemblage that makes up site S-3 are presently unclear. The DPR 523A form for the resource and one part of the revised technical report (CRTR 2011b:55,) report that the "majority of the artifacts were found in a one by one meter area." The DPR 523C form reports the dimensions of the flake scatter to be 15 m from north to south and 15 m from east to west. The revised technical report states that "all of the *flakes* [emphasis added] at this site were found in a very discrete concentration measuring less than" one meter square (CRTR 2011b:64). And, lastly, the sketch map of the DPR 523K form depicts the artifact distribution to cover an area approximately 5 m from north to south and 4 m from east to west. The artifact composition of the site is no clearer. The applicant reports the artifact composition of the resource differently in different parts of the revised technical report (CRTR 2011b:55, 63, 64) and, as well, on the DPR 523A and C forms for the resource. The site's artifact assemblage appears to include two stone cores and six to nine stone flakes. The cores are reported to be small (5 and 6 cm) artifacts of rhyolite that indicate multidirectional flake detachment. The number and character of the stone flakes is less certain. The revised cultural resources technical report and the DPR 523A form for the site report four primary flakes, one secondary flake, and one tertiary flake of red rhyolite and what appears to be a red and yellow welded tuff (CRTR 2011b: 55). The DPR 523C form for the site reports 7 primary flakes of rhyolite (N=3) and "igneous material" (N=4), and one secondary and one tertiary flake of "igneous material." The revised technical report does not provide descriptions of the flakes, but notes that the "available toolstone at this site consists of a few scattered cobbles of a yellow and red igneous material (CRTR 2011b:64).

Notwithstanding the variability in the applicant's description of the resource and outstanding concerns about the accuracy of artifact material type identifications, enough information exists to characterize, interpret, and evaluate site S-3. Site S-3 is a relatively small and discrete scatter of eight to eleven stone artifacts. The artifact assemblage includes what the applicant interprets to be two small, exhausted, multidirectional cores, and six to nine moderately large (4–9 cm) flakes, five to eight (83–89 percent) of which represent the initial removal of the weathered exterior cortex of two different, presently indeterminate types of cobbles. Any patterns that may exist with regard to the differential distribution of artifact or material types are unreported.

The artifact assemblage of site S-3 appears to represent one or two brief episodes during which people chose to stop and assess the value of two different types of rock for use as toolstone, and subsequently may have also sought to detach further flakes for use in tool production. The light and transitory use of the site area that the material culture indicates, and the facts that none of this material is of artistic value, nor provides

information that would readily facilitate the placement of this activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-3 is not eligible for listing in the CRHR.

Site S-5

Site S-5 is a small prehistoric lithic scatter in the northeastern portion of the proposed Unit 2 heliostat field. All of the artifacts on the site are reported to have been found in an approximately 0.5-m square area, and are on the surface of distal, Holocene-age sediments of an active local alluvial fan (Unit Qa1). The ground surface that supports the scatter is, with one exception, relatively level with a moderately dense lag deposit of pebbles and cobbles. The exception is a small (5 x 10 m) depression directly adjacent to the site that the applicant suggests may have once been a small spring or seep. The vegetation in the vicinity of the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., and unspecified native grasses, although no creosote is clearly visible in the applicant's overview photograph of the site. Surface visibility across the site is stated to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The available information on the artifact assemblage for site S-5 and on the spatial distribution of the artifacts in the assemblage is unclear. The actual apparent artifact distribution and the applicant's boundary for site S-5 do not match. The revised cultural resources technical report (CRTR 2011b:55) and the DPR 523A and C forms unequivocally state that the five flakes that make up the entire artifact assemblage for the site were found in a 0.5 m square area, yet the dimensions of the site are reported on the DPR 523C form to be 10 m square and are depicted on the DPR 523K sketch map as a circle approximately 10 m in diameter. The composition of the site's artifact assemblage is much clearer. The assemblage includes five moderately large (4–8 cm) secondary flakes of what is alternately described as a "red and black banded rhyolitic material" and a "red and black banded igneous material." The flakes represent part of the process by which the weathered exterior cortex was removed from the original cobble core.

The artifact assemblage of site S-5 appears to represent one episode during which people chose to stop and prepare a rock for use as a source of flakes for tool production. The light and transitory use of the site area that the material culture indicates, and the facts that this material is not of artistic value, and does not provide information that would readily facilitate the placement of this activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-5 is not eligible for listing in the CRHR.

Site S-AF-2

Site S-AF-2 is a small prehistoric lithic scatter in Clark County, Nevada, outside of and adjacent to the easternmost portion of the Common Area. The artifacts on the site are reported to have been found in a "four meter area," and are on the surface of mid- to distal, Holocene-age sediments of a dormant local alluvial fan (Unit Qa2). The identification of the landform context for the site is imprecise (CRTR 2011b:56, 69,70; IMACS 2011), but the site appears to be along the edge of and above an ephemeral stream channel that dissects the local fan surface. That surface appears to be relatively level with a lag deposit of pebbles and cobbles. The vegetation on and around the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the primary presence of creosote (*Larrea tridentata*). Low sagebrush (*Artemisia* spp.) and Indian ricegrass (*Achnatherum hymenoides*) are noted as present in the understory. Surface visibility across the site is unreported, though presumably high. The site is on land under the jurisdiction of the Bureau of Land Management's (BLM) Southern Nevada Field Office.

The available information on the artifact assemblage for site S-AF-2 and on the spatial distribution of the artifacts in the assemblage is unclear. The actual apparent artifact distribution and the applicant's boundary for site S-AF-2 do not match. The revised cultural resources technical report (CRTR 2011b:56) and Part A of the Intermountain Antiquities Computer System (IMACS) form state that the 19 flakes that make up the entire artifact assemblage for the site were found in a "four meter area," yet the dimensions of the site are reported on Part B of the IMACS form to be 4 m square with a calculated area of 12.5 square m and are depicted on the IMACS sketch map as a circle-like shape approximately 10 m in diameter. The composition of the site's artifact assemblage is much clearer. The assemblage includes 19 primary (N=16) and secondary (N=3) flakes of "caramel-colored" chert, all of which the applicant says appear to have been detached from the same core. The flakes would appear to represent the process by which the weathered exterior cortex was removed from the original chert core.

The artifact assemblage of site S-AF-2 appears to represent one episode during which people chose to stop and remove the weathered exterior cortex of a chert nodule, a process that would prepare the resultant core for later use elsewhere as a source of flakes for tool production. The light and transitory use of the site area that the material culture indicates, and the facts that none of this material is of artistic value, nor provides information that would readily facilitate the placement of this activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-AF-2 is not eligible for listing in the CRHR.

Multi-site Prehistoric Archaeological Resources: Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape (Pahrump Metapatch Landscape)

Technical Classification of the Landscape and Applicable Guidance

The Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, which is adjacent and parallel to the northeastern boundary of the project

site, has been identified by staff as an archaeological landscape and historical resource under CEQA. The landscape appears to date from a presently undetermined point in prehistory through at least the early twentieth century and includes archaeological sites, springs, mesquite groves which aboriginal cultures have used and quite probably tended for millennia, and assemblages of flora and fauna unique to the variety of mesquite woodland association that is the focus of the landscape. Applying NPS guidance developed for the National Register Historic Places (NRHP) to the consideration of the landscape as a cultural resource under the parallel CRHR (NPS 1994, 1999, 2000), the combination of cultural and natural features that make up this composite resource would qualify the resource as a type of cultural landscape referred to as a "rural historic landscape" and would require technical evaluation of historical significance as a district (NPS 1999), more precisely, an archaeological district (NPS 2000).

Landscape Elements and Characteristics

Our knowledge of the character of the Pahrump Metapatch Landscape and the elements of which it is composed is severely constrained because no systematic survey of the landscape has been done to date. The records search for the present analysis revealed that no prior formal investigations have been undertaken across the portion of the Pahrump Metapatch Landscape within one mile of the proposed project site, and only two prior investigations have traversed the landscape in the vicinity of the proposed project: a 1982 reconnaissance survey for an off-road vehicle race and a 1989 intensive survey of the Old Spanish Trail (OST) from Las Vegas to the California border to facilitate the Nevada BLM's management of that resource. These two efforts led to updates of the records for the OST and a previously known archaeological site at Stump Spring (26CK301). No new sites were identified. The information that is presently available on the landscape is the result of Energy Commission staff's informal reconnaissance of the landscape in March and April of 2011 and draft information from the applicant on the results of intensive pedestrian surveys on two different transects through the landscape, received just prior to the publication of this analysis (Spaulding 2012d).

The Pahrump Metapatch Landscape is composed of both natural and cultural elements. The natural elements include what appears to be one of the relatively ancient populations of mesquite trees that falls within one mesquite woodland metapatch[21], the Pahrump metapatch, delineated in Clark County, Nevada (BLM 2006)(**Cultural Resources Figure 6**). The mesquite trees across broad swaths of this metapatch are the primary anchors of groups of coppice[22] dunes which, in turn, are a major structural element of the landscape. Local fault scarps and aquifer discharge points are other structural elements that shape the distribution of the mesquite trees across the landscape, and shape the inventory and the distribution of the balance of the floral and

[21] A "metapatch" is defined as a "collection of woodland patches separated by less than 2 km, and not separated by any major [geographic] barrier" (BLM 2006, p.41).

[22] "Coppice dunes" form as vegetation and air-transported sand interact to form sand mounds that vegetation anchors in place and out of which the anchoring vegetation continues to grow. The incremental growth of coppice dunes over time can lead to the formation of quite large sand dunes.

faunal associations that have been of import to Native American communities through time.

The frequency and the character of the archaeological deposits that make up the cultural elements of the landscape are unclear. Representative archaeological data for the landscape are presently unavailable. The applicant largely declined staff requests to consider the potential presence of theme-based, multi-property cultural resources or to provide primary contextual data to facilitate the evaluation of the historical significance of any such resources (CEC 2011h, Data Requests Nos. 105 and 121). What is presently known is that relatively robust archaeological deposits are usually associated with the points along the landscape from which springs emanate or did emanate in the past. These deposits appear to have higher artifact densities and a greater diversity of artifact types than deposits away from springs. Deposits of higher artifact density and greater artifact diversity most likely represent longer durations of land use around the springs, as well as a greater range of activity there.

Cursory staff observations of the landscape in the near vicinity of the proposed project site, an inter-spring area between Stump and Hidden Hills Ranch springs, document the presence of at least two additional types of archaeological deposits. One type is an interdunal lag[23], variably of fire-affected calcium carbonate ($CaCO_3$) tufa[24] and coarse-grained sandstone mixed with chipped flakes of chert and of fine-grained, toolstone-quality sandstone. Bifacial, edge-modified chert flakes were found to be an infrequent component of these deposits. The distribution of chert flakes was sparse and broad, subsuming multiple clusters of fire-affected rock. The chert appeared to have been worked using a hard-hammer technique. Another type of deposit is a relatively large (5–10 m-wide, 15–30 m-long) interdunal scatter made up almost entirely of small, what would appear to be pressure-flaked, late-stage, biface thinning flakes, all of chert and all of different colors of chert. No two flakes were typically found to be of the same material. The frequency of the flakes was roughly on the order of 12 pieces per square m. Presumably, the actual range of the archaeological deposits that represent the landscape is much broader. Clarification of this issue must necessarily await further research.

Staff does not believe that the prehistoric lithic scatters found on the proposed facility site bear a thematic association with the Pahrump Metapatch Landscape. The lithic scatters on the floor of the bolson and on the surface of the alluvial fans along the eastern margin of that floor appear to represent the incidental collection, assay, and initial reduction of toolstone-quality rock as people traversed the area on their way to other places. There is presently no demonstrable, necessary behavioral link between what appears to be the incidental acquisition of toolstone and the suite of resource use behaviors that most likely characterize human activity on this landscape. People may have acquired toolstone locally on the bolson floor or on the alluvial fans that they then

[23] An “interdunal lag” deposit is a deposit that is the result of the aerial erosion of a sand dune whereby the wind blows dune sand away leaving in its wake a heap or scatter of any materials larger than sand grains. Those materials “lag” behind the blown away dune sand.

[24] “Tufa” is a relatively porous deposit of $CaCO_3$ that slowly precipitates out of water in a number of surface and subsurface contexts.

later used to engage landscape resources, but there is presently no evident causal connection between the acquisition of those particular toolstones and the use of the landscape. Staff, consequently, does not consider the prehistoric lithic scatters on the proposed facility site to be contributing elements of the Pahrump Metapatch Landscape.

The Pahrump Metapatch Landscape is ultimately the result of a dynamic interaction among the natural elements of the landscape and the different Native American cultures that have evolved there. The tangible evidence of this interplay is the landscape characteristics that are part of its formal definition. Of the eleven landscape characteristics set out in National Register Bulletin 30 (NPS 1999:3–6), the landscape has the potential to possess six characteristics (land uses and activities, patterns of spatial organization, response to the natural environment, cultural traditions, vegetation related to land use, and archaeological sites). These characteristics would reflect and more precisely articulate the reciprocal manner in which the land has shaped local Native American cultures and, in turn, the manner in which successive and overlapping Native American cultures have shaped the land through time. There are a number of aspects of the landscape on which human action may have been more of a factor than is readily apparent. The shape of the individual mesquite patches within the landscape and their spatial distribution may, to some degree, be a function of cultural manipulation that reflects the ownership norms of the people who collected mesquite pods and may have tended the patches. The shapes of the individual trees may partially be the result of plant-tending techniques meant to maximize mesquite pod yield or facilitate easier harvesting. The information that would be necessary to develop meaningful discussions of these and other potential landscape characteristics is not presently available. Primary field research on the landscape would be necessary to acquire it. During the course of the consideration of the application for the proposed project, the applicant has repeatedly objected to engaging in this fieldwork.

Landscape Interpretation

The overarching behavioral theme that binds the Pahrump Metapatch Landscape into a discrete entity is the Native American use of the area to collect and process mesquite pods and other plant resources unique to this mesquite woodland-coppice dune association; to hunt the animal resources dependent on the association; and to access the scarce water resources that are coincident with it. The Native American use of this cultural landscape extends from the ancient point in time when the existence of the mesquite woodland and the presence of Native Americans first coincided, up through the early twentieth century. The landscape represents a local resource-rich zone in the midst of the relatively vast expanses of the resource-sparse Mojave Desert scrub and shadscale scrub associations that surround it. The landscape was undoubtedly of more than economic value to the native peoples who used it. As a desert floor area that yielded a disproportionately high amount of life-giving resources, the metapatch landscape can be surmised to have been deeply woven into the oral traditions, the mythology, the religion, and the ethno-geography of the peoples who once lived there.

The Pahrump Metapatch Landscape was one of a number of local, discontiguous resource zones that were, most likely, variable parts of the territorial configurations of different cultures here through time. The landscape was one resource island in a lateral and vertical resource archipelago scattered in a metaphorical sea of low resource-value

vegetation associations. The Spring Mountains and Mount Charleston have offered and still offer, among other resources, pinyon nuts, agave, and water. The Pahrump Valley playa, perennially to seasonally, from the terminal Pleistocene through the Holocene epochs, has been a critical focus of a suite of lacustrine[25] resources. And the Nopah Range undoubtedly offers resources of value as well. The variable and most likely significant role that the metapatch landscape played in different prehistoric-through-early-historic aboriginal territories has not been well investigated to date.

CRHR Evaluation of the Landscape

There is presently not enough information on the Pahrump Metapatch Landscape to make a formal determination on the resource's eligibility for listing in the CRHR. However, there is enough information to provide a sound rationale for assuming the eligibility of the landscape as an archaeological district under CRHR Criteria 1 and 4 and for proceeding directly to the analysis of the potential project-related impacts to this historical resource under CEQA.

The Pahrump Metapatch Landscape is most likely worthy of listing in the CRHR under Criterion 1, for its association with events that have made a significant contribution to the broad patterns of the local aboriginal prehistory and history of Pahrump Valley, and under Criterion 4 for its potential to yield information important to our understanding of that prehistory and history. Although the visual quality of the landscape's setting, feeling, and association relative to Criterion 1 and the spatial quality of the landscape's location and design relative to Criterion 4 are not entirely pristine, the landscape, nonetheless, presently retains enough of its historic character and appearance (integrity) to be recognizable as a historical resource and to convey the reasons for and the sense of its significance.

The provisional boundary for the landscape is the boundary delineated for the Pahrump Metapatch in the *Conservation Management Strategy for Mesquite and Acacia Woodlands in Clark County, Nevada* (BLM 2006)(**Cultural Resources Figure 6**). This boundary is meaningful because it relates the resource to a discontiguous series of mesquite woodland populations that can be conceptually unified largely on the basis of their association with the near-surface water sources along the Pahrump-Stewart Valley fault system. This boundary is provisional and would require significant future refinement. The periods of significance for the bounded landscape would be those periods from the terminal Pleistocene through the Holocene epochs, when the landscape was a key component of local aboriginal culture. Whether there were distinguishable, discrete periods when this was not the case or the landscape has always functioned in this capacity has not yet been deciphered.

Historical Archaeological Resources

Site S-20

Site S-20 appears to be a sparse and relatively small historic refuse deposit to the west of the proposed Unit 2 power tower, adjacent to a dirt road. The deposit rests on the

[25] Lacustrine**:** of, relating to, formed in, living in, or growing in lakes (Merriam-Webster On-Line Dictionary. 2012. http://www.merriam-webster.com/dictionary/lacustrine)

surface of non-Holocene, Quaternary-age sediments of Pahrump Valley basin fill (Qbf). The ground surface that supports the deposit is relatively level with a sparse lag deposit of pebbles overlying an apparent sheet of eolian sands. The boundary between the Mojave Desert scrub and the shadscale scrub vegetation associations on the facility site (HHSG 2011a:fig. 5.2-3) runs very close to site S-20. The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., and unspecified native grasses. Surface visibility across the site is stated to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The available information on the artifact assemblage for site S-20 and on the spatial distribution of the artifacts in the assemblage is spare. The only mention of the extent of the deposit or the distribution of the constituent artifacts within it is on the DPR 523C form for the site. The deposit apparently measures 10 m from north to south and 15 m from east to west. The description of the artifacts in the site assemblage are also somewhat vague. The deposit is reported to include one "solder dot can" or, presumably, matchstick filler can, five sanitary cans, three soft-top cans, and the embossed bases of three bottles which are undescribed. Without reference to artifact attribute data, the applicant states that the matchstick filler can dates to the 1950s and that the makers' marks on the bottle bases date to the late 1960s.

On the basis of the available information, the artifact assemblage of site S-20 appears to represent one or several episodes of roadside refuse disposal. The facts that none of this material is of artistic value, nor provides information that would readily facilitate the association of it with significant events or persons, combine to indicate that the resource does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-20 is not eligible for listing in the CRHR.

Indeterminate Archaeological Resources

Site S-8

Site S-8 is a small rock cairn in the west-central portion of the Common Area. The archaeological feature is on the surface of distal, Holocene-age sediments of a dormant local alluvial fan (Unit Qa2). The vegetation on and around the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). Surface visibility across the site is unreported, though presumably high.

The subject cairn is an isolated archaeological feature. It is small (56 x 84 cm) and made up of 26 cobbles and boulders set in what appears to be three courses. The rock types are unreported but appear, on the basis of the photograph on the DPR 523A form for the feature, to be largely of igneous origin. The rocks in the photograph exhibit different degrees of mechanical and physical weathering, and different degrees of $CaCO_3$ accretion on the weathered cortex of each rock. The applicant notes (CRTR 2011b:55; DPR 523A 2011) that the lowest course of the cairn is "set into," or embedded in the surface of the ground. Archaeologists may cite the degree to which archaeological remains have become embedded in the surface on or in which they are found as a rough index of the antiquity of those remains. The implication here would be

that the cairn may be of some antiquity and not a product of more recent historic activity. No cultural materials were found on, in, or adjacent to the cairn, the association with which might have indicated a more definitive age for the feature.

The rock cairn that is site S-8 appears to represent a single event where someone built this feature. On the basis of the available information, it is presently not feasible to determine when the feature was built or for what purpose. As the feature cannot be associated with significant events or persons, possesses no discernible artistic value, and has no information to offer that may be important to prehistory or history, despite its apparent physical integrity, it does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-8 is not eligible for listing in the CRHR.

Evaluations of Archaeological Resources on the Basis of Phase II Archaeological Research on the Facility Site

Of the six prehistoric archaeological sites where staff deemed surface observation alone to be an insufficient basis to develop formal recommendations of historical significance, the applicant, BLM staff, and staff ultimately agreed to conduct Phase II archaeological research on all or part of five of them (CA-INY-2492, S-4, S-6, S-10/11, and S-23). The excluded resource, site S-AF-1, an archaeological deposit in the 200 ft. buffer zone for the original intensive pedestrian cultural resources survey, is just north of the northernmost portion of the Common Area, on BLM land in Nevada. BLM staff was not in favor of conducting Phase II archaeological research on either it or the portion of another archaeological deposit, site S-10/11, which laps over the east-central boundary of the HHSEGS Common Area, and the California border, also onto BLM land in Nevada. BLM staff preferred to establish the historical significance of lithic scatters such as these through a more inductive evaluative process. Given that the deposits were on BLM land in Nevada, staff agreed to drop them from our request for Phase II archaeological research.

Phase II Facility Site Methods

The methodology of the applicant's Phase II archaeological research structures part of the applicant's effort to comply with the subdivision of the Energy Commission's siting regulations that relates to the assessment of the potential effects of the proposed project on historical resources and to the subsequent development of measures to mitigate any significant effects (Cal. Code Regs., tit. 20, § 1701 et seq., app. B, subd. (g)(2)(E)). To assess the potential effects of the proposed project on historical resources, one must implicitly determine which of the cultural resources found in the project area of analysis as a result of archival and field research meet the regulatory definition of a historical resource. When one cannot reasonably demonstrate that an archaeological deposit is almost entirely exposed on the present ground surface and also rests on a landform that is older than the commonly accepted date of the initial human occupation of North America (ca. 15,000 before the present), or when the material remains on the exposed surface of an archaeological deposit indicate more than a light and transitory use of that place in the past, archaeological excavation is necessary to identify and to assess the spatial integrity of the potentially significant data sets which any buried components of that deposit, if present, may possess.

The methodology of the applicant's Phase II archaeological research primarily involves the use of small excavation units and backhoe trenches to inventory the presence and density of any subsurface material culture on the five subject sites and to assess the integrity of the spatial associations among those remains (Lawson et al. 2012). The initial effort on each site for this phase of research involved an intensive re-survey of the site surface of each site within the boundary established during the original Class III, Phase I intensive pedestrian cultural resources survey. Surface artifacts were mapped with a Trimble GeoXH, 2005 Series GPS. Additional site documentation for the re-survey included photography and site-specific descriptions of geomorphic context. Each of the five sites, relatively sparse (1 artifact/2.5–344 m^2) surface scatters of chipped stone, or relatively sparse lithic scatters, was excavated with the use of small shovel test probes (STPs) approximately 35 cm in diameter. The STPs were excavated in 20 centimeter levels to a depth of one m, or until an impenetrable layer was encountered. Excavated STP sediments were screened through 1/8-inch hardware cloth. Artifacts found were analyzed in the field and cast back into their respective STPs along with the excavated sediments after the completion of each probe. STP locations were mapped and STP-specific forms document each excavation. STPs were placed on the largest of the five archaeological sites, S-10/11, relative to a 30 to 35 m grid that was set across the site. On the balance of the sites, STPs were more subjectively placed near apparent surface artifact concentrations.

The backhoe trenches that were ostensibly excavated as a part of the Phase II archaeological research are more appropriately given consideration as part of the research on the geoarchaeology of the facility site. Discussion of the trenches and the results of that field effort may be found in Geoarchaeological Field Investigation, above.

Phase II Facility Site Results

Phase II archaeological research on the portions of the five prehistoric archaeological sites agreed upon as a result of consultation among staff, BLM staff, and the applicant led to the excavation of a total of 23 STPs. Eight of the STPs for four sites were negative, and 10 of the 15 STPs for the fifth site, site S-10/11, were also negative. The five STPs on site S-10/11 in which artifacts were found yielded a total of nine whole or fragmentary stone flakes in the first 10 cm excavated below the ground surface. Notwithstanding the facts that the subsurface excavations on the California portion of site S-10/11 represent a maximum subsurface sample of 1.442-cubic m and those on the four other sites represent a maximum 0.192-cubic-m sample for each, the excavations do evidence one aspect of staff's efforts to establish a factual basis relative to which staff can develop reliable recommendations on the historical significance of the subject archaeological resources.

CA-INY-2492

Site CA-INY-2492 is a small, extremely sparse prehistoric lithic scatter in the northeastern portion of the proposed Unit 2 heliostat field. The site was originally recorded in 1979. It was relocated and the documentation for it updated during the intensive pedestrian cultural resources survey for the proposed project. The artifacts on the site are reported to have been found on the surface of distal, Holocene-age sediments of an active local alluvial fan (Unit Qa1). The ground surface that supports the scatter is level with a moderately dense lag deposit, primarily of pebbles with some

cobbles present. The vegetation in the vicinity of the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), and *Lycium* spp. Rice grass (*Achnatherum hymenoides*) and Big Galleta grass (*Pleuraphis rigida*) are also noted on discontinuous sand sheets in nearby ephemeral stream channels. Surface visibility across the site is stated to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The spatial distribution and the character of the surface artifact assemblage that appears to make up site CA-INY-2492 are presently unclear. The original USDA Forest Service Archaeological Site Survey Record for the site documents an approximately 10 x 20 m scatter of two chert or chalcedony cores and "numerous" flakes, none of which were thought to exhibit use-wear, that were interpreted to be the result of "cleaning and core reduction." The DPR 523C form for the site notes the dimensions of the deposit as being 55 m from north to south and 50 m from east to west. Any patterns that may exist with regard to the differential distribution of artifact or material types within the site area are unreported and poorly depicted. The sketch map on the DPR 523K form depicts the site, an assemblage of nine artifacts, as being approximately 45 m from north to south and 40 m from east to west with symbols that denote two flake concentrations, four individual flakes, and a trowel probe spread around that area. The uncertainty about the distribution of the artifacts across the site is not the only factor that complicates the interpretation of it. The descriptions of the character of the site artifact assemblage are inconsistent as well. The recent intensive pedestrian cultural resources survey found nine artifacts on the site, one core and eight flakes. The DPR 523A and C forms for the site state that the assemblage is made up of one brown chert core, one primary and one secondary yellow chert flake, two primary chert flakes of unreported color, and one primary and three secondary flakes of a "light brown igneous" material. The flakes range from approximately 3–5 cm in length. The interim Phase II report identifies one brown chert core that evidences flake detachment in multiple directions, a multidirectional core, two yellow chert flakes, and nine "rough grained reddish brown chert flakes" (Lawson et al. 2012:8).

Efforts were made during both the original intensive pedestrian cultural resources survey of CA-INY-2492 and the Phase II archaeological research on the site to identify and inventory any potential subsurface component that may be a part of that deposit. These efforts included the excavation of one trowel probe and two STPs. The small (10 cm in diameter, 10 cm in depth) trowel probe found no cultural material. The STPs were dug to depths of 74 and 85 cm, respectively, and the screening of probe sediments did not produce any artifacts. The probes were terminated at a tough layer of $CaCO_3$, or caliche. The texture of the sediments and the degree of sedimentary compaction were reported to be consistent throughout the profile of both probes, from the surface to the bottom. The sediment is reported to have been moderately compacted pinkish brown sandy silt with angular gravels.

Absent intrasite data on the spatial distribution of the surface artifacts that presently appear to make up site CA-INY-2492, the deposit can only be said to represent one to three episodes of the reduction of rock, ostensibly different kinds of chert, and the

preparation of formal cores for the detachment of flakes for stone tool production, most likely expedient stone tools. The site assemblage appears to indicate an overall light and transitory use of the site area. The facts that the artifacts are not of artistic value and do not provide information that would readily facilitate the placement of the site activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site CA-INY-2492 is not eligible for listing in the CRHR.

Site S-4

Site S-4 is a small prehistoric lithic scatter in the east-central portion of the proposed Unit 2 heliostat field. The artifacts on the site are reported to have been found in relatively small (10 x 15 m) area on the surface of distal, Holocene-age sediments of a dormant local alluvial fan (Unit Qa2). The ground surface that supports the scatter is level with a spare lag deposit of pebbles and cobbles. The vegetation in the vicinity of the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., unspecified native grasses, and unspecified invasive weeds. Surface visibility across the site is stated to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The available information on the character of the surface artifact assemblage for site S-4 is partially contradictory. The assemblage is made up of 41 flakes, of which 35 are primary flakes, 2 are secondary flakes, 2 are tertiary flakes, and 2 which have unspecified attributes. The primary flakes range from approximately 4–8 cm in length, while the secondary and tertiary flakes are smaller and range from approximately 3–4 cm in length. There are gross contradictions as to the material types—the rocks of which the flakes are made. The DPR 523A form for the site refers to the flakes as being primarily of a “light brown igneous medium grained material” with one flake being of a “salmon colored chert material.” The igneous material was reported to be present as “large untouched cobbles” on the site as well. The DPR 523C form for the same site refers to the flakes as being primarily of a “very poor quality chert material.” One tertiary flake of jasper is also noted. The form states that the chert flakes have “a lot of cortex with inclusions” and that the chert has numerous vesicles. The applicant’s interim summary of the results of the Phase II archaeological research (interim Phase II report) reports that the flakes are “primarily a light brown to reddish brown rough grained silicified mudstone or siltstone” or a stone that resembles “freshwater limestone or siltstone” (Lawson et al. 2012:5–6). The flake of “salmon colored chert material” recurs.

The artifact distribution pattern across the site is at least fairly clear. The different sources agree that the site has one small (2 x 2 m), primary concentration of 33 flakes, which the interim Phase II report states as all being of a “yellow, silicified mudstone.” The eight other flakes from the site were found sparsely distributed across the balance of the site area.

The Phase II effort to identify and inventory any potential subsurface component of the site was the excavation of two STPs. The probes were dug to depths of 60 and 75 cm,

respectively, and the screening of probe sediments did not produce any artifacts. Deeper excavation was precluded by the presence of what is reported to have been a tough layer of $CaC0_3$, or caliche. The initial 5 cm of the excavation is reported to have been unconsolidated, unspecified sediments with the balance of the subsurface sedimentary deposits being moderately compacted, pinkish brown sandy silt with angular gravels.

The surface artifact assemblage that presently appears to be site S-4 represents one primary and several other incidental episodes of the assay and initial reduction of rock available on the site, for use as toolstone. The one concentration of 33 flakes is the most unambiguous example of this. The contradictory information on lithic material types presently renders meritless any discussion of the implications that the artifacts may have for cultural behavior beyond this one site. The site assemblage indicates an overall light and transitory use of the site area. The facts that the artifacts are not of artistic value and do not provide information that would readily facilitate the placement of the site activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-4 is not eligible for listing in the CRHR.

Site S-6

Site S-6 is a moderately small, sparse prehistoric lithic scatter in the east-central portion of the proposed Unit 2 heliostat field. The artifacts on the site are reported to have been found on the surface of distal, Holocene-age sediments of a dormant local alluvial fan (Unit Qa2). The ground surface that supports the scatter is level with a lag deposit of pebbles and cobbles. The vegetation in the vicinity of the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., and unspecified native grasses. Surface visibility across the site is stated to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The spatial distribution and the character of the surface artifact assemblage that appears to make up site S-6 are presently unclear. The DPR 523C form for the site notes the dimensions of the deposit as being 25 m from north to south and 30 m from east to west. Any patterns that may exist with regard to the differential distribution of artifact or material types within the site area are unreported. The available descriptions of the composition and the character of the artifact assemblage are inconsistent. The DPR 523A form for the site at first details the assemblage as being eleven flakes, three cores, and a utilized flake. The form then proceeds to describe two cores, one of green chert and one of rhyolite, instead of three, and describes the utilized flake as being of basalt and having flaked edges, which would make the artifact an edge-modified flake, a formed tool, rather than simply a utilized flake. The form states that the flakes are of a poor quality, red rhyolite, a material which was observed to occur naturally on the site. The DPR 523C form for the site notes a light brown igneous core in addition to the others on the DPR 523A form, nine rhyolite flakes, and one orange and red chert flake fragment. The nine flakes are identified as three primary and five secondary flakes, and one tertiary flake. The interim Phase II report identifies nine flakes, one flake fragment,

three cores, and a utilized flake (Lawson et al. 2012:6–7,). The cores are all interpreted to indicate the detachment of flakes from multiple directions. The two cores that are in addition to the green chert core are described in the interim report to be “rough grained, silicified mudstone.” The flakes are stated to be “mostly secondary flakes and all are a poor quality silicified freshwater limestone or mudstone,” cobbles of which occur naturally on the site and which makes up the bulk of the worked lithic material on the site. The interim report describes the utilized flake as being of “dark basalt” with slightly rounded and worn, perhaps sand-blasted, flake scar edges. The applicant interprets this piece to have been brought onto the site from elsewhere, because the material, the dark basalt, is one that the applicant had not “observed at other [archaeological] sites in the HHSEGS,” notwithstanding the fact that the interim report describes “exotic lithologies” as being common among the larger clasts or rocks of the Qa2 alluvial unit (Lawson et al. 2012: 5) on which S-6 rests. Those lithologies are reported to include a “variety of igneous rocks, from volcanic (basaltic andesite, vesicular basalt) to ignimbritic (tuffaceous breccias), to plutonic (granites).

The effort made during the original pedestrian survey on site S-6 to identify and during the Phase II field effort to identify and inventory any potential subsurface component of site S-6 included the excavation of one trowel probe and two STPs. The small (10 cm in diameter, 10 cm in depth) trowel probe was excavated in the northern portion of the site during the original pedestrian survey of the proposed facility site. No cultural material was found. The STPs were dug to depths of 20 and 60 cm, respectively, and the screening of probe sediments did not produce any artifacts. Deeper excavation was precluded by the presence of what is reported to have been a tough layer of $CaC0_3$, or caliche. The initial 5 cm of the excavation is reported to have been unconsolidated, unspecified sediments with the balance of the subsurface sedimentary deposits being a moderately compacted, pinkish brown sandy silt with angular gravels.

Absent intrasite data on the spatial distribution of the surface artifacts that presently appear to make up site S-6, the deposit can only be said to indicate the assay and initial reduction of marginal toolstone quality rock that appears to be found as cobbles as part of the natural sedimentary lag on the site. The purpose of reducing the rock appears to have been to fashion lithic cores from which flakes could be detached for stone tool production, most likely expedient stone tools. The green chert material from which the one core was fashioned and the orange and red chert of the flake fragment may or may not have come from the onsite lag deposit. The applicant was of the opinion that the dark basalt material of the apparent edge-modified flake was exotic to the site and, therefore, that people brought the artifact onto the site from elsewhere. The site assemblage does appear to indicate an overall light and transitory use of the site area. The facts that the artifacts are not of artistic value and do not provide information that would readily facilitate the placement of the site activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-6 is not eligible for listing in the CRHR.

Site S-10/11

Site S-10/11 is a relatively large, sparse prehistoric lithic scatter that straddles the northern part of the northeastern boundary of the Common Area and the California border. The site was documented as two distinct archaeological deposits during the original intensive pedestrian cultural resources survey (CRTR 2012b) and was subsequently lumped into a single site during Phase II archaeological research due, apparently, to the discovery of three buried artifacts between the formerly distinct sites (Lawson et al. 2012: 9). The artifacts on the site are reported to have been found on the distal and midslope surfaces of an alluvial fan of Holocene-age sediments. These sediments appear to be primarily a mixture of eroded deposits from the western Spring Mountains bajada, and from paleospring tufa and eolian sand deposits from the Pahrump Valley fault zone. This sediment mixture emanates from that zone as a coalescing sequence of relatively small and active alluvial fans (Unit Qa1). The surface of the particular alluvial fan that supports site S-10/11 slopes down toward the west and transitions from a less than five percent slope on the Nevada portion of the site to a slope of less than two percent on the California portion of it. Several small ephemeral stream channels that traverse the site incise the surface of this fan. Chert cobbles are a noted constituent of the streambed loads in these channels. The fan surface away from the ephemeral stream channels has a moderately dense lag deposit, primarily of pebbles and cobbles. A relatively thin sand sheet drapes the southern portion of the site. The vegetation in the vicinity of the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., and unspecified native grasses. The sand sheet across the southern portion of the site supports Rice grass (*Achnatherum hymenoides*), and Big Galleta grass (*Pleuraphis rigida*). Surface visibility across the site is stated to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The spatial distribution and the character of the surface artifact assemblage that appears to make up site S-10/11 are presently unclear. The DPR 523C form for site S-10, the larger of the two original sites, notes the dimensions of that deposit to be 80 m from north to south and 50 m from east to west. Any patterns that may exist with regard to the differential distribution of artifact or material types within the site area are unreported and coarsely depicted. The sketch map on the DPR 523K form depicts the same site as being approximately 210 m from northwest to southeast and 81 m from northeast to southwest. The DPR 523C form for site S-11, adjacent to the southwest-central portion of site S-10, similarly notes the dimensions of that deposit to be 10 m north to south and 15 m from east to west, and the DPR 523K sketch map for that site depicts it as approximately 28 m north to south and 44 m from east to west. Within whatever the actual dimensions of the site are, the site artifact assemblage appears to be distributed into three large artifact concentrations and seven smaller ones. The smallest of the three large concentrations is at the extreme northwestern end of the site surrounded to the southeast by four of the smaller concentrations. All five of these concentrations are within approximately 30 m of what the applicant identifies on the map as a source for toolstone, a chert source associated with one of the ephemeral stream channels that courses through the site. The balance of the large concentrations

is found on the southeastern end of the site, and the balance of the smaller concentrations is found in the center of the site. The interim Phase II archaeological research report describes the large concentrations as having a variety of primary and secondary flakes and cores (Lawson et al. 2012:?). The smaller concentrations are reported to each have 10–20 flakes of various types, and 1–2 cores. The absence of intra-concentration descriptions of artifact assemblages and distributions constrains one's ability to interpret the behavior that the concentrations and the broader site represent. The uncertainty about the distribution of the artifacts across the site is not the only factor that complicates one's interpretation of it. The descriptions of the character of the site artifact assemblage are inconsistent as well. DPR 523 series forms document the observations of the original intensive pedestrian cultural resources survey on both site S-10 and S-11. The DPR 523A form for site S-10 notes the site to include 3 flake tools, 9 cores, and over 150 flakes, the majority of which are said to be of light brown chert. The DPR 523C form for that site states, alternately, that the assemblage is made up of 3 flake tools, 11 cores, 232 flakes, and 25 pieces of stone tool production shatter, all of which are noted to be of chert. The cores are relatively small and average approximately 7 cm in maximum dimension. The 232 flakes are reported to include 95 primary, 114 secondary, and 23 tertiary flakes. The primary and secondary flakes range in length from 2–7 cm, and the tertiary flakes range from 1–4 cm. The interim Phase II report describes the assemblage as including 3 flake tools, 1 core tool, 10 cores, and over 150 flakes, the majority of which are said to be of light brown chert. All of the cores are noted to indicate detachment of flakes in multiple directions, known as multidirectional cores. The observation was made that nodules of chert that appear to have eroded out of the Paleozoic carbonate rock of the Spring Mountains and become incorporated into the alluvial deposits of that range's bajada have subsequently eroded out of those latter deposits and are now found as cobbles in the dry channels of the ephemeral streams that traverse the site.

The interim Phase II report also provides further detail on the stone tools that were found (Lawson et al. 2012:10). The three flake tools that were found all appear to be utilized flakes, expedient tools not subject to formal shaping subsequent to their detachment as simple flakes from a core. Although the descriptive detail that would more securely support the interpretation of the tools is not available, the applicant interprets two of the tools (L x W x T[26] of 37 x 35 x 10 and 74 x 65 x 18 mm, respectively) to have been subject to light use along one tool edge, presumably on the basis of sporadic unifacial chipping along that edge. The interim Phase II report describes the third flake tool (L x W x T of 38 x 30 x 10 mm) as having "heavy chipping damage along one edge." This is presumably the same tool that the DPR 523C form for site S-10 describes as having "one good crushed edge." The core tool, for which dimensions and a detailed description are unavailable, is stated in the interim Phase II report as being an exhausted, or completely used core with "heavy chipping damage along one edge.

Efforts were made during both the original intensive pedestrian cultural resources survey and the Phase II archaeological research on sites S-10 and S-11 to identify and inventory any potential subsurface components that may be a part of those deposits.

[26] L = length, W = width, and T = thickness

These efforts included the excavation of 3 trowel probes and 15 STPs. The small, shallow (10 cm in diameter, 10 cm in depth) trowel probes found no cultural material. The STPs were laid out 30–35 m apart across the California portion (~ 86 percent) of site S-10/11, relative to an arbitrary grid devised for that purpose. The probes were dug to depths of 24–100 cm. Probes were terminated prior to 100 cm of depth only when rock or dense $CaCO_3$ deposits, known as caliche, inhibited further excavation. The texture of the sediments and the degree of sedimentary compaction varied somewhat throughout the profiles of the probes. The majority of STPs were placed on portions of the site with a gravel lag where the surface was very dry and moderately compacted. The excavation of other STPs on portions of the site with loose surface sediments found the loose sediments to extend down only about 10 cm before more compacted sediments were encountered. The sediment is reported to have been moderately to well compacted pinkish brown silt with mostly small and angular gravel.

The screening of probe sediments produced artifacts in five of the probes. The applicant notes that all of the excavated artifacts came from the uppermost 10 cm of fill in probes that had been placed on surface deposits of loose silty sand. The interim Phase II report lists these artifacts as seven flakes and two flake fragments. No further description of the artifacts is available.

Absent higher resolution data on the intra-concentration spatial distribution and character of the surface artifacts that presently appear to make up site S-10/11, the deposit can be interpreted primarily as a lithic procurement site focused on a particularly productive local source of Paleozoic chert cobbles, ultimately derived from the Spring Mountains. The site artifacts indicate the presence of perhaps seven segregated reduction loci[27] (SRLs) and three larger areas that most likely represent recurrent reduction episodes that occurred over a relatively long period of time. The presence of a number of cores, the high percentages of the enumerated primary (41 percent) and secondary (49 percent) flakes relative to tertiary (10 percent) flakes that appear to indicate a behavioral emphasis on cobble assay and the preparation of flake cores, and the spare representation in the site artifact assemblage of other types or classes of artifacts all support the interpretation of a behavioral focus on the procurement of toolstone-quality chert and the preparation of cores for subsequent use in the production of stone tools. Given the extremely rare (< 2 percent) incidence of stone tools on the site relative to the enumerated artifacts, those that were found, the core tool and the three flake tools, may represent pursuits on the site secondary to lithic procurement, but more probably represent cases of incidental or accidental discard of these specimens. The site assemblage, as a whole, appears to indicate an overall light and transitory use of the site area. More precise documentation of the constituent artifacts of the larger and smaller lithic concentrations and the patterns of artifact distribution within those, and lithic refit analyses of the discrete SRLs and of any SRLs identified within the larger lithic concentrations have the potential to yield more useful information to reconstruct the behavioral patterns that the composite artifact assemblage of the site represents, but staff does not believe that that information would

[27] A segregated reduction locus is a concentration of stone artifacts that “contains wastes from individual knapping events, produced wherever one or a couple [of] suitable cobbles were decorticated and/or reduced into rough cores or tool preforms” (Giambastiani 2005).

ultimately prove to be significant. The facts that the artifacts are not of artistic value and do not provide information that would readily facilitate the placement of the site activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-10/11 is not eligible for listing in the CRHR.

Site S-23

Site S-23 is a small prehistoric lithic scatter in the southeastern portion of the proposed Unit 1 heliostat field. The artifacts on the site are reported to have been found on the surface of distal, Holocene-age sediments of an active local alluvial fan (Unit Qa1). The ground surface that supports the scatter is level with a relatively sparse lag deposit, primarily of pebbles with some cobbles present. The vegetation in the vicinity of the site is documented as Mojave Desert scrub (HHSG 2011a:fig. 5.2-3). The applicant reports the presence of creosote (*Larrea tridentata*), *Lycium* spp., and unspecified native grasses. Surface visibility across the site is stated to be nearly 100 percent. The only noted information related to the historic land use of the site and surrounding area is their location on the Hidden Hills Ranch, which has been in operation as a cattle ranch since the 1920s.

The spatial distribution and the character of the surface artifact assemblage that appears to make up site S-23 are presently unclear. The DPR 523C form for the site notes the dimensions of the deposit as being 10 m from north to south and 10 m from east to west. Any patterns that may exist with regard to the differential distribution of artifact or material types within the site area are unreported and poorly depicted. The sketch map on the DPR 523K form depicts the site as being 15 m from north to south and 10 m from east to west with symbols that denote a flake concentration, a flake, and a trowel probe clustered in the center of that area. The available descriptions of the character of the artifact assemblage are inconsistent. The DPR 523A and C forms for the site states that the four secondary and fifteen tertiary flakes that make up the entire artifact assemblage are, respectively of a “light brown medium grained igneous material” and a “light yellow to brown igneous material, likely a welded tuff.” The interim Phase II report identifies the flakes as being of a “light brown coarse grained silicified mudstone,” cobbles of which occur naturally on and near the site (Lawson et al. 2012:11). The material is described there as extremely poor quality toolstone.

The effort made during the original pedestrian survey on site S-23 to identify and during the Phase II field effort to identify and inventory any potential subsurface component of site S-23 included the excavation of one trowel probe and two STPs. The small (10 cm in diameter, 10 cm in depth) trowel probe found no cultural material. The STPs were placed in areas of the site where a gravel lag was apparent. The probes were dug to depths of 66 and 90 cm, respectively, and the screening of probe sediments did not produce any artifacts. Deeper excavation was precluded by the presence of what is reported to have been a layer of cobbles. The texture of the sediments and the degree of sedimentary compaction were consistent throughout the profile of each probe, from the surface to the bottom. The sediment is reported to have been moderately to well compacted light brown silt with a moderate density of small, angular gravel.

Absent intrasite data on the spatial distribution of the surface artifacts that presently appear to make up site S-23, the deposit can only be said to indicate the reduction of marginal toolstone quality rock that appears to be found as cobbles as part of the natural sedimentary lag on the site. The purpose of reducing the rock appears to have been to detach flakes for stone tool production, most likely expedient stone tools. The site assemblage appears to indicate an overall light and transitory use of the site area. The facts that the artifacts are not of artistic value and do not provide information that would readily facilitate the placement of the site activity in time or the association of it with significant events or persons, combine to indicate that the resource, despite its apparent physical integrity, does not meet any of the CRHR criteria of historical significance. Staff therefore recommends that site S-23 is not eligible for listing in the CRHR.

ASSESSMENT OF PROJECT IMPACTS TO CRHR-ELIGIBLE ARCHAEOLOGICAL RESOURCES AND RECOMMENDED MITIGATION

The construction of the proposed project would cause a substantial adverse change in the significance of the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape. The Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape (Pahrump Metapatch Landscape) is a constellation of what have been and, to a lesser degree, may still be passively and actively managed natural features and of material culture remains that staff, for the purpose of the present analysis, has assumed to be significant for the landscape's associative and information values. The landscape is most likely significant for its association with particular events and sequences of events that have made an important contribution to the broad patterns of the Native American prehistory and history of this portion of the eastern Mojave Desert (CRHR Criterion 1), and for the potential importance for the information that the landscape may be able to provide about the prehistory and history of Native American life in the region (CRHR Criterion 4). The construction and operation of the proposed facility site has the potential to indirectly cause physical damage to the landscape, which would degrade its value under Criterion 4, and would unquestionably degrade the landscape's value under Criterion 1 due to the stark visual intrusion the facility would have on it. The landscape must retain enough integrity of setting, feeling, and association to be able to convey its associative values if the proposed project is not to have a significant effect on it.

The *indirect* physical effect that the proposed project has the potential to cause on the Pahrump Metapatch Landscape is related to the magnitude of the project's potential drawdown on the local system of aquifers that underlie the proposed facility site in California and the adjacent landscape in Nevada. If the project's use of the local aquifer system were to result in an appreciable drop in the level of the water table, then previously documented local environmental stress would intensify on the mesquite woodland which is a fundamental component of the Pahrump Metapatch Landscape. The ultimate death of the woodland mesquite, which would be an indirect project effect, would compromise the integrity of the subject landscape under both CRHR Criteria 1 and 4. With respect to Criterion 1, the loss of the mesquite would compromise the landscape's setting, feeling, and association, aspects of the landscape's integrity that enable the resource to convey the associative values for which staff has, in part,

recommended that it be assumed significant. The loss of the mesquite would also ultimately lead to the physical destabilization of the coppice dunes which the mesquite anchor. There are most likely archaeological deposits embedded in those dunes. The loss of the mesquite and the consequent deterioration of the mesquite roots which presently act to stabilize the dunes would make the dune sand available for eolian transport or pluvial erosion, and could therefore reasonably be anticipated to lead to the damage and destruction of some of the landscape's archaeological deposits. Any such damage or destruction would compromise the landscape's location, design , and association, aspects of the landscape's integrity that enable the resource to convey the information values under Criterion 4 for which staff has, in part, also recommended that the landscape be assumed significant. Staff believes that the implementation of **BIO-23**, **BIO-24**, **WATER SUPPLY-6**, and **WATER SUPPLY-8** would reduce the potential indirect physical effect of the proposed project to a less than significant level. Any remedy for noncompliance with any of the above recommended conditions of certification would need to additionally take into account and mitigate for the damage done to the Pahrump Metapatch Landscape as a whole and for the damage done to any of the landscape's contributing elements, which would include, among other contributors, the mesquite population itself and any archaeological components of the landscape.

The presence of the proposed facility's two heliostat fields and the two, approximately 750 foot-tall solar power towers would be a stark visual intrusion that would profoundly and irreparably degrade the ability of the landscape to convey its historical significance under CRHR Criterion 1. The mass of the looming towers in particular, in combination with the operational glare from the solar receiver steam generators atop each tower, would compromise the setting, feeling, and association aspects of the resource's integrity, aspects critical to the resource's ability to convey its associative values under Criterion 1. Subsequent to the construction of the facility, one would no longer be able to experience the sense of the landscape as it was during its period of significance. The baseline presence of the roads and residences of the Charleston View community along the southwestern side of the landscape and of Nevada State Route 160 through the northeastern side of it has contributed somewhat to the visual degradation of the landscape, in those limited areas. There are broad expanses from within the landscape, however, where that degradation is not readily apparent, where dunes, fault scarps, and stream banks shield the viewer from both the sight and the sound of Charleston View and the highway. The presence of the solar power towers would significantly intrude on those remaining broad landscape expanses. The towers would loom over the very landscape features that presently shield the viewer from the modern world. Staff therefore concludes that the construction of the proposed project, its indefinite period of operation, and the indefinite period of the presence of the facility's infrastructure on the land would result in a significant impact on the Pahrump Metapatch Landscape, a historical resource; and would require mitigation under CEQA.

The significant effect of the proposed project on the Pahrump Metapatch Landscape may not be wholly mitigable if the project is constructed as designed in the proposed location. Given the indefinite period of both the proposed project's operation, a minimum of at least 30 years, and the long-term physical presence of the proposed power towers on the land, the effect of the towers' presence on the landscape can, in essence, be

considered permanent. Once the towers are present, the visual integrity of the landscape would be lost. Staff is unaware of any mitigation measures that would materially mitigate the loss of an entire landscape or a substantial portion of one. Staff believes that any suite of mitigation measures that could reasonably be argued to reduce the almost permanent loss of the entire landscape or a substantial portion of it to a less than significant level would have to provide compensation the benefits of which would provide returns to the public on a time scale that would be commensurate with the duration of the project's visual effects, and of a magnitude that would be commensurate with the magnitude of those effects. To substantively reduce the visual effects of the proposed project on the Pahrump Metapatch Landscape to a less than significant level, the applicant would need to provide for compensatory mitigation that attenuates the magnitude of the project's visual effects on the subject landscape over the entire span of time that the power towers are present there. As the applicant has been unable to date to acknowledge any effects of the proposed project beyond the boundary of the facility site or, consequently, to consider potential historical resources outside of that boundary, the applicant has provided no information or analysis on the subject landscape and has recommended no mitigation to reduce the proposed project's effects on it. Staff nonetheless concludes that the project's projected effects on the Pahrump Metapatch Landscape would be significant, and that, were mitigation measures to meet specific criteria, mitigation of these effects to a less than significant level would, in theory, be feasible. Mitigation that would meet such criteria has proven infeasible in this case (see Multi-resource Mitigation for the Degradation of Multiple Landscapes, below). Staff nonetheless does propose mitigation through two conditions of certification (**CUL-10**, and **CUL-11**) that while not reducing the project's effects to a less than significant level would ameliorate the loss of the Pahrump Metapatch Landscape's ability to convey its associative values.

Staff proposes mitigation measures through two conditions of certification (**CUL-10**, and **CUL-11**) that would, in part, compensate for the loss of the Pahrump Metapatch Landscape's ability to convey its associative values. Condition of Certification **CUL-10** provides for partial compensatory mitigation for the proposed project's visual effects to the Pahrump Metapatch Landscape by facilitating the delivery of a number of different programs through extant regional interpretive centers. These programs would encompass objectives to facilitate primary landscape research and the public interpretation of the landscape, and to preserve landscape archaeological assemblages, natural history collections, and the documentation related to primary research efforts. **CUL-10** would also function at a broader level as mitigation for the proposed project's direct visual effects to the Pahrump Paiute Home Landscape and the Ma' hav Landscape (see *Analysis of Impacts to Ethnographic Resources* subsection, below), and for both direct physical and visual effects to trail and road segments in the Old Spanish Trail-Mormon Road Northern Corridor (see *Analysis of Impacts to Historic-Period Built-Environment Resources* subsection, below) (see also the *Multi-Resource Mitigation for the Degradation of Four Historical Resources* subsection, below, for the complete discussion of the broader concept, the history of its development, and its proposed implementation.). **CUL-10** would emplace valuable programs dedicated to the interpretation and preservation of the significant aboriginal landscape that the proposed project, as well as other reasonably foreseeable renewable energy projects in Pahrump Valley, respectively, would and will permanently and irreparably cause to be lost as a

result of profound direct visual degradation. From a broader perspective, the degradation of the subject landscape would represent the loss of a significant piece of the anthropological mosaic of human life on our planet. Though only partial and incomplete compensatory mitigation for this loss, staff believes that the implementation of **CUL-10**, in combination with **CUL-11**, while not reducing the project's effects to a less than significant level, would ameliorate the loss of the Pahrump Metapatch Landscape's ability to convey its associative values, because it would foster the generation and interpretation of, and preserve knowledge about the landscape, and provide archaeological materials related to human life on the landscape to a public who may largely have never been aware of its existence, or its significance, prior to the irreversible loss of the relatively pristine whole.

Staff's proposed Condition of Certification **CUL-11** would seek to develop a comprehensive picture of the Pahrump Metapatch Landscape's associative values and attempt to re-create or to engender at least some sense of the experience of the landscape through description and interpretation. This type of mitigation would parallel the treatments routinely given to significant built-environment resources, such as buildings and bridges (Historic American Building Survey and Historic American Engineering Record documentation, respectively) prior to demolition, and increasingly given to significant landscapes (Historic American Landscape Survey documentation), under federal historic preservation programs, where such resources are subject to profound visual degradation or physical destruction. This form of mitigation does not serve to directly avoid or minimize the significant direct visual effects that the proposed project would have on the Pahrump Metapatch Landscape, and, as a sole mitigation measure, would not reduce those effects to a less than significant level. It would however serve to partially compensate local Native American communities and the public for their respective losses, and, in combination with **CUL-10**, would further reduce those effects.

Staff finds the proposed mitigation appropriate here, because staff knows of no direct way to effectively counteract the visual degradation that the proposed project would inflict on the landscape. **CUL-11** seeks to compensate, in part, for the permanent loss of the public's ability to experience a significant aboriginal landscape through the reasonably thorough documentation of the landscape's diachronic[28] composition and character, and the subsequent dissemination of this information among the public, to the people who would suffer the loss. **CUL-11** proposes to gather this information through the design and execution of a thoughtful program of primary field research.

The proposed field research would develop two primary avenues of inquiry. One direction of inquiry would encompass research on the geomorphology and the paleoenvironment of the ancient mesquite woodland-coppice dune association, and on the springs and seeps across the proposed landscape. This information is critical to the establishment of the chronology of the use of this area and of the age of related archaeological sites, and to the determination of the relative importance that the landscape may have played in the broader ecological milieu of Pahrump Valley over the last several millennia. The applicant's May 13, 2012 response to Data Request 105

[28] "Diachronic" means of or concerned with phenomena as they change through time.

(Spaulding 2012b), a technical memorandum that provides an initial scope for a study of the physiographic and biological contexts of a portion of the subject vegetation association adjacent to the proposed facility site, would serve as a useful point of departure for the development of a more formal research design for such an inquiry.

A second line of inquiry would entail the investigation of the archaeology of the landscape and would seek to establish the range of variability, the density, and the patterns of distribution of the archaeological deposits that typify the landscape. The overarching purpose for gathering and interpreting information on the associative values of the Pahrump Metapatch Landscape is not to provide further support to staff's assumption of historical significance of the subject landscape. Once assumed significant by the lead agency, the resource is considered significant under CEQA and treated accordingly. The purpose would rather be to attempt to provide the public with a sense, however diminished, of the experience that they would have had if the HHSEGS project did not exist.

Staff believes that the implementation of **CUL-10**, and **CUL-11**, while not reducing the proposed project's effects to the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape to a less than significant level, would provide reasonable and feasible means to substantively reduce those effects. Staff therefore concludes that the project's effects to the subject landscape would stand as unmitigable were the application for the proposed project approved, and despite the implementation of **CUL-10**, and **CUL-11**.

Construction of the proposed facility has the potential to cause a substantial adverse change in the significance of buried archaeological resources across the eastern portion of the facility site on or in Holocene-age alluvial landforms Qa1 and Qa2 (see CH2 2012a, Figure DR101-1). Any construction excavation into these landforms has the potential to truncate or destroy archaeological resources buried beneath, but not evident from, the surface. The implementation of both **CUL-6**, a monitoring protocol for the landforms, and **CUL-7**, a discovery protocol, would reduce any potential significant effects that the inadvertent discovery of buried archaeological resources would cause to a less than significant level. The monitoring protocol of **CUL-6** provides for full-time archaeological monitoring of all construction-related ground disturbance on or in the Qa1 and Qa2 alluvial fans. Both a professional archaeologist and a member of a local Native American community would together conduct this monitoring. Upon the discovery of any buried archaeological resources, **CUL-7** sets out a discovery protocol that would provide for measured assessments of the age, integrity, and significance of cultural resource construction finds. The combination of both conditions of certification tailors the applicant's monitoring burden, on the basis of geoarchaeological research done in conjunction with the review of the AFC, down to only the portion of the proposed facility site that has a demonstrable potential to harbor buried archaeological resources, and provides a protocol for the treatment of any such resources upon their discovery.

The construction of the proposed project and the fulfillment of staff's recommended conditions of certification may cause effects to cultural resources which cannot be adequately analyzed prior to the approval of the application, because it may not be feasible to acquire information of sufficient detail. The reasons for the lack of access to

key information vary. The proposed project would not be far enough along in design to be able to identify, with any degree of certainty, either whether project construction would require the use of offsite construction fill, or the one or several sources from which that fill would come. Construction also may require the use of an offsite disposal site for fill generated on the facility site. Whether and where the use of such a site may be necessary are presently unknown as well. Each of these types of project effects, both direct and indirect, have the potential to damage the physical and visual integrity of archaeological resources. Staff proposes **CUL-8** to take these types of effects into account.

In the event that the construction or operation of the California components of the project require the acquisition or disposal of sediments, soil, or gravel (construction fill) from any non-commercial borrow or disposal site, in California or elsewhere, **CUL-8** would require the applicant to develop an inventory of the cultural resources for the portions of any such site where physical damage or visual intrusion to such resources may occur, and to engage in consultation with staff on the resolution of any significant effects to historical resources. The construction fill would have to come from or be disposed of at non-commercial borrow sites where it would be feasible to mitigate any significant effects to historical resources to a less than significant level through the use of relatively routine mitigation measures. For example, archaeological resources found to be significant on the basis of their information value would need to be wholly mitigable through data recovery. Built environment resources found to be significant on the basis of their associative, or design and construction values would need to be similarly mitigable through a formal heritage documentation protocol equal or analogous to the Federal Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER), or Historic American Landscapes Survey (HALS) programs. If historical resources on a proposed non-commercial borrow site were found not to be mitigable to a less than significant level, the use of that site would be precluded, for that purpose, because stakeholders would never have had an opportunity under CEQA to provide comment on the character of the proposed project's effects on such a resource, whether any significant effects to such a resource were mitigable, and, if so, what the range of appropriate mitigation measures might be. The implementation of **CUL-8**, by virtue of its design, would ensure that the applicant's use of a non-commercial borrow or disposal site would not result in an unmitigable impact to a historical resource.

ANALYSIS OF IMPACTS TO ETHNOGRAPHIC RESOURCES

Ethnographic Background

Ethnography fulfills a supporting role for other anthropological disciplines, while providing contributions on its own merits. It supports archaeology by providing a cultural and historic context for understanding the people who are associated with the material remains of the past. By understanding the cultural milieu in which archaeological sites and artifacts were manufactured, utilized, or cherished, this additional information can provide greater understanding for identification efforts, significance determinations per the National Historic Preservation Act (NHPA) or CEQA; eligibility determinations for the NRHR or CRHR; and for assessing if and how artifacts are subject to other cultural resources laws, such as the Native American Graves Protection and Repatriation Act.

In addition, ethnography's own merits include providing information on ethnographic resources that tend to encompass physical places, areas, or elements or attributes of a place or area. Ethnographic resources have overlap with and affinity to historic property types referred to as cultural landscapes, traditional cultural properties, sacred sites, and heritage resources.

General ethnographic backgrounds for the Western Shoshone and Southern Paiute were provided by the applicant in the AFC (HHSEGS 2011a, Section 5.3: 14-15). With this information as a starting point, staff conducted an ethnographic study to identify Native American concerns and as a basis for determining the significance of related resources and potential mitigation for impacts to those resources.

Nine distinct tribal governments were consulted regarding an ethnographic study for this project. Tribes were invited to participate based upon a list of affiliated tribes provided by the Native American Heritage Commission (NAHC). The nine invited tribal governments represent three different cultural affiliations. From west to east, these affiliations are: Owens Valley Paiute, Timbisha Shoshone, and Southern Paiute (consisting of the Pahrump Paiute, Las Vegas Paiute, and the Moapa Paiute. Of the nine tribal governments, the Pahrump Southern Paiute participated fully, the Moapa Southern Paiute and Timbisha Shoshone participated in supporting roles, and the remaining six tribes provided limited input due to their greater distances and relationships to the project area. **Cultural Resources Figure 1** is a map of the general locations and territories of the participating tribes. The map also includes a historic journey taken by a Pahrump Paiute leader, Chief Tecopa, and his son that, in part, helps to define Pahrump Paiute ancestral territory.

Southern Paiute

The "Southern Paiute" represents a population of people that traditionally reside in a large swath of land that has, as its general boundaries, the Black Mountains to the east, the eastern Mojave Desert to the west, the Colorado River and the Grand Canyon to the south, and the southeastern plateaus of the Rocky Mountains to the east. The northern boundary takes in the southern third of present day Utah and the lower quarter of present day Nevada. The Pahrump and Moapa Tribes are the Southern Paiute residing in the western extent of Southern Paiute territory. The Chemehuevi people to the immediate south of Pahrump and living along the lower Colorado River are also Southern Paiute and share many cultural traits with those Southern Paiute to the north and east. Chemehuevi did not participate in this ethnographic study because they were not listed by the NAHC and therefore were not invited to participate. In addition, the more eastern Southern Paiute Tribes, located in Utah and Northern Arizona, were not invited to participate although they recognize the Spring Mountains as their common place of origin and participate in some of the ceremonial practices in common with the Moapa and Pahrump Southern Paiute.

A written record of Paiute tribes in 1873 was the result of a federal commission. In the fall of 1873, Major John Wesley Powell and G. W. Ingalls were commissioned by the U.S. Department of the Interior to determine the extent of Paiute Indians (Numic) dwelling throughout the Great Basin who had not yet been moved to reservations (Fowler 1971:97–120). In all, the two commissioners documented 83 separate tribes.

Powell made one trip as far as Las Vegas, where he collected information on the Paiutes of that area. Powell documented a "Chief of Alliance", named To-ko'-pur (Chief Tecopa), who represented one tribe, as well as the alliance of seven additional tribes (**Cultural Resources Table 8)**. Each of the additional tribes had "Chiefs." The following table provides Powell's grouping of seven tribes into one alliance. Powell suggested that all Southern Paiute of southeastern California, southern Nevada, northwestern Arizona and southern Utah be relocated to the Moapa Reservation (Fowler 1971:116).

CULTURAL RESOURCES Table 8
Seven Tribes Allied Under Chief Tecopa

TRIBE	LOCALITY	CHIEF
No-gwats	Vicinity of Potosi	To-ko'-pur
Pa-room'-pats	Pa-room Springs	Ho-wi'-a-gunt
Mo-quats	Kingston Mountains	Hu-nu'-na-wa
Ho-kwaits	Vicinity of Ivanspaw	Ko-tsi'-an
Tim-pa-shau'-wa-go-tsis	Providence Mountains	Wa-gu'-up
Kau-yai'-chits	Ash Meadows	Nu-a'-rung
Ya'-gats	Armagoza	Ni-a-pa'-ga-rats

Powell's 1873 Las Vegas journey report counted a total of 240 individual Southern Paiute within the alliance lead by Chief Tecopa (Fowler 1971:104–105). Powell provides further clarification by stating that a number of Indians who acknowledge a common authority and encamp together is a "Tribe". Powell also adds that any collection of "tribes" that acknowledge allegiance to a head chief would be designated as a "nation" (Fowler 1971:50). Hence, all of the seven tribes with allegiance to Chief Tecopa were considered a nation.

Today, the terminology has changed, with the alliance or nation, now called a "tribe" and each of the contributing localities referred to as "districts." The entire alliance is now referred to as the Pahrump Tribe. The nomenclature was partly confused when anthropologist Isabel Kelly chose to combine the above Tecopa alliance with four other localities, (Las Vegas, Colville, Indian Spring, and Cottonwood Island) and then chose to call the entire group the "Las Vegas Tribe." Some ethnographers have then come to falsely associate the currently recognized Las Vegas Tribe with this larger conglomerate or to consider Pahrump Paiute as Las Vegas Paiute.

That the Pahrump and Las Vegas Southern Paiute are two distinct groups is further confirmed by a document produced by the Inter-Tribal Council of Nevada:

> Centered around Las Vegas, Red Rock, and Mt. Charleston were the Pegesits who lived as far east as present-day Hoover Dam. On the western edge of Nevada were the Pahrumpits. They lived in Pahrump Valley and on the western slopes of the Spring Mountains (Inter-tribal 1976:11).

Pahrump Paiute Tribe

The Pahrump Paiute Tribe, located in Pahrump, Nevada, is not a federally recognized tribe, but is recognized as an established tribal entity by the State of California and is informally recognized by federal land management agencies that operate within the Tribe's traditional territory. Over the years, Pahrump Paiute individuals have been intermittently recognized by the federal government. The Tribe currently consists of approximately 100 tribal members. The membership generally resides in the nearby Las Vegas, Pahrump, Charleston View, and Tecopa/Shoshone areas, although some tribal members live a considerable distance beyond the tribal territory. The tribe is led by a chairperson and is based in Pahrump, Nevada. While the Pahrump Paiute Tribe has no reservation, they do assert an ancestral territory. They are the primary tribe affiliated with the area in which the project is proposed. The tribe's primary foci are maintaining their unique cultural identity, protecting important cultural resources that are in harm's way of various federal, state and local projects, and attaining federal recognition. The tribe's cultural expertise resides within its membership.

Moapa Paiute Tribe

The Moapa Band of Paiute Indians, located in Moapa, Nevada, is a federally recognized tribe. It currently consists of approximately 300 members. Some tribal members are closely related to Pahrump tribal members or are from the Pahrump Valley and continue to bury some of the Moapa members that are related to the Pahrump Valley in the Chief Tecopa Cemetery (formerly known as the Pahrump Indian Cemetery). The tribe occupies a 71,954-acre reservation near Moapa, Nevada. A reservation of 2 million acres was originally established in 1874; however, two years later, the reservation was reduced to 1,000 acres. In the 1980s, the reservation was expanded by an additional 70,000 acres. The reservation is located along the lower flood plains of the Muddy River. The tribe governs per a constitution that was adopted in 1942. An elected tribal council presides over several tribal businesses (travel center, fireworks store, and a tribal farm) and various tribal departments and committees, including a cultural committee. The tribe has been impacted by surrounding development, such as the nearby coal-fired Reid Gardner Power Station. Tribal elders and cultural staff also assert that decades of bomb testing at Nellis Air Force Range immediately to the west and northwest of the reservation have contaminated their reservation and ancestral lands (Kinlichine 2012; http://www.moapapaiutes.com/about_us.htm).

Las Vegas Paiute Tribe

The Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony is a federally recognized tribe. It consists of approximately 71 members who occupy a 3,800-acre reservation generally referred to as "Snow Mountain" and located several miles north of Las Vegas. Pahrump Paiute and Las Vegas Paiute are closely related to one another and to some of the Moapa Tribe membership. Isabel Kelly identified both Pahrump and Las Vegas under the Las Vegas Paiute Tribe; however, both tribes have continuously maintained their distinct identities and function independently. The Las Vegas Tribe's

original reservation was a 10-acre plot of land located in downtown Las Vegas and deeded to the tribe in 1911 by a private ranch owner. The 10-acre plot is still part of the reservation. The tribe has a constitution adopted in 1970 and is governed by a tribal council. The tribe has several businesses, including an extensive golf resort, gas station, and two smoke shops. Recent issues that involve the tribe's concern are on-going desecration of tribal cultural sites, including graffiti of sacred sites in the Red Rock area, a popular tourist destination for visitors to Las Vegas. The Tribal staff cultural resources expertise resides within the Tribal Environmental Protection Office ((http://lvpaiutetribe.com; http://en.wikipedia.org/wiki/Las_Vegas_Tribe_of_Paiute_Indians_of_the_Las_Vegas_Indian_Colony).

Shoshone

The Shoshone people reside in a swath of land immediately north of, the Southern Paiute territory. Their western-most boundaries are in the Coso Mountains and on the eastern slope of the Inyo Mountains in California. The eastern end of their territories is in the areas of northwestern Utah and southern Idaho. The Shoshone in the western side of this swath of land are referred to as Western Shoshone.

Timbisha Shoshone Tribe

The Timbisha Shoshone Tribe, California, is a federally recognized tribe. It currently has approximately 306 tribal members and occupies a 7,914-acre reservation, comprised of several parcels in and around Death Valley National Park, including a 314-acre parcel near Furnace Creek, California. Some reservation parcels are located in Nevada, near Lida, Scotty's Junction, and Death Valley Junction. The Tribe also has several areas that are co-managed with the NPS or the BLM. The Tribe's main office is in Bishop, California. The Tribe was originally represented in the 1863 treaty of Ruby Valley. However, that treaty did not result in any specific representation for the Timbisha Shoshone, who fought for and eventually achieved federal recognition in 1983. However, the Tribe did not receive a land base until 2000 with the passage of the Timbisha Homeland Act. The Tribe holds general elections; it is led by a chairperson and holds monthly meetings. The Tribe's cultural resources programs are managed by a Tribal Historic Preservation Office (THPO). The Timbisha's ancestral territory abuts the Pahrump Paiute Tribe's ancestral territory in the vicinity of Ash Meadows, Eagle Mountain, and the Black Mountains. (Field Directory, 2004:156; http://www.timbisha.org/index.htm; Durham 2012).

Owens Valley Paiute

The Owens Valley Paiute are a distinct group of Paiute that reside in the Owens Valley and have the Owens Valley as an ancestral territory, including the valley's defining flanks, the eastern flanks of the Sierra Nevada, and the western flanks of the Inyo and White Mountains. The Mono Lake area provides the northern boundary of their territory. The Owens Valley Paiute are represented by five separate tribes. All of the tribes are members of the Owens Valley Indian Water Commission. Of the five tribes, two (Lone Pine and Big Pine) have some tribal members with cultural affiliation to the Timbisha Shoshone and Pahrump Paiute people that historically co-existed in the Ash Meadows area.

Lone Pine Paiute Shoshone Tribe
The Lone Pine Paiute Tribe of Lone Pine, California, is a federally recognized tribe. It currently has approximately 425 tribal members and occupies a 237-acre reservation near Lone Pine, California. The Tribe is governed by a general council and holds monthly meetings. Some Lone Pine Paiute Tribal members are of Timbisha Shoshone descent. Cultural resources affairs are provided by the tribal Environmental Protection Program. (Field Directory 2004:111; http://lppsr.org/).

Fort Independence Paiute Tribe
The Fort Independence Paiute Tribe is a federally recognized tribe. It consists of approximately 136 tribal members and occupies a 580-acre reservation near Independence, California. The Tribe has recently attained National Historic Preservation Act, Section 101(d)2 tribal historic preservation status. (Field Directory 2004: 94, http://www.fortindependence.com/native.aspx)

Big Pine Paiute Tribe
The Big Pine Paiute Tribe of the Owens Valley is a federally recognized tribe. It consists of approximately 403 tribal members and occupies a 279-acre reservation near Big Pine, California. The Tribe has a constitution and is governed by a Tribal Council and a General Council. The Tribal Council holds monthly meetings; the General Council meets quarterly. At least one Big Pine Paiute Tribe family shares a tribal affiliation with the Pahrump Paiute. The Big Pine Tribe's cultural resources program is maintained through a THPO (Field Directory, 2004:66; http://www.bigpinepaiute.org; Jim 2012).

Bishop Paiute Tribe
The Paiute-Shoshone Indians of the Bishop Community is a federally recognized tribe. It consists of approximately 1,040 tribal members and occupies an 875-acre reservation near Bishop, California. The tribe meets bi-monthly and is governed by the Bishop Indian Tribal Council. The Paiute-Shoshone Indians of the Bishop Community share a tribal affiliation with the Paiute-Shoshone. The Bishop Tribe's cultural resources program is maintained through a THPO. (Field Directory, 2004:69; http://www.bishoppaiutetribe.com/).

Utu Utu Gwaitu Paiute Tribe
The Utu Utu Gwaitu Paiute Tribe (formerly the Benton Paiute Tribe) is a federally recognized tribe. It consists of approximately 138 tribal members and occupies a 162-acre reservation near Benton, California. The tribe has a constitution and is governed by the Utu Utu Tribal council. The Tribal Council holds monthly meetings; the General Council meets annually. The Utu Utu Gwaitu Paiute shares a tribal affiliation with the Paiute. (Field Directory, 2004:63).

Evaluation of Ethnographic Resources: Three Ethnographic Landscapes

The National Park Service Brief 36 (NPS 2000a) provides the following definition of a cultural landscape and lists four types. A cultural landscape is:

> …a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes.
>
> An ethnographic landscape is defined as "a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary settlements, religious sacred sites, and massive geological structures. Small plant communities, animals, subsistence and ceremonial grounds are often components." Examples include a section of a river where a Native American culture lives, travels, and fishes; or an upland mountain area where tribal people hunt, gather, camp and travel extensively during part of the year.

Ethnographic landscapes are understood and documented by conducting ethnographic research that identifies the contributing elements or attributes of the landscape. Contributing elements can include both cultural and biological resources, climate and landforms, subsistence, religion, economy, and the built environment. Surrounding the HHSEGS project site, staff has identified three ethnographic landscapes, discussed below.

Southern Paiute Salt Song Landscape
This landscape is eligible for the CRHR under Criterion 1 at the regional level for its broad contributions to the unique historic events that shape Southern Paiute understanding of the landscape, its mapping through song and movement, and the conveyance of the deep oral tradition through the generations for the unborn, living, and deceased.

This landscape is also eligible for the CRHR under Criterion 3 at the regional level for its contributions to the production and retention of the salt songs, whose high artistic value would have been degraded without the landscape—songs sung during a ceremony that moves a group of living people and the deceased through a landscape are most aesthetic and culturally appropriate sung in the landscape, in contrast to being sung for a studio recording or transcribed into musical notation and then heard, read, or duplicated by others.

Pahrump Paiute Home Landscape
This landscape is eligible for the CRHR under Criterion 1 at the regional level for the broad contributions to the unique historic events that shape Pahrump understanding of their homeland and their ongoing traditions and history that have allowed them to survive, and, during particular periods of their existence, flourish in a place that many non-Pahrump would consider harsh, inhospitable, or vastly in need of improvements.

This landscape is also eligible for the CRHR under Criterion 2 at the regional level for its association with the life and times of Chief Tecopa, the first Pahrump Paiute chief who sustained, advocated for, and guided his people through the pressures of a rapidly

changing world brought on by the intrusions of other cultures. The transformational role and exemplary association of this leader with his homeland and his people endures into modern times, passing from generation to generation into the present.

Ma-hav Landscape
This landscape is eligible for the CRHR under Criterion 1 at the local level for its broad contributions to the unique historic events of the Pahrump Paiute Home Landscape. in that it provides a unique marginal, or fringe, cultural milieu that spanned the interaction of the first contacts between Pahrump Paiute and non-Pahrump Paiute foreigners, such as the Mexican traders; American explorers, trappers, and traders; the American and Mormon miners and homesteaders; and later American ranchers and businessmen who came to call the Pahrump Valley either a wayside curiosity or their new home (see **Cultural Resources Table 9**, below).

This landscape is also eligible for the CRHR under Criterion 4 at the local level of significance for its potential to yield ethnographic information important to the prehistory and history of the Ma-hav area and also for its potential to specifically yield prehistoric archaeological information from archaeological remains known to exist or potentially exist in the Ma-hav Landscape.

The Ma-hav Landscape contains burials and at least one known cemetery. Normally, cemeteries are not eligible for the NRHP. However, the burials and cemetery are considered as contributing features of the Ma-hav landscape and lend a sense of longevity to the landscape. Rather than render the landscape ineligible, this actually increases the qualifications for eligibility.

The Pahrump Paiute feel that their lifeways have been trodden upon, stolen, lost, forgotten, rejected, belittled, infringed upon, and otherwise dismissed. In the face of this treatment, Pahrump Paiute continue to practice as much of their traditional ways as is possible within the dominant society. They feel like it is still within their reach to maintain their cultural identities and ensuing obligations as traditional Pahrump Paiute while participating in the dominant society. The Pahrump Paiute see federal recognition and a tribal land base, including at a minimum, greater tribal involvement in land management planning processes, as critical steps to ensure their tribal longevity.

Integrity

Southern Paiute Salt Song Landscape
The Southern Paiute Salt Song Landscape has been visually and physically compromised by significant modern developments, such as the presence of numerous large cities, towns, military installations, energy generating facilities, mining infrastructure, and other infrastructure, such as transportation and transmission corridors. In addition, auditory and olfactory characteristics and nightscapes have been compromised. The Spring Mountains are surrounded on several sides with incompatible intrusions to traditional religious and cultural practices. To the east/southeast lies the sprawling Las Vegas metropolis. To the north lies Nellis Air Force Base and Nevada Test Site. And to the east/northeast lies the town of Pahrump. Across and through this terrain are several major highway corridors and transmission lines. However, in one

major area, lying to the south/southeast where the proposed project and its alternative site are proposed, the landscape is remarkably and relatively unmarred.

In addition, Southern Paiute traditional singers have an obligation to continue the singing tradition lest they void their obligations to the deceased and ultimately to themselves, their descendents yet to be born, and their very identity and continuance as a people. No amount of landscape alteration can prevent them from continuing this tradition. However, increased infrastructural intrusions increase the burden and challenges to traditional practitioners to continue traditions vital to their community and related heritage. They consider their landscape to remain aesthetically pleasing despite intrusions due to the beauty, balance, and sustenance by which they are provided a unique identity, handed down through generations and originally provided to them in a pact with their creator.

The Southern Paiute Salt Song Landscape maintains integrity of association, feeling, setting (from the perspective of the traditional practitioners), and location.

Pahrump Paiute Home Landscape

The Pahrump Paiute Home landscape has been compromised by the same modern developments, such as the sprawling town of Pahrump. Water used for agriculture has significantly lowered the water table, resulting in declines of associated plant communities and related animal habitat and population viability. Private property rights have restricted access to important hunting and gathering grounds. The tribe does not have a land base that would preserve intact their cultural traditions, except for which they would otherwise be able to take their cultural destiny into their own hands. However, sufficient land is in federal ownership, such as the U.S. Forest Service lands in the Spring Mountains, the U.S. Fish and Wildlife Ash Meadows Wildlife Area, and designated BLM wilderness areas in the Nopah and Kingston Mountain Ranges, as well as BLM front-country lands that encircle the Pahrump Valley, that allow the Pahrump Paiute some continued access to traditional hunting and gathering grounds. Because this landscape is intricately tied to Pahrump Paiute identity as a distinct people, no amount of environmental alteration of their lands would deter them from protecting and maintaining their landscape the best that they can. Indeed, one main reason for Pahrump Paiute application for federal recognition is to attain greater leverage in protecting what is their perceived birthright to exist in their homelands, including standing in issues related to the Native American Graves Protection and Repatriation Act.

The Pahrump Paiute Home Landscape maintains integrity of association, feeling, setting (from the perspective of the Pahrump Paiute), and location.

Ma-hav Landscape

The Ma-hav landscape has been primarily compromised by the establishment and workings of the Hidden Hills Ranch and perhaps, marginally, by the operations of the Front Site Gun Range located in the northeast portion of the landscape. However, these historic and recent alterations are minimal compared to other component landscapes that contribute to the Pahrump Paiute Home Landscape. Areas of the Ma-hav landscape are in BLM ownership and subject to federal management. One specific area

(Stump Springs) is protected as an Area of Critical Environmental Concern (ACEC) for its association with Pahrump Paiute cultural values. The Pahrump Paiute People affiliated with the Ma-hav landscape live as close to the landscape as is possible, given that the land is in private ownership by non-Pahrump Paiute people. The Ma-hav Landscape maintains integrity of association, feeling, setting (from the perspective of the Pahrump Paiute), and location.

Periods of Significance

Southern Paiute Salt Song Landscape
The period of significance for the Southern Paiute Salt Song Landscape spans from the time of primordial instruction, just after the great flood and Coyote's creation of the Southern Paiute, up to the present.

Pahrump Paiute Home Landscape
The period of significance for the Pahrump Paiute Home Landscape spans from the time of Coyote's creation of Southern Paiute up to the present. From an archaeological perspective, the earliest dates would liberally be sometime between 10,000 years B.C. and the ethnographic present. A conservative archaeological perspective would be from 600 years ago to the ethnographic present. A historically documented time period of significance would be from the time of Chief Tecopa's leadership (circa 1840s) to the present. It can be assumed that Chief Tecopa inherited his leadership from one of his male relatives, but the historical record does not provide sufficient information regarding Chief Tecopa's preceding lineage to support an earlier documentable date for this landscape. Upon Chief Tecopa's death, his leadership was passed on to his son, Tecopa Johnny.

Ma-hav Landscape
The period of significance for the Ma-hav Landscape is provided in the following timetable.

Cultural Resources Table 9
Ma-hav Landscape Chronology

Time	Specific Places, People, and Events
Beginning of Time	The area is flooded. Primordial animals abide on Mount Charleston to wait out the residing waters. Coyote releases first humans from a basket.
Time of Animal Instruction to First Humans	Coyote provides instruction to his adopted daughter concerning menses, childbirth, and becoming a woman at Ma-hav.
Period of Pahrump Paiute occupation	Pahrump Paiute occupy the Springs area as a part of a permanent or seasonal encampment and horticultural place.

Time	Specific Places, People, and Events
1776–1830	Pahrump Paiute hear of Spanish, Mexican, and early American traders (Escalante, Garcés, Armijo, Jedidiah Smith, Peg-Leg Smith) who travel, trade, and raid along some of the Paiute trade routes closer to the Colorado River.
1815	Chief Tecopa born at Manse Spring. He will become a leader of various tribes or “districts” that today collectively identify as the Pahrump Paiute.
1829–1848	Mexican traders move goods between New Mexico and California and engage in the Indian slave trade. Some travel the old Spanish Trail between Resting Springs and Mountain Springs.
1840s–1890?	John “Stomper” Pete, a Southern Paiute Medicine Man, occupies Stump Springs. There is also anecdotal information of a Southern Paiute family with the last name of Stump that occupied the Stump Springs in subsequent years.
1844	John C. Fremont travels between Resting Springs and Mountain Springs and overnights at or near Stump Springs. Fremont retaliates upon possible Pahrump Paiute for the killing of most of the Hernandez Party.
1849 –1875	Many emigrants, including gold miners, Mormons, and military personnel, travel through Stump and other nearby springs, en route to Utah or California. Early homesteaders begin to settle the various valleys by establishing homesteads on or near springs, including springs in Pahrump Valley.
1849–1930s	Several diseases are introduced to the Pahrump Paiutes as well as other Native American populations. Many young and old die. Alcohol is introduced to the Pahrump Paiute causing social disarray. There is a time of famine. This happens throughout the Pahrump Valley, including Ma-hav.
1860s	Miners pass through the area to begin harvesting timber in the Spring Mountains, to be used for the development of mining infrastructure. The first reported mill is established in the Spring Mountains in 1875 by the Brown brothers.

Time	Specific Places, People, and Events
1860–72	Charlie, a Pahrump Paiute man and the Tribal War Chief, establishes one of the first Indian Ranches in Pahrump Valley, the Ma-hanse (now named Manse Ranch). He is sometimes referred to as “Mormon Charlie” or “Ash Meadows Charlie.” Chief Tecopa also establishes a ranch at Bolling Mound Spring. John B. Yount is born in Oregon. Charlie is involved in the 1865 assault and robbery of gold prospector Charles Breyfogle at Stump Springs.
1872	Wagon roads connect Stump Springs, Mountain Springs, Charlie’s Ranch, and other Pahrump Valley Springs. One road runs through the Hidden Hills area. Other ranches become established by Indians and whites at some of the larger springs such as Ash Meadows, Pahrump, and Manse.
1873	Chief Tecopa is encouraged by the U.S. government to make his circular journey to convince his and neighboring tribes to move to the newly established Moapa Reservation. The Paiute and Shoshone from the Armagosa River refuse to go. Many Pahrump Paiute are enticed or force-marched to Moapa reservation. Some hid and remained; others escape and return.
1874–1915	Lee brothers move to area, and Phi Lee buys the Resting Spring Ranch. Phi marries Sally “Mopats,” a Paiute woman and has several children, including Dora, Robert, Robert “Bob,” Dick, Clara, Gus, Bert, and Cub. Phi and Sally have a seasonal camp at Ma-hav. “Bob” Lee resides at an area of Hidden Hills near Weeping Rock Springs and raises his son Robert (1910?). Cub Lee homesteads in Mesquite (Sandy) Valley. Bob Lee is at Hidden Hills as a small boy and sees two Indian-constructed fireplaces at Hidden Hills.
1877	Joseph Yount purchases Manse Ranch from the Jordan brothers.
1880	Queho is born.
1900?	Albert Howell, Pahrump Paiute and later informant to anthropologist Julian Steward, lives with his Pahrump Paiute wife Mary at Ma-hav where they maintain a small farm. The Howells have a daughter-in-law named Anna Tecopa. John Howell, the first black to live in the area, is a freed slave from North Carolina. John works in the mines and marries a Southern Paiute from Las Vegas. They have a son, Albert.

Time	Specific Places, People, and Events
1904	Chief Tecopa dies; the Chief's son, Tecopa Johnny, inherits his father's leadership role.
1905	Chief Tecopa's Cry ceremony held at either the Pahrump cemetery or Ma-hav or at both places.
1910s?	Dora Lee marries Gallant Brown, and they live at Ma-hav near Dora's brother, Bob Lee's place. Dora and Gallant have several children, Steve, Earnest, William, and Gallant Jr., who are raised in the Ma-hav area.
1900–1920	Many more ranchers and farmers move into the Pahrump Valley and begin to develop large crop lands, which require greater amounts of water. Many Pahrump Paiute provide the labor required for the flourishing ranches of the Valley, including Chief Tecopa's son Charlie, who is killed in 1911 by another ranch hand, Joe Lake, while both are working for the Manse Ranch. Pahrump Paiutes claim that Charlie Tecopa (Paiute) was shot by John Yount east of Manse Ranch, and John Smith (Paiute) was shot by John Yount and was buried where he was shot.
1911	Las Vegas Reservation established through a 10-acre land donation made by Helen Stewart.
1915	John Yount, son of Joseph Yount, sells his Trout Creek Property to Phi Lee, and he and his Pahrump Paiute wife Sally "Mopats," move to Ma-hav and rename the place Charleston View (not the Charleston View of today). John makes improvements.
1916	It is reported that the Yount Ranch (at Ma-hav) was irrigated by means of windmills that pumped from three shallow wells. Water was within 6 to 15 feet below surface.
1921	George Rose receives patent on 179 acres to the east of the Bob Lee homestead and north of the Yount Ranch.
1922	John Yount files fee patent and becomes owner of Yount Ranch at Ma-hav.

Time	Specific Places, People, and Events
1920–31	"Tank" Sharp (Libby Scott's son), whose family is from Mound Spring and Manse Ranch area is one-quarter Pahrump Paiute and a friend of John Yount. Tank operates a still and bootlegs alcohol from the hills around Yount Ranch. Joe Hudson, a non-Indian, killed Tank, and Oscar Bruce, a Pahrump Paiute from Mound Spring perhaps living near Bob Lee's place, retaliates by killing Joe Hudson. Other bootleggers operate out of the Ma-hav area.
1926	William Wilson receives patent for 160 acres immediately south of the Yount Ranch.
1920s	John Yount purchases Wilson and Rose's properties.
1932–33	Susie Yount, John Yount's first wife, dies and a Cry Ceremony is held at Yount Ranch. John Yount allows the ceremony. Hundreds of Indians attend ceremony and camp out at the Yount Ranch near the orchard.
1930s?	Bob Bruce and Susie Howell die and are buried at the Ma-hav cemetery.
1930s–Present	Archaeologists accumulate evidence of southern Great basin/Mojave desert occupations that reach back to 12,000 years B.P. When inland seas covered some of the area. There are numerous archaeological sites throughout the Mesquite dunes including at Hidden Hills Ranch.
1935–1940	John Yount has a second common-law wife named Sally Belle, who is white. John dies. Belle attempts to sell property to Roland Wiley and becomes embroiled in inheritance problems with Younts. Eventually Wiley buys out heirs. Before Wiley arrives at property, Sally Belle illegally sells property to Louise Kellog. Wiley and Kellogg have a legal battle and Wiley wins. Wiley evicts Kellog.

Time	Specific Places, People, and Events
1940–1990	Wiley buys additional property. Wiley evicts numerous Pahrump Paiute families from his properties. Including Dora Brown. Dora establishes Dora's Place at Browns Spring In 1941. Wiley holdings become the largest private property holdings in Pahrump Valley. Wiley establishes the Hidden Hills Ranch (dude ranch), has guests living in teepees and digging for Indian artifacts, constructs an airplane runway, attempts to grow crops, taps springs and messes up water flow, builds Cathedral Canyon tourist attraction. Wiley hires Al Carpenter as the Hidden Hills caretaker.
1940s–Present	Pahrump Paiute families, Lees, Browns, Weeds, Howells, Bruces, and Toms and their descendents continue to live near Hidden Hills after being forced out. These are some of the families that are tribal members of the federally unrecognized Pahrump Paiute Tribe. The Ma-hav Pahrump Paiute Cemetery continues to be used and maintained by Pahrump Paiute.
1951	The mushroom cloud from the detonation of an atomic bomb can be seen from the Hidden Hills ranch.
1975	Queho is buried at Hidden Hills Ranch.
1987–Present	Pahrump Tribe files for federal recognition with the U.S. Department of Interior. The filing was posted in the Federal Register on Dec 10, 1987. The petition for federal recognition remains pending.
1989	Roland Wiley dies, and Wiley estate is established
2006	Hidden Hills Caretaker, Al Carpenter dies. Hidden Hills Ranch is vandalized and looted.
2006	Stump Spring Area of Critical Environmental Concern is established by the BLM for protection of the cultural resources located at and near the spring.
2011	Bright Source proposes Hidden Hills Solar Energy Generating Systems on Wiley Property and has lease option with Wiley Estate.

A historic time period that can be documented in the literature, including oral histories collected for staff's ethnographic study, starts with John "Stomper" Pete's occupation of Stump Springs, circa 1840–1890, up to the present.

All CRHR-Eligible Ethnographic Resources Subject To Potential Project Impacts

Staff has identified three ethnographic landscapes that the HHSEGS project would impact, the Southern Paiute Salt Song Landscape, the Pahrump Paiute Home Landscape, and the Ma-hav Landscape. The contributing features, integrity, and periods of significance for these resources are discussed above.

Quotes from Recent Tribal Interviews Concerning Perceived HHSEGS Impacts

> The project impact is huge. That does not mean that a traditional ceremony can be held and then the land and spirits will understand once and for all. Confusion will increase and multiply over time and that will accumulate in the burden that singers and other people will take on year after year.
>
> Bomb testing in the area has contaminated a lot of the desert around Moapa. We are at risk if we go gather plants. There is also the local coal plant that causes environmental problems. So we go to Pahrump Valley (and other areas where Southern Paiute are from) to gather because we think that it is a cleaner environment.
>
> Area is also important for Fox Trail songs. Which is a song that follows the fox, who travels from spring to spring. Putting a high tech facility in the midst of the ceremonial song trail is an invasion of Indian religion. The project area is a religious area. There is not only what the project mirrors and towers will do to the salt song prayers and people but also there will be long term impacts from more people and activity over the course of the project. What actual impacts would be to the Salt Song Trail and if those impacts can be mitigated are something that only certain practitioners can answer. Those answers can only be provided by medicine men or song practitioners. It is suggested that the ethnographer talk with Larry Eddy (Chemehuevi Elder) or Richard Arnold (Pahrump Paiute Singer).
>
> There is a real concern about environmental justice and how Southern Paiute people are being disproportionately and adversely impacted by the proposed project. When our cultural landscape is impacted significantly, such as will happen with the proposed solar project, lifeways are changed forever and [that] does not allow our people to complete their journey to the afterlife as described in our Salt Songs.
>
> An impact to the song trails would impact all Southern Paiute that need or rely on the Salt Songs trails and related ceremonies.

ASSESSMENT OF PROJECT IMPACTS TO CRHR-ELIGIBLE ETHNOGRAPHIC RESOURCES AND RECOMMENDED MITIGATION

Staff has assessed the impacts of the proposed HHSEGS project on the three ethnographic landscapes as significant, but it is anticipated that none of the recommended mitigation measures would reduce impacts to a less than significant

level. However, the project's impacts to the Ma-hav landscape and the Pahrump Paiute Home landscape would be somewhat reduced with the project's implementation of **CUL-10**. However, because the Salt Song Landscape corridor, where traditional singers visualize the landscape as they sing their deceased ancestors to the other side, will be physically blocked should the project be constructed, and because this corridor blockage would create spiritual, emotional, and physical imbalance among the living in not being assured that their deceased relatives have been transported to the afterlife, and would raise doubts for the living as to their own spiritual passage upon death, Staff's recommendation that the Salt Song Landscape is CRHR-eligible is based on the evidence of continuous ancestral use, the continued investment of tribal lives in the use of this landscape, and its integrity. Energy Commission staff cannot recommend any mitigation that would ameliorate project impacts to the Salt Song Landscape.

The construction of the proposed project would cause a substantial adverse change in the significance of the three ethnographic landscapes. The presence of the heliostat fields and the 750 foot tall solar power towers would be a stark visual intrusion that would profoundly and irreparably degrade the ability of the landscapes to convey historical significance under CRHR Criterion 1. In particular, the mass of the looming towers, in combination with the operational glare from the solar receiver steam generators atop each one, would compromise the setting, feeling, and association aspects of the resources' integrity, aspects critical to the resource's ability to convey its associative values under Criterion 1. Subsequent to the construction of the facility, one would no longer be able to experience the sense of the landscape as it was during its period of significance.

Salt Song Landscape

Direct Impacts

The Salt Song Landscape and associated practices require a specific landscape, and that landscape, a linear corridor, totally encompasses the proposed project area. The cultural practices associated with this landscape have endured for at least a millennium and are ancient enough that most Southern Paiute do not know of its specific historical origins except to say that the practices, and places where the practices are conducted, were provided to Southern Paiute at the time of creation. The project is proposed to be placed in the midst of this corridor. Siting the project in its proposed location would result in a physical impact to the Salt Song Landscape trail and its contributing features, in that the project footprint and infrastructure would blemish, mar, and otherwise damage, destroy, and alter the trail corridor. In the course of project construction some natural waterways would be removed, damaged, or altered. New water flow patterns, with newly introduced water sources, would be created. The project would also damage, remove, and otherwise destroy plants and animals that are contributing features to the landscape in the vicinity of the trail corridor. Unprecedented and continuous human activity would occur in a place otherwise considered to be comparatively tranquil.

Many of the impacts during construction would endure for the operational life of the project. The washing of heliostat mirrors and establishment of project roads would cause further alteration to the natural course of ground and surface water flow. Dew would accumulate in differential amounts depending on project extent of infrastructure.

Alteration to water accumulation and flow would change surviving plant characteristics. Contributing feature plants and animals would be removed and or fenced out from the project footprint, subject to harm up to and including death. The heliostat mirrors would not only cause alteration of the water flow and plant and animal life, but traditional cultural and religious practitioners believe that the heliostats would also diminish the power of the songs and add confusion to the songs and souls on their journey to the afterlife, given the large number of heliostats, approximately 170,000, that would be utilized in Solar Plant 1 and Solar Plant 2.

Indirect Impacts

Construction would also have indirect impacts to the deceased that travel the trail, to the traditional singers that guide the deceased along the trail, and to the surviving relatives. Funeral ceremonies have occurred adjacent to the proposed project site in the past and are likely to occur in the future. A year after burial, Salt Song Singers in conjunction with grieving relatives, undertake the Salt Song Ceremony, which occurs in various places within the project boundaries and in adjacent areas. The project would become a physical barrier to those who travel the Salt Song Trail. In addition, the construction of the project would irreparably damage and alter, through physical, visual, and auditory impacts, the ability of the Salt Song Singers to fulfill their spiritual obligations to the deceased to move them from their places of death through the landscape and on to the afterlife.

As the uncertainty of Salt Song Singers to fulfill their obligations is increased, so also is there a correlating increased impact to grieving families of the deceased. Grieving families would be uncertain if their deceased have been properly ushered to the place of afterlife. Additionally, although the Salt Song Trail is a Southern Paiute institution, the segment that runs through, across, and within the Pahrump Valley is within Pahrump Paiute ancestral territory and, therefore, is under their watch. Should this segment of the trail be impacted, it would further adversely affect the Pahrump Paiute in that they would be perceived by other Southern Paiute to have had a role in allowing the impact to occur. There are indirect cause and effect links between impacts to ethnographic landscapes and impacts to people whose lifeways and related sense of cultural well-being rely upon and ensue from such landscapes.

Mitigation

The direct, indirect, and cumulative adverse impacts of the proposed project on the Salt Song Landscape are significant and unavoidable if the project is constructed as designed and in the proposed location. Given the extended period of both the proposed project's operation (a minimum of at least 30 years) and the physical presence of the proposed facilities, including the heliostats and power towers, the effect of the project's presence on the landscape must be considered permanent. Staff is unaware of any suite of mitigation measures that would reduce the loss of a substantial portion of the Salt Song Landscape's integrity and spiritual context, particularly one that provides the means by which the Southern Paiute deceased travel from their places of birth and death to an afterlife. The applicant has provided no information or analysis on this or any of the other ethnographic landscapes, and has recommended no mitigation to date to reduce the project's impacts on these significant resources.

Although it is not possible to avoid or substantially reduce the direct adverse impacts this project, as proposed, would cause to this resource, there may be alternatives that would allow the project to proceed in some fashion, while still offering some protection to the resource and its associative values. This could include selecting a much reduced footprint, changing the proposed infrastructure to a technology that does not rely on solar power towers, or mitigating for the loss of plants and animals that are otherwise not considered or protected, because they are not among those recognized as endangered, in the conditions of certification recommended in the **BIOLOGICAL RESOURCES** section of the HHSEGS **FSA**, but that are significant to the Pahrump Paiute and integral to their traditional and spiritual practices and beliefs. It is likely, however, that construction of the proposed project in any configuration, at the proposed location, would result in the complete disruption of the existing ecosystem and habitat within the facility footprint, conditions that would have to be maintained for the life of the project. Appropriate rehabilitation of the site would need to be revisited at the time of closure; however, return to the drainages; plants, animals, supportive ecosystem, and topography that existed prior to construction is not reasonably feasible.

Staff has consulted with the Southern Paiute to explore the possibility of mitigation measures that would at least partially mitigate the loss of this landscape's ability to convey its associative values and to compensate for the impacts to those who pass away, those responsible for facilitating the passage of death, and those who grieve during a time of transition. There is not another resource that can replace the Salt Song Landscape. By Southern Paiute reckoning, the creator provided a specific set of instructions in relation to a particular landscape and the transference of knowledge from the creator to the Southern Paiute concerning matters of life and death is non-negotiable. There are no rules by which tribal religious leaders can modify, delete, or add to the religious prescriptions provided them in a solemn pact with the creator. To do otherwise is to invite chaos, particularly as the rules and practices at hand are those pertaining to relations between the living and the deceased. No conditions of certification to address impacts to this resource are recommended at this time.

Pahrump Paiute Home Landscape

Direct and Indirect Impacts
The project site is wholly within the boundaries of the Pahrump Paiute Home Landscape. The Pahrump Paiute Home Landscape overlaps with and is a contributor to the Salt Song Landscape.

In addition, a number of the indirect impacts identified for the Salt Song Landscape and all of the indirect impacts identified for the Ma-hav Landscape also apply to the Pahrump Paiute Home Landscape. However, because of relative scale, the HHSEGS project would have a smaller visual impact on the Pahrump Paiute Home Landscape.

Mitigation
Although impacts to the Pahrump Paiute Home Landscape might be mitigable if it were a stand-alone resource, the direct, indirect, and cumulative impacts of the proposed project on the Pahrump Paiute Home Landscape are only mitigable to less than significant by mitigating for the Ma-hav Landscape to a level of less than significant.

CUL-10 would function at a broader level as mitigation for the proposed project's direct visual effects to the Pahrump Paiute Home Landscape.

Ma-hav Landscape

Direct Impacts
The project site is wholly within the boundaries of the Ma-hav Landscape. The Ma- hav landscape overlaps with and is a contributor to the Pahrump Paiute Home Landscape and the Salt Song Landscape. Therefore, some of the direct impacts identified for the other two landscapes would also apply to the Ma-hav landscape.

Indirect Impacts
Water usage would increase during the period of construction. It is possible that increased water drawdown from the local aquifer would potentially impact the adjacent spring areas of the Ma-hav landscape. Reduced water in the spring areas could degrade plant and animal habitats. Many of the impacted plant and animal habitats and populations are contributors to the Ma-hav Landscape. Animals that no longer can frequent the project site and that have a capability to self-relocate would move into adjacent areas of the Ma-hav Landscape, further increasing competition for habitat and other life-sustaining resources that also may be in decline due to overall water decreases.

Some of the Pahrump Paiute horticultural areas in the Ma-hav Landscape can still be identified. However, as spring areas are potentially reduced and vegetation types are also potentially reduced, it is possible that soils would erode quicker and it is even more possible that horticultural areas would erode away or be covered over with soil types not conducive to horticultural fertility. The spring areas of the Ma-hav Landscape, adjacent to the project site, have been and continue to be locales for tribal ceremony, including burial in and near the Tribal cemetery. It is likely that burial ceremonies would occur in the future, despite the fact that the burial area and related access is on or near private land and that the cemetery has been vandalized in the past. A large solar field with large solar power towers, adjacent and within view of the ceremonial area of the Ma-hav Landscape would visually and auditorily intrude on the areas where Pahrump Paiute are accustomed to conducting very solemn ceremonies.

Mitigation
There may be alternatives that could allow the project to proceed in some fashion, while still offering some protection to the resource and its associative values. This could include selecting a much reduced footprint, changing the proposed infrastructure to a technology that does not rely on solar power towers, or mitigating for the loss of plants and animals that are otherwise not considered or protected in the conditions of certification recommended in the Biological Resources section of the HHSEGS Final Staff Assessment (**FSA**), but that are significant to Pahrump Paiute and integral to their traditional and spiritual practices and beliefs. Conditions of certification that would monitor possible water level decreases and related impacts to spring reliant vegetation are recommended in the both the Biological Resources Condition of Certification **BIO-24** and Water Supply Conditions of Certification **WS-2** and **WS-6** of the FSA.

Visual Resources Condition of Certification **VIS-6** would require an Interpretive Area be placed somewhere in the Pahrump Valley in Inyo County to compensate for the visual intrusion that the project would impose on scenic values by highlighting the natural and cultural visual resources in the project vicinity, including the Wilderness Areas, National Recreation Areas, named peaks and the Old Spanish Trail-Mormon Road. This way-side Interpretive Area would also direct visitors to places where more in depth interpretive resources about the Ma-hav landscape could be experienced. Cultural Resources Condition of Certification **CUL-10** has been added to expand the interpretive scope to include information on the traditional Pahrump Paiute land management, usage, and history of the Ma-hav Landscape. One (or several) selected extant Interpretive Facility (different from the "Interpretive Area" envisioned in **VIS-6**) would be provided with a traditional Pahrump Paiute horticultural garden, that to the extent feasible would be watered by a natural spring and that would include a sampling of traditional plants to demonstrate, to the general public, the ethno-botanical uses and knowledge base of the traditional tribal peoples who were adapted to the desert environment over at least a millennia. Development of the ethnographic elements of a (or several) interpretive facility would be implemented in direct consultation with the Pahrump Paiute Tribe, including all stages of planning, construction, and management, to the extent that the Pahrump Paiute Tribe is comfortable in participating.

ANALYSIS OF IMPACTS TO HISTORIC-PERIOD BUILT ENVIRONMENT RESOURCES

Historic-Period Background

The border region of southeastern California and southern Nevada has long been a travel corridor in the American West, with a climate and terrain that has made travel and settlement in the area challenging. The history of this travel can still be seen across the Pahrump Valley (see **CULTURAL RESOURCES Figures 7 and 8**).

Old Spanish Trail-Mormon Road
The Old Spanish Trail (OST) has gone by many names, including the Camino de California, Camino de Santa Fe, and Camino de Nuevo Mexico, depending on one's destination (NPS 2000b:5). Various groups of people used the OST in historic times, including explorers, trappers, prospectors, and immigrants; however, the primary use appears to have been for trade. The OST was primarily a horse and burro trail, but in places it follows trails used by the Native Americans, which would have originally been footpaths. Later the Mormons traveled parts of the OST primarily by wagon; therefore, traces in the western half of the OST that joined up with the Mormon Road were transformed into a wagon road beginning in 1847 (NPS 2000b: 5).

Various portions of the OST were explored by different groups. The exploration of the OST in historic times began in the Spanish Period as their interest in the exploration and settlement of the present-day American southwest intensified.

Spanish Period
By the middle of the sixteenth century, Spain had emerged as the premier naval and military power in Western Europe with colonies in North and South America and a trading network throughout the Pacific. The Spanish colonization of California was

achieved through a program of military-civilian-religious conquests. Soldiers secured areas for settlement by suppressing Indian and foreign resistance and establishing fortified structures called presidios. Civilians established pueblos (e.g., towns) and Spanish priests led the religious conquest effort by establishing missions and converting the Indians.

Don Francisco Vazquez de Coronado led the first excursion by European peoples through the southwest in 1540 (Steiner 1999:1). As part of this expedition Gárcía López de Cárdenas, a lieutenant of Coronado, first ventured up the Colorado River, but only came as far as the south side of the Grand Canyon (CRTR 2011b:24; Steiner 1999:4–5). While Coronado failed to find the riches he originally set out for, his expedition spurred Spanish settlement in the American Southwest.

In the late 1770s, Antonio Maria de Bucareli, the Viceroy of New Spain, "legitimized Spain's claim to Alta California by making it the new *Provincia de California* with a provisional capitol at the Presidio at Monterey." (Steiner 1999:6). Bucareli's plan was to use the missions to colonize the new province. Despite the abundance of rich farmland, the missions that had been established were not geared towards sustaining large populations. As such, supplies were imported from the Provinces of New Mexico and Sonora to the east. Small supply ships and the lack of reliable overland supply routes initially hampered growth in California. Bucareli realized that it was necessary to establish a direct supply route between New Mexico and California in order for California to flourish (Steiner 1999:8). The OST would eventually be that route.

Spanish priests, or padres, played a key role in the establishment of the OST. They began the colonization of the American southwest in the late sixteenth century, long before Bucareli's decree, motivated by their mission to convert the native peoples to Christianity and extend the influence of the Catholic Church. The first church in New Mexico was built in 1598, and the padres were followed by settlers, who colonized land suitable for agricultural activities. The provincial capital of Santa Fe was founded in 1610, and by the eighteenth century, this area was considered politically stable and productive. The Spanish were less successful at colonizing what is now northern Arizona and were only able to extend their sphere of influence to the areas south of the Gila River and along the Santa Cruz River south of present-day Tucson. The Spanish explored the coast of present-day California in the mid-sixteenth century, but it was not until the incursion of Russian and British explorers into what are now Alaska, British Colombia, Washington, and Oregon in the 1750s that serious attempts were made by the Spanish to colonize Alta California (Steiner 1999:4–6).

The Spanish continued to explore the Southwest region through the seventeenth century. Father Eusebio Francisco Kino followed Coronado's route, travelling north to southern Arizona. He explored the courses of the San Pedro and Santa Cruz rivers north to the Gila River and was the first European to the see the ruins of Casa Grande in 1694. He also explored what is now the United States-Mexico border from south of Nogales to Yuma, Arizona (Steiner 1999:9–10).

Father Francisco Garcés picked up where Father Kino left off when the Jesuits were expelled from New Spain in 1767. Father Garcés was the resident missionary at the

Mission San Xavier del Bac, near present day Tucson, Arizona. Father Garcés made five important entradas, or explorations, during his tenure there. His first two entradas, in 1768 and 1770, brought him as far north as the Gila River. His third entrada, in 1771, brought him again to the Gila River where he retraced Father Kino's route to Yuma then south along the Colorado River to the Sea of Cortez. On each of these explorations, Father Garcés ministered to the local peoples and established friendly relations. He also accompanied Captain Juan Bautista de Anza on his expedition from the Presidio at Tubac, Arizona to the Presidio of Monterey in 1774, and went as far as the Mission San Gabriel. This expedition proved that an overland route was possible between Sonora, Mexico, and Monterey, California. While waiting for de Anza to return at the Yuma Crossing, Father Garcés continued to explore along the banks of the Colorado River and into the Mojave Desert, which provided more valuable information on the region (Steiner 1999:10–12).

Father Garcés's most important entrada was in 1776, when he and two Native American guides set out north towards the Colorado River. They had reached the Mojave villages by February 28, where they were shown items by the natives that had come from the coast. Father Garcés convinced several of the Mojave natives to guide his party across the desert. They set off on March 4 and crossed the Mojave Desert via Indian trade routes, surviving only because their guides knew where to find water. Presumably they stopped at Paiute Spring, Rock Spring, Marl Spring, and Soda Spring, which would later become critical stops along the extreme southern alternative route of the OST. Once they reached the sink of the Mojave River they followed it to Cajon Canyon and descended into the Los Angeles basin, reaching Mission San Gabriel and Los Angeles on March 26, 1776 (Steiner 1999:12–14).

Initially Father Garcés intended to continue on to San Luis Obispo; however, he was denied troops and supplies and was unable to continue his journey. Instead he explored other parts of California up to Tulare Lake in the San Joaquin Valley, crossed over the Tehachapi Pass, and retraced his route to the Mojave Villages and Colorado River in May. Recognizing the significance of the Native American desert trails and the impact they would have on the Spanish goal of establishing an overland route from Santa Fe to the coast, Father Garcés continued his journey east to try to reach Santa Fe. He and his guides began near present-day Needles and travelled to Kingman, Arizona, Peach Springs, detoured to the Grand Canyon, and to the Hopi pueblo of Old Oraibi, part of the present-day Hopi Reservation. Spanish priests had not previously been welcomed there, and Father Garcés's experience was no different. He did, however, meet a member of the Zuñi tribe there who confirmed that the New Mexican missionaries had made it as far west as Old Oraibi. This confirmed for Father Garcés that an overland route from Santa Fe to the coast was possible. However, he did not continue to Zuñi Mission, and others received credit for discovering this route (Steiner 1999:14–16).

Father Garcés returned to the Mission La Purisima Conception at the Yuma Crossing on the Colorado River and continued working among the Quechan people. In July 1781, the Quechan revolted against the Spanish and killed all of the men, including Father Garcés (Steiner 1999:16). Some of the routes that Father Garcés traveled would later become part of the western portion of the OST (NPS 2000b:6).

In the 1760s and '70s, there were three official Spanish-sanctioned expeditions into Ute country (southwestern Colorado and southeastern Utah); the first two were led by Juan Maria Antonio Rivera and the third by Francisco Atanasio Dominguez and Father Sivestre Velez de Escalante (NPS 2000b:6).

In 1822, Mexico achieved independence from Spain, and California became an outpost of the Mexican Republic.

Mexican Period

The first Europeans known to have entered present-day Nevada were fur trappers: As early as the 1820s, British and American mountain men, fur traders, and entrepreneurs were venturing into California. In 1825-26 Antoine Robidoux built Fort Uncompahgre (a.k.a. Fort Robidoux), near present-day Delta, Colorado, which acted as a centralized trading area. Trappers and traders traveling to and from the Fort used routes that would later become part of the OST. Peter Skene Ogden of the Hudson's Bay Company and Jedidiah Strong Smith of the Rocky Mountain Fur Company. In 1826, both men crossed into Mexican Territory looking for the San Buenaventura River and beavers. Smith and his party explored an impressive amount of Nevada and were the first non-Indians to cross the Great Basin. Trade connections between Santa Fe and Los Angeles developed quickly along what came to be called the Old Spanish Trail. Jedediah Smith first traversed the route in 1826, traveling down the Virgin River to the Colorado River and then on to California. Although west of the lower Colorado River, Smith's party traveled a similar route as Garcés, which would later be named the Mojave trail or road.

Antoine Robidoux, Peter Skene Ogden, Jedediah Strong Smith, Antonio Armijo, William Wolfskill, and George C. Yount explored and documented the OST route throughout the Mexican Period in the Mohave Desert Region. Early mountain men such as Jedediah Smith, in addition to trapping and trading, also dabbled in contract map-making for the United States. Wolfskill and Yount first established the Northern Route of the OST in 1831 (NPS 2000b:7).

In 1829–1830, Mexican trader Antonio Armijo successfully established a route from New Mexico to Los Angeles. He traded New Mexican goods for horses and mules. His accounts reportedly took him south of present day Las Vegas on his way to the Amargosa River. It is likely that he passed somewhat south of the project area, but perhaps through the project alternative area near present day Sandy Valley. Armijo came down the Virgin River to the Colorado River below the Grand Canyon and then journeyed across the desert reaches to the Mojave River. He followed the Mojave River to the Cajon Pass and then on to Los Angeles. Armijo crossed the Colorado River at the Crossing of the Fathers, which was discovered by Fathers Dominguez and Escalante in 1776 (NPS 2000b:7). After Armijo paved the way, annual trading expeditions between New Mexico and Los Angeles became routine. During this time a number of routes were developed. Many travelers avoided the Colorado River below the Grand Canyon. After descending out of the Utah Mountains by way of the Virgin River, travelers cut across the desert, establishing a direct route to the Mojave River.

The primary use of these routes was for commerce and immigration. A less well-documented activity during this period was slaving. Beginning in the Spanish Period,

Paiutes were often captured by Ute and Navajo raiders and sold as slaves in New Mexico or California.

American Period
By the 1840s, there was a steady migration of American settlers into California. Unable to stop the incursion, the Mexican government granted citizenship to all who would pledge to follow Mexican law. Many of these foreigners received land grants on which they established grazing and commercial operations. One example of this is the New Helvetia Rancho granted to John Sutter in 1839 in what is now the City of Sacramento.

War broke out between the United States and Mexico in May 1846, with some decisive battles occurring in California. The American victory over Mexico was formalized in February 1848 with the signing of the Treaty of Guadalupe Hidalgo, and Mexico ceded all its land holdings above the Gila and Rio Grande rivers to the United States. California was admitted as the thirty-first state in the Union on September 9, 1850

In 1848, Brigham Young, leader of the Church of Latter Day Saints, or Mormons, in Utah, had established a church policy of settlement, which included a series of settlements for several hundred miles both north and south of Salt Lake City and a port on the Pacific coast. This policy would aid immigration and ensure control over the Great Basin (Reeder 1966:216). By 1849, Young had established plans for the State of Deseret, encompassing the Great Basin, the Colorado River drainage, and most of present-day southern California, but, when California became a state in 1850, the land east of California was divided into the two territories of New Mexico and Utah, which would ultimately thwart Young's plans for a Mormon port in southern California. Young continued to seek a route to a port and plan for the settlement of a colony in present day southern California, and so the Mormon Road was established. In early 1851, Mormon settlers left Salt Lake City bound for California. They arrived in southern California in June of that year, where they purchased the San Bernardino Rancho (Reeder 1966:205). "The main route to this burgeoning Mormon Center became known as the "Mormon Corridor," or the "Mormon Road" (BLM 2001:5). A one-mile-square town site was laid out, which essentially marked the California end of the Mormon Road. San Bernardino County was established in 1853. The population of this new settlement grew steadily in the early 1850s and in 1856, it was said that it had grown to 3,000 people (Reeder 1966). Brigham Young and other Mormon leaders built what later became known as the "Mormon Fort" (a.k.a., Las Vegas Mission) in 1855, located in present-day Las Vegas, Nevada. The Fort was strategically located half-way between the settlements in southern Utah and the San Bernardino Mission in southern California along the Mormon Road. This part of the Mormon Road overlapped with the OST between New Mexico and California. The Mormon settlements were officially abandoned in February 1857, under the direction of Brigham Young, although a few settlers remained to tend the fields and continue to operate way stations.

Agriculture

The Pahrump Valley has a number of artesian wells conducive to farming. Some of the earliest homesteads were established by Pahrump Paiute, with the assistance of some Mormon families that stayed on in the Ash Meadows, Pahrump, and Las Vegas areas. Southern Paiute were horticulturalists prior to European contact. As non-Indian

populations increased, cattle ranching quickly became a mainstay after Europeans settled in the valley in the mid-1860s. In addition to cattle, several crops were grown, including alfalfa, cotton, sugar beets, and wine grapes.

In the 1860s-70s Charlie, a Pahrump Paiute man and the Tribal War Chief, establishes one of the first Indian Ranches in Pahrump Valley, the Ma-hanse (now named Manse Ranch). In 1877 Joseph Yount purchased Manse Ranch. In 1902, one of Joseph Yount's sons, John B. Yount, acquired the land that would eventually become the Hidden Hills Ranch, another of the early ranches, which was located approximately 10 miles south of the Manse Ranch. In the late 1930s Roland Wiley buys the Yount Ranch from Sally Belle, John Yount's common-law wife. Wiley's holdings grow over subsequent decades as he buys surrounding property. In 1940 the Hidden Hills Ranch comprised 2,474 acres (see HHSEGS 2011a: table 5.3-3 for location). Wiley establishes the Hidden Hills Ranch as a dude ranch where guest live in teepees and dig for artifacts. Agricultural activities include a small orchard that was established near the complex of buildings that included the family home.

During the first two decades of the 20th Century large farming and ranching enterprises, such as the Yount Ranch, were established and flourishing throughout the northern portion of Pahrump Valley. Many of these ranches relied on the valley's abundant (but dwindling) water sources and Paiute laborers.

Evaluation of CRHR Eligibility of Individual Historic-Period/Built-Environment Resources

Old Spanish Trail-Mormon Road

The Old Spanish Trail Recognition Act of 2002 (Act) designated the Old Spanish Trail (OST) as a National Historic Trail. The Act defines the Old Spanish National Historic Trail as "an approximately 2,700 mile long trail extending from Santa Fe, New Mexico, to Los Angeles, California, that served as a major trade route between 1829 and 1848…, including the Armijo Route, Northern Route, North Branch, and Mojave Road" (16 USC 1241) and refers to maps in the National Park Service's "Old Spanish Trail National Historic Trail Feasibility Study," (Feasibility Study) dated July, 2001 (NPS 2000b). The OST, as documented by the Act, is located to the south and just outside of the HHSEGS project site, but within the HHSEGS built-environment PAA. While the OST and Mormon Road diverge in Nevada, with the Mormon Road turning north and the OST continuing east, in California they are recorded as occupying the same general area. The Mormon Road linked the settlements in southern Utah to the San Bernardino Mission in southern California. The Mormons used the OST in the project area as an alternate to the northern Emigrant Trail (BLM 2001:5).

In 2001, the Nevada Office of Historic Preservation listed segments of the OST in Nevada on the NRHP calling it the Old Spanish Trail-Mormon Road Historic District (OST-MR District). The OST-MR District was found significant under NRHP Criteria A and D in the areas of transportation, exploration/settlement, and archaeology/historical, with a period of significance of 1844-1857. The OST-MR District includes approximately 10 miles of the OST-MR, just a small portion of the 2,700-mile-long trail. The study that resulted in the nomination was restricted to the historic route in Nevada, as it was

mapped by John C. Fremont. The OST-MR District is defined by the extant wagon traces (6–7-foot-wide) plus a 20-foot-wide corridor on either side, described as the "pitch zone" where travelers discarded trash and goods along the way. Archaeological finds have been made in the OST-MR District (NPS 2001:11). The OST-MR District includes three segments, all in Nevada, with a total of five contributing sites and four non-contributing sites. The Stump Spring segment, the nearest to the California-Nevada border, is described as beginning on the two-track road near Stump Spring and travels generally southeast towards the border.

In 2010-2011 the Old Spanish Trail association (OSTA), their consultant(s), volunteers and stakeholders performed field and historic research in six states (CA, UT, NV, AZ, NM and CO) in order to prepare a Multiple Properties Documentation Form (MPDF) and nominations to the National Register of Historic Places (NRHP) for six segments of the Old Spanish National Historical Trail. The MPDF and NRHP nominations were prepared by the OSTA, their consultant(s), volunteers and stakeholders under contract to the New Mexico State Historic Preservation Office. The project is being funded by the Bureau of Land Management (BLM), National Park Service (NPS) and NM Historic Preservation Division (HPD). The MPDF and the NRHP nominations were submitted as Drafts for review by the NM HPD, BLM, and the NPS in August 2011. After these documents are finalized each of the six nominations will be sent to their respective SHPOs for review. At this time there is no schedule for the completion of these documents; however, it is known that the draft NRHP nomination for the Emigrant Pass segment recommends this segment as eligible at the State Level for listing on the NRHP under Criteria A and D.

The OST is a large and complicated resource that has not been fully documented through survey. "It [the OST] was never a single, clearly defined route, but was a composite of traces that separated and converged according to the dictates of terrain and potable water (Steiner 1999: ix)." It is logical that there would be a single, narrow trail or road through those areas of difficult terrain, such as mountain passes; however, in open, flat lands such as the project area, it is unlikely that travelers would travel the same perfectly straight path between springs. Rather, circumstances such as availability of water, forage (e.g., food for the animals), terrain and climate, the presence of friendly tribes and the absence of hostile tribes, could take them on a more southerly or northerly route. "Over time, travelers sought easier, shorter routes, and numerous variant trails developed along the Old Spanish Trail Northern Route corridor (NPS 2001:13)."

While many have endeavored to trace a single route for the OST, or even a main route with some alternates, it seems more appropriate to call the resource a corridor, as it is referred to by the Feasibility Study. The Northern Route of the OST, as documented in the Feasibility Study, is located in the HHSEGS built-environment PAA (16 USC 1241:15):

> [The] combined North Route [of the OST-MRNC] followed Virgin River and Dry Lake Valleys southwest to Las Vegas (Big Springs) and Blue Diamond (Cottonwood) Spring, crossing the Spring Mountains at Mountain Springs. The trail entered California by way of the Pahrump Valley.

Because the resource is best described as a corridor and because the Northern Route is located in the HHSEGS built-environment PAA, the OST and the Mormon Road are discussed together here and are referred to as the Old Spanish Trail-Mormon Road Northern Corridor (OST-MRNC).

The project site lies within the OST-MRNC. Documented and previously determined NRHP-eligible portions of the OST-MR are located within close proximity to the project site, and traces on the project site have not been adequately studied to determine whether or not they are contributors to the OST-MRNC. Known elements and features within the OST-MRNC to date include the Northern Route[29] of the Old Spanish Trail National Historic Trail (as designated by the Old Spanish Trail Recognition Act of 2002), Track 4 (CH2MHill DR125), Steiner's Apx Trace (OSTA 2012), S-24 (CH2MHill DR125), S-26 (CH2MHill DR125), Track 5 (CH2MHill DR125), Central trace (OSTA 2012), and Northern trace (OSTA 2012). While not all of the traces on the project site have been ground-truthed, it is clear that the project site lies squarely among all of these tracks and traces and, therefore, within the OST-MRNC, a regionally and nationally significant travel and trade corridor that aided the exploration and shaped the development of the southwestern United States.

Staff has concluded that there is a high probability that these tracks and traces, although not formally included in the Act, would be CRHR eligible under Criterion 1 as part of the Old Spanish Trail National Historic Trail.

The OSTA has documented approximately seven miles of the mule trace defining the OST from Emigrant Pass east to the community of Charleston View. Based on the locations of the springs just over the border in Nevada, OSTA has hypothesized that branches of the route are located on the HHSEGS project site. Other traces or segments of the OST-MR have been proposed, based on travel accounts, from just south of present-day Pahrump, to the north of the project site, and to the south of the project site within the built-environment PAA (see **CULTURAL RESOURCES Figure 8**). Many individuals and organizations have studied, searched for, and documented portions of the trail in California near and on the project site. As such, many possible traces have been proposed as "The" Old Spanish Trail. Based on the various studies, traces in the vicinity of the project area could cross the California-Nevada border as far north as Pahrump, Nevada; as far south as Charleston View, California (a.k.a. Calvada Springs), south of the project site; and at locations in between, which could traverse the project site.

The applicant's consultant identified two traces of the OST-MR in the HHSEGS built-environment PAA, which were given temporary site numbers, Track 4 and S-24. It is also possible, although not identified by the applicant, that S-25, S-26, Track 1, and/or Track 5 are associated with the OST-MR. In particular S-25 and Track 4 appear to line up with the study done by the OSTA. These resources are discussed below.

[29] Note: This overlaps with Track 4 (CH2MHill DR125) and Steiner's Apx Trace (OSTA 2012).

S-24 (Historic Road Segment)
Temporary Site S-24 was recorded and evaluated by the applicant's consultant. This resource consists of a historic road segment connecting the old Nevada State Route 16 to the Tecopa Pass Road. Historically it connected either Hidden Hills Ranch Spring and/or Browns Spring to the OST-MR just 0.5 mile south of the project site. It was measured at approximately 8,250 feet in length and is approximately 20 feet wide. The segment of this road located within the built-environment PAA was noted as being graded in the modern era. Some historic and modern debris was observed along this segment, including one flat-top, steel Coors can; a green glass Coke bottle; and an Owens-Illinois maker's mark dating to 1944. One segment of the road, which is located within Charleston View in an area of desert pavement, was described as ungraded and in fair condition. It is bounded by two modern roads. This segment is 10 feet wide and appears to have two tracks that are approximately 2 inches deeper than the surrounding desert pavement. The segment is short, measuring less than 20 feet and is bound by two modern roads. This road bed has no remaining desert pavement. A large pit approximately six feet in diameter is located next to this small segment and appears modern.

S-24 is depicted on the 1910 USGS 30-minute Ivanpah map and the 1956 USGS 15-minute Horse Thief Springs quadrangle map. This road also appears to be the road discussed in archival sources that led into and out of the Hidden Hills Ranch in the 1930s. Its construction consists of a shallow grade in the natural landform. The 1910 Ivanpah map shows that S-24 crosses another road, which runs through Stump Springs. S-24 then turns southwest, approximately 0.5 mile south of the HHSEGS project area.

The applicant's consultant states that the segment of S-24 within the HHSEGS built-environment PAA no longer retains sufficient integrity to be eligible as a contributing element to the overall OST-MR. Staff agrees that S-24 would not be eligible under NRHP Criterion A (equivalent to CRHR Criterion 1) due to the alterations that have occurred during maintenance, which included being graded with modern equipment. However, staff disagrees with the applicant's conclusion with regards to NRHP Criterion D (equivalent to CRHR Criterion 4). The history of the OST-MR is incomplete; therefore, any traces and tracks that are discovered are potentially eligible under Criterion D (and CRHR Criterion 4) for data potential. Despite the fact that some segments have been maintained or upgraded, they still retain integrity of location, feeling, and association which can add to the historical knowledge of the route(s) of the OST-MR. The applicant's consultants confirmed this: "The current graded road appears to be situated on the remnants of an historical wagon road…. (Lawson and Spaulding, 2012, S-24 Historic Road Segment DPR 523L)." Also, based on the width of the modern, graded part of S-24 (approximately 20 feet) versus the width of the ungraded part of S-24 (approximately 10 feet), subsurface artifacts associated with the road may be present on either side of the ungraded segment, in the "pitch zone." Staff recommends that S-24 is potentially eligible as a feature or element of the OST.

S-25
Temporary Site S-25 is a road that connects the Hidden Hills Ranch to Sandy Valley. The segment recorded within the project site measures 4,025 feet in length and is 20

feet wide. Its construction consists of a shallow grade in the natural landform. The applicant notes that the road does not appear on the 1910, 1912, and 1942 USGS Ivanpah 30-minute quadrangle maps, but does appear on the 1956 15-minute Horse Thief Springs USGS quadrangle map. As such the applicant has suggested that a construction date range of 1942 to 1956 is appropriate.

The road, in its modern form, was primarily used by Roland Wiley to access his Hidden Hills Ranch from the Arrowhead Highway between Las Vegas and Los Angeles. It connects the ranch to Sandy Valley. It is said that Wiley regularly graded the road to maintain his access. It was an alternate route to the pass at Mountain Springs prior to the construction of Nevada Highway 160. The applicant's consultant states that the road could have been considered eligible for the NRHP and CRHR as part of the Hidden Hills Ranch because of its association with Wiley. However, as the Hidden Hills Ranch is no longer extant, there is no longer that association for the road, so the road has therefore lost integrity as an element or feature of the Hidden Hills Ranch. Staff also agrees that on its own the road is not individually eligible for either the NRHP or the CRHR. However, evidence suggests that portions of this road are associated with the OST. As is the case with S-24, the fact that some portions have been maintained or upgraded does not change the fact that it still retains integrity of location, feeling, and association which can add to the historical knowledge of the route(s) of the OST-MR. As such it is a potential historical resource under CEQA.

S-26
This recorded site is a single, ephemeral trail or footpath that measures approximately 35 to 40 cm wide. The width and location of the trail led the applicant's consultant to the conclusion that it is a prehistoric trail possibly connecting nearby Hidden Hills Ranch Spring and/or Browns Spring to the northeast with a village site to the southwest. Additional evidence suggests that this is also a possible segment of the OST-MR. Staff has recommended that S-24 would be eligible under NRHP Criterion A (equivalent to CRHR Criterion 1) and under Criterion D (and CRHR Criterion 4) for data potential. The history of the OST-MR is incomplete; therefore, any traces and tracks that are discovered are potentially eligible with those traces showing a high degree of integrity even more valuable. This trace appears to have retained integrity of location, feeling, and association which can add to the historical knowledge of the route(s) of the OST-MR. Because it has not been significantly altered there is a higher potential for the discovery of subsurface artifacts associated with the road may be present in the "pitch zone."

Track 1
This is a narrow road paralleling the California-Nevada border within the HHSEGS built-environment PAA. It is approximately 2 miles long with a southern terminus at S-24. There is evidence that it may be associated with the OST and later early surveys of the California-Nevada border. Staff agrees that Track 1 would not be eligible under NRHP Criterion A (equivalent to CRHR Criterion 1) due to the alterations that have occurred during maintenance, which included being graded with modern equipment. However, the history of the OST-MR is incomplete; therefore, any traces and tracks that are discovered are potentially eligible under Criterion D (and CRHR Criterion 4) for data potential. Despite the fact that some segments have been maintained or upgraded, they

still retain integrity of location, feeling, and association which can add to the historical knowledge of the route(s) of the OST-MR. Staff recommends that Track 1 is potentially eligible as a feature or element of the OST.

Track 4
Track 4 has been identified as a segment of the OST-MR as documented by the NPS in 2001. The applicant's consultant initially discerned it as a single route during remote imagery analysis; however, two track portions were observed along portions of the route. It is an approximately 5.5 miles long, and 6 foot wide portion of the OST-MR starting at Stump Spring and trending southwest. It passes south of the project site, but within the HHSEGS built-environment PAA. It merges with S-24 and then can be followed west out of the valley. Artifacts found by the applicant's consultant along this segment include a hand-soldered can with a crimp seam top, a mule shoe, a crushed soldered can, a soldered-seamed sanitary can, and a large metal ring, likely from a bridle or harness. The applicant's consultant dated the can prior to 1883. A small scatter of aqua glass was also found and one basal fragment bore a pontil scar, dating the glass to pre-1860. Some modern trash was also observed including a wire hanger, a modern aluminum beer can, and a crushed sanitary can.

The history of the OST-MR is incomplete; therefore, any traces and tracks that are discovered are potentially eligible with those traces showing a high degree of integrity even more valuable. This trace appears to have retained integrity of location, feeling, and association which can add to the historical knowledge of the route(s) of the OST-MR. Because it has not been significantly altered there is a higher potential for the discovery of subsurface artifacts associated with the road may be present in the "pitch zone." Staff recommends that Track 4 is potentially eligible as a feature or element of the OST.

Track 5
Track 5 is a trail of unknown age that runs from Browns Springs in the east and near the western margin of the Pahrump Valley bolson on the west. It is outside of the project site, but within the HHSEGS built-environment PAA. There is evidence that it could be a trace of the OST. The history of the OST-MR is incomplete; therefore, any traces and tracks that are discovered are potentially eligible with those traces showing a high degree of integrity even more valuable. This trace appears to have retained integrity of location, feeling, and association which can add to the historical knowledge of the route(s) of the OST-MR. Because it has not been significantly altered there is a higher potential for the discovery of subsurface artifacts associated with the road may be present in the "pitch zone." Staff recommends that Track 4 is potentially eligible as a feature or element of the OST.

Assessment of Project Impacts to Historic-Period/Built-Environment CRHR-Eligible Resources and Recommended Mitigation

The project site lies within the OST-MR Northern Corridor. Documented and previously determined eligible portions of the OST are located within close proximity to the project site and traces on the project site and in the larger Pahrump Valley have not been adequately studied. Known elements/features within the OST-MR Northern Corridor to

date include the Northern Route of the Old Spanish Trail National Historic Trail as designated by the Old Spanish Trail Recognition Act of 2002, Track 4 (CH2MHill, 2012), Steiners Apx Trace (OSTA 2012), S-24 (CH2MHill, 2012), S-26 (CH2MHill, 2012), Track 5 (CH2MHill, 2012), Central trace (OSTA 2012), and Northern trace (OSTA 2012). While not all of the traces on the project site have been ground truthed, it is clear that the project site lies squarely among all of these tracks/traces and, therefore, within the OST-MR Northern Corridor, a regionally and nationally significant travel/trade corridor that aided the exploration and shaped the development of the southwestern United States.

The information from the above sources and the complex character of trail segments recorded by both the applicant's consultant and the OSTA, has led staff to conclude that, within the built-environment PAA and the wider Pahrump Valley, this resource is not represented by a single route, but as a corridor of converging and intermingled tracks and traces. The applicant's cultural resources consultant, CH2MHill, acknowledged the scale and complexity of the resource in their research design for the Historic Trails and Roads Technical Study. "For the sake of historical realism, it is assumed that there is no "one" road on the surface, and that the OST-MR is a braided or anastomosing network of tracks… (CH2MHill, DR125)." The project site is located within this corridor, with traces running throughout the project site.

Although not formally included in the Act, staff has concluded that there is a high probability that these tracks/traces would be eligible as part of the Old Spanish Trail National Historic Trail and eligible for the NRHP and CRHR. As such, the Corridor is a potential historical resource for the purposes of CEQA and potential impacts resulting from the proposed project must be evaluated. The construction of the proposed project would cause a substantial adverse change in the significance of the OST-MR Northern Corridor by erasing traces/trails on site and visually impacting traces/tracks off site, which could jeopardize the integrity of the OST-MR segment of the Old Spanish Trail National Historic Trail in the Pahrump Valley.

Additionally, the proposed project is within the viewshed of the NRHP-listed Old Spanish Trail/Mormon Road Historic District (District). The District was found eligible for the NRHP under Criteria A and D. KOP 2 in the **VISUAL RESOURCES** section of the **FSA** clearly shows that the power towers would be visible from the Stump Springs area. At a minimum the Stump Spring Segment, as described in the NRHP nomination form for the District, would be impacted based on the visual simulation at KOP 2. The proposed project would degrade three of the aspects of integrity that contribute to the District's significance; setting, feeling, and association.

While modern development in the Charleston View area may have disturbed some OST-MRNC tracks and traces in the HHSEGS built-environment PAA and has caused some visual intrusion with the construction of low-rise buildings, the overall setting of the Pahrump Valley has been well preserved with long stretches of uninterrupted natural landscape. The area is relatively flat and consists of scrub vegetation. This vast, relatively flat landscape is a major character-defining feature of the setting of the OST. When travelers came over the Spring Mountains and viewed the Pahrump Valley they knew they had come to one of the most difficult parts of their journey; between the

various springs in the Spring Mountains and Resting Spring west of Emigrant Pass there was no water, no respite from the hot, dry desert. Modern development has been sparse and the visibility of that development is minimal from the project site, as discussed in the **VISUAL RESOURCES** section of the FSA. Conversely, the HHSEGS proposed project would be visible for miles, creating the most significant visual intrusion into the valley to date. Based on the visual simulations and analysis of the visual impacts from the Key Observation Points (KOPs), the proposed project would be visible for at least 30 miles away as can be seen in **Figure 26** of the **VISUAL RESOURCES** section of the **FSA**. (Figure DR37-1 in the AFC demonstrates locations and areas that would have a view of the project.)

The integrity of the setting, feeling, and association of the tracks and traces outside of the HHSEGS project site would thus be significantly impacted by the project, which is within the viewshed of the NRHP-listed OST-MR District in Nevada, discussed above. KOP 2 in the **VISUAL RESOURCES** section of the **FSA** clearly shows that the power towers would be visible from the Stump Springs area. At a minimum the Stump Springs segment of the OST-MR District, as described in the NRHP nomination form, would be impacted, based on the visual simulation at KOP 2. The HHSEGS project would significantly degrade three of the aspects of integrity that contribute to the OST-MR District's significance—setting, feeling, and association.

As discussed above, staff considers the OST-MRNC a historical resource for the purposes of CEQA, and therefore potential impacts resulting from the HHSEGS project must be evaluated. The project would significantly impact the OST-MRNC by erasing potential tracks and traces on-site. Any OST-MRNC tracks and traces on the HHSEGS project site would be destroyed—directly, physically impacted by the project's construction. Destruction of the tracks and traces, and the resulting loss of integrity, is irreversible. Staff has concluded that this impact on the informational values of the OST-MRNC is significant and must be mitigated.

Staff has also concluded that the installation of the proposed power towers and heliostats would result in a significant and unavoidable direct, perceptual impact to the OST-MRNC. The installation of this large number of heliostats and 750plus-foot towers would substantially alter the vast, open landscape that is a character-defining feature of this historical resource. The visual quality of this section of the OST-MR would be permanently damaged by the project's presence, resulting in a substantial adverse change in the significance of a historical resource and a significant and unmitigable impact. This impact cannot be avoided or reduced if the project is constructed as designed and in the proposed location. Given the extended period of both the HHSEGS proposed project's operation (a minimum of at least 30 years) and the physical presence of the proposed project facilities, the impact of the project on the resource must be considered permanent. Staff is unaware of any suite of mitigation measures that would fully mitigate the impacts of the proposed project and reduce the impacts to a less than significant level. The historical significance of the OST-MR in the Pahrump Valley is largely tied to its view of the vast, unobstructed, flat expanse of desert landscape, which would be impeded by any type of screening that might be proposed to attempt to block views of the project, especially the power towers. Eliminating project

elements along the project site boundary would not lessen the visual impact, as the existing views are unobstructed for several miles.

The applicant has proposed no mitigation measures to reduce significant impacts to built-environment resources as they do not believe that significant impacts would occur. As noted above, staff is unaware of any action, short of project relocation or denial that would directly fully mitigate the significant direct impacts that the proposed project would have on the OST-MRNC. As an alternative, staff finds mitigation, identified in Conditions of Certification **CUL-9**, **CUL-10,** and **VIS-6**, to be a means of compensating, in large part, for the permanent loss of the resource's visual and informational values. **CUL-9** addresses both of the HHSEGS project's significant direct impacts: the physical impact on the potential OST-MRNC tracks and traces that may be located on the project site; and the visual impact on the setting of the OST-MRNC. **CUL-10** also addresses the project's significant direct impacts as well as the visual impact on the setting of the OST-MRNC by disseminating the information gathered in **CUL-9** to other cultural resource professionals and the public, so that the history of this significant resource is not lost. First, **CUL-9** would require the HHSEGS project owner, before the start of construction, to fund research by the OSTA to confirm potential OST-MRNC tracks and traces that are located on the project site and to fully record them. Second, **CUL-9** would require the HHSEGS project owner, during construction, to fund research by a qualified historian to gather information and verify existing data specific to the location, history, condition, and significance of the OST-MRNC, as an individually CRHR-eligible resource and an element of the Old Spanish Trail National Historic Trail and/or a possible contributor to the NRHP-listed Old Spanish Trail Historic District. The information resulting from **CUL-9** would be necessary to completing the Interpretive Program recommended in **CUL-10**.

However, even with full implementation of Conditions of Certification **CUL-9, CUL-10, and VIS-6**, the project's impact to the OST-MRNC would remain significant and unmitigable.

MULTI-RESOURCE MITIGATION FOR THE DEGRADATION OF FOUR HISTORICAL RESOURCES

The construction and operation of the proposed project would result in direct physical and visual degradation and cumulative degradation to four historical resources including archaeological, ethnographic, and built-environment landscapes in Pahrump Valley, and may result in indirect physical degradation to them as well. For the analytic details of each of these effects on each respective resource type, please see the *Assessment of Project Impacts to CRHR-Eligible Archaeological Resources and Recommended Mitigation, Analysis of Impacts to Ethnographic Resources,* and *Assessment of Project Impacts to Historic-Period/Built-Environment CRHR-Eligible Resources and Recommended Mitigation* subsections of the present section of this FSA. "CEQA established a duty for public agencies to avoid or minimize environmental damage where feasible." (Cal. Code Regs., tit. 14, § 15021(a))

Staff has modified the original interpretive center concept, the development of which was begun in **CUL-10** of the SSA and conceptually completed subsequent to the publication of the SSA, and offers a related concept that would appear to be consistent

with the regulatory intent of mitigation under CEQA, while still meeting the basic objectives for the mitigation of the proposed project's effects on the multiple subject historical resources in Pahrump Valley. CEQA requires mitigation proposed for projects under consideration to be feasible measures which have the potential to minimize any significant adverse effects (Cal. Code Regs., tit. 14, § 15126.4), where "feasible" is defined as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (Cal. Code Regs., tit. 14, § 15364). In addition to being feasible, mitigation measures must also be "roughly proportional" to the significant effects that a proposed project may have on the environment (Cal. Code Regs., tit. 14, § 15364, subd. (a)(4)(B)).

The mitigation that staff recommends for the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, the Pahrump Paiute Home Landscape, the Ma-hav Landscape, and the Old Spanish Trail-Mormon Road Northern Corridor focuses on the public interpretation of the resources, largely through extant interpretive facilities in and near Pahrump Valley. While the interpretation of the subject resources would be more effective closer to the remnants of the landscapes that the proposed project would damage, the use of extant interpretive facilities further afield would not entirely compromise the delivery of the interpretive mitigation objectives identified for those resources, and the use of the basic infrastructure and the staff of the extant facilities would somewhat reduce mitigation costs. **CUL-10** would parse out the different interpretive mitigation objectives to one or more extant interpretive facilities in the vicinity and thus accomplish the interpretive goals of resource mitigation. Under this multiple facility approach, **CUL-10** would require the applicant to fund the delivery of each of the parsed interpretive mitigation objectives in each interpretive facility that would agree to deliver particular interpretive mitigation objectives. The delivery mode groups and the delivery mode venues cited below serve as an example scenario for the implementation of **CUL-10**. Staff consultation with the venues is ongoing and to date has been informal and preliminary. **CUL-10** has been drafted with the flexibility in mind to accommodate the outcomes of more formal venue consultations.

Example CUL-10 Implementation Scenario

1. The construction and maintenance of an interpretive kiosk within one hundred yards of the facility site that presents broad overviews of the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, the Pahrump Paiute Home Landscape, the Ma-hav Landscape, and the Old Spanish Trail-Mormon Road Northern Corridor along with information on the nearby interpretive facilities where the public would be able to access more in-depth interpretive programs for each resource. The presentation of the overviews and the delivery of information on nearby interpretive facilities could occur in conjunction with the implementation of **VIS-6**, as long as the implementation of that condition occurred within the specified distance from the facility site.

2. The delivery of passive museum displays and multi-media presentations, *and* hands-on, interactive exhibits the purpose of which is to facilitate the interpretation of the cultural landscapes and corridor. The specific interpretive

modes would include the development and delivery of separate displays, presentations, *and* exhibits, of museum quality, about

- the genesis, paleoecology, and archaeology of the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape,
- the seasonal subsistence cycle of the Pahrump Paiute Tribe, and
- the Old Spanish Trail-Mormon Road Northern Corridor.

The Shoshone Museum in Shoshone, California could facilitate the delivery of the above interpretive modes. The Shoshone Museum, an extant venue approximately 37 miles west of the proposed facility site, is a gateway community into Death Valley National Park and one of the National Park Service's suggested routes into the park. The traffic through the community, primarily from Las Vegas, to Death Valley provides the museum with a relatively high local volume of visitors. The implementation of this subgroup of delivery modes would most likely require the construction of an expansion onto the museum to house museum displays and interactive exhibits, and to deliver multi-media presentations, in addition to the construction of the actual displays and exhibits, and the production of the multi-media presentations.

3. The delivery of ethnographic reconstructions the purpose of which is to facilitate the interpretation of the Native American use of the local landscape in the prehistoric and ethnographic periods. The specific interpretive modes would include the

   - Native American installation and maintenance of an aboriginal horticultural garden for public interpretation, and
   - the conjunctive Native American installation and maintenance of an exploratory reconstructed village consisting of a few replica dwellings that allow public access to walk in, about, and through the village and garden area. Providing direct visitor access to a real garden featuring native garden varietals, such as pumpkins, beans, and corn, set near the interpretive materials provided per item 2, above, will greatly enhance the visitor education experience beyond what passive interpretive materials would solely provide.

Staff believes that were the alternate level of mitigation set out here (**CUL-10**) and **CUL-11** to be emplaced for the proposed project, one would not be able to argue that the direct physical and visual, the indirect, and the cumulative effects of the proposed project would be reduced to a less than significant level for the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, the Ma-hav Landscape, and the Pahrump Paiute Home Landscape. Staff believes that the direct physical effects of the proposed project on the Old Spanish Trail-Mormon Road Northern Corridor would also not be reduced to a less than significant level with the implementation of **CUL-9**, and the multiple facility approach. The implementation of **CUL-9** and the multiple facility approach would still not reduce the direct visual and cumulative effects of the proposed

project on the Old Spanish Trail-Mormon Road Northern Corridor to a less than significant level. Staff would retain the belief that these particular effects would be unmitigable.

ALL CRHR-ELIGIBLE RESOURCES SUBJECT TO POTENTIAL PROJECT IMPACTS

Cultural Resources Table 11 lists, by resource type, the CRHR-eligible cultural resources potentially impacted by the project and the recommended conditions of certification that would mitigate, to the extent possible, the HHSEGS project's significant impacts.

CULTURAL RESOURCES Table 11
CRHR-Eligible Cultural Resources Potentially Subject to Impacts from the Proposed Project and Recommended Mitigation

Resource Type, Designation	**Resource Description** [type, size, age,]	**CRHR-Eligibility**	**Recommended Conditions to Mitigate Impacts**
Prehistoric Archaeological Resources			
Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape	Terminal Pleistocene to Holocene proposed landscape thematically focused on collection and processing of mesquite and other plant resources unique to the mesquite woodland-coppice dune association. Landscape elements include the archaeological deposits, the mesquite population, ancillary floral and faunal populations, and, the structural features of the faults, dunes, and aquifer discharge locales	Assumed eligible for listing in the CRHR	1. To re-create for the public a sense of the experience of this landscape, under **CUL-10**, through interpretive and preservation programs delivered at extant regional interpretive facilities, as partial compensation for the HHSEGS project's damage to this resource. 2. To obtain, under **CUL-11**, a comprehensive picture of a significant aboriginal landscape through the documentation of the landscape's composition and character over time; and
Buried archaeological resources that may be discovered during construction monitoring or identified during survey of potential soil borrow and disposal sites	Unknown	To be determined by CPM	**CUL-1** through **CUL-8**
Historical Archaeological Resources	None		

Resource Type, Designation	Resource Description [type, size, age,]	CRHR-Eligibility	Recommended Conditions to Mitigate Impacts
Ethnographic Resources	Three ethnographic landscapes: 1. Salt Song Landscape 2. Pahrump Paiute Home Landscape 3. Ma-hav Landscape	Recommended eligible for listing in the CRHR	**CUL-10** objectives for the recommended interpretive and preservation programs, as partial compensation to the public and to Native Americans for the HHSEGS project's damage to these resources, are: 1. To interpret the historic and cultural uses of the Ma-hav Landscape, its surroundings and relation to the Pahrump Paiute Home landscape, and those landscapes' linked cultural resources such as identified in the above mentioned archaeological landscape and portions of the Old Spanish Trail-Mormon Road Northern Corridor; 2. To interpret the nature and ecology of the mesquite springs area and surrounding habitats; and 3. To educate the public and otherwise promote wise and conservative water and energy use in desert environs.

Resource Type, Designation	Resource Description [type, size, age,]	CRHR-Eligibility	Recommended Conditions to Mitigate Impacts
Built-Environment Resources			
The Old Spanish Trail-Mormon Road Northern Corridor (see **Cultural Resources Figure 7**)	Historic trail and road.	Portions of the OST are designated as a National Historic Trail. NRHP and CRHR-eligible.[30]	**CUL-9** objectives are: 1. To complete research by the OSTA to confirm potential OST-MRNC tracks and traces that are located on the project site and to fully record them; 2. To complete research by a qualified historian to document the location, history, condition, and significance of the OST-MRNC, as an individually CRHR-eligible resource and an element of the Old Spanish Trail National Historic Trail and/or as a possible contributor to the NRHP-listed Old Spanish Trail Historic District; 3. To nominate the OST-MRNC to the CRHR and the NRHP; and 3. To provide newly compiled information on the OST-MRNC to the public as recommended in **CUL-10**, as partial compensation to the public for the HHSEGS project's damage to this resource.

[30] An NRHP nomination is currently being reviewed by the Nevada BLM.

CUMULATIVE IMPACTS AND MITIGATION

GEOGRAPHIC SCOPE OF ANALYSIS

Table 1, Hidden Hills Master List of Cumulative Projects, and the **Cumulative Projects Figure 1**, included in the Cumulative Impacts Assessment **EXECUTIVE SUMMARY** of the HHSEGS FSA, identify the development projects that may contribute to cumulative impacts on cultural resources in combination with the proposed HHSEGS project. These include St. Therese Mission, Pahrump Airport, Element Solar, Amargosa Farm, PSI Amargosa PV Solar Project, Silver State South Solar Project, Stateline Solar Farm, Sandy Valley, Searchlight Wind Energy, Southern Owens Valley Solar Ranch, Lathrop Wells Solar, Table Mountain, and South Solar Ridge. These projects are located within a geographic area that has been identified by staff as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects would be required to undergo their own independent environmental review under CEQA.

Cumulative impacts could occur if impacts resulting from the implementation of the proposed HHSEGS project combine with the impacts of other local or regional projects on the same or similar resources. Cumulative impacts would occur locally if the HHSEGS impacts combined with the impacts of projects located within the area identified in **Cumulative Projects Figure 2**. Cumulative impacts could also occur as a result of the development of some of the many proposed and licensed solar and wind development projects that have been, or are anticipated to be, constructed in the foreseeable future. This geographic scope is appropriate because it is likely that cultural resources similar to those in the HHSEGS PAA are present throughout the Pahrump Valley and eastern Mojave Desert.

PROJECT CUMULATIVE IMPACTS AND MITIGATION

Archaeological Resources

Staff projects the cumulative effects of the proposed project, and of past and reasonably foreseeable probable future projects on the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape (Pahrump Metapatch Landscape) to be significant, and staff concludes that the proposed project's contribution to those effects are cumulatively considerable. The baseline cumulative effects of the development of the Charleston View community, the construction and use of the Front Sight Firearms Training Institute , and improvements to both the Tecopa Road and Nevada State Route 160 have been to degrade the setting, feeling, and association aspects of integrity related to the landscape's ability to convey its significance under Criterion 1, and the location and design aspects of integrity with respect to its analogous ability under Criterion 4. Staff believes, however, that the degree of degradation to date, relative to either criterion, has not been significant. Broad, important portions of the landscape remain intact. The construction and operation of the proposed project would represent the first significant, direct visual intrusion on the Pahrump Metapatch Landscape and has the potential to foster other indirect effects. The presence of the proposed project and the modifications made to the ancillary regional infrastructure to accommodate it would likely enhance development opportunities for other solar generation projects in

the future, which would, in turn, dependent on the particular technology suites, compound the significant effects of the proposed project on the subject landscape. The effects of the proposed project on the Pahrump Metapatch Landscape are cumulatively considerable, because they would be the first significant effects that would be inflicted on the landscape, the significance of which is amplified by the project's location adjacent to it, the effects would be extremely difficult to mitigate to a less than significant level, and they would likely degrade the visual integrity of the landscape to a point that would make the effects that subsequent projects would have seem less significant than they otherwise would.

The mitigation of what staff concludes here are the cumulatively considerable effects of the proposed project to a less than significant level is problematic. In theory, one may be able to devise a suite of mitigation measures that could be reasonably argued to accomplish this goal, but any such suite would face difficult tests of feasibility. As discussed above (see Multi-resource Mitigation for the Degradation of Multiple Landscapes), such a suite of mitigation measures would have to include the delivery of interpretive programs amidst or adjacent to this or the other cultural landscapes that this project would damage. As any such mitigation suite has been found to be infeasible for the present application, the project's cumulatively considerable effects to the Pahrump Metapatch Landscape are found by staff to be unmitigable. The implementation of **CUL-10**, and **CUL-11**, though not reducing the project's effects to less than significant, would nonetheless provide for their substantive reduction.

Ethnographic Resources

Were the project to be implemented as proposed three ethnographic landscapes would be cumulatively impacted in similar ways as described in the Archaeological Resources section above. The project site and vicinity are a known area for important Native American religious and traditional resource uses.

The Pahrump Paiute Home Landscape is much larger than the project footprint. The project would be visible from less than one tenth of the total Pahrump Paiute Home Landscape. However, all of the projects identified in the "Cumulative Impacts" subsection of this analysis are within the Pahrump Paiute Home Landscape. In addition, because of its size, there are many more reasonably foreseeable projects than those listed that would adversely impact the Pahrump Paiute Home Landscape.

Two other solar projects, Element Solar and Sandy Valley, are proposed either near or immediately adjacent to the Ma-hav Landscape. Element Solar would be of a similar scale to the Hidden Hills project, but would not incorporate solar power tower infrastructure into its designs. The proposed Sandy Valley project would occupy a much larger site footprint and would probably use solar power tower technology and infrastructure. Therefore, cumulative impacts would be greater from the Sandy Valley project. The Element Project would provide a slightly lesser set of impacts, but the combined set of projects would jointly provide even greater impacts than any one of the projects would singularly introduce.

As mentioned in the Integrity discussion for the three ethnographic landscapes, the Southern Paiute Salt Song Landscape has already been visually and physically

compromised to some extent by modern developments, such as the presence of numerous large cities, towns, military installations, energy generating facilities, mining infrastructure, and other infrastructure, such as transportation and transmission corridors. In addition, auditory, olfactory, and nightscapes have been compromised. The Spring Mountains are surrounded on several sides with incompatible intrusions to traditional religious and cultural practices. To the east/southeast lies the sprawling Las Vegas metropolis. To the north lie Nellis Air Force Base and the Nevada Test Site. And to the east/northeast lies the City of Pahrump. Across and through this terrain are several major highway corridors and transmission lines. Although not in the immediate vicinity of the proposed project, the expanse of these ethnographic landscapes exposes them to cumulative impacts resulting from projects well outside the area identified in **Cumulative Projects Figure 1**.

The impacts to the entire Salt Song Landscape are beyond the scope of this analysis. However, the segment of the Landscape that runs through the Pahrump Valley is already compromised, in particular, by the presence of the City of Pahrump.

Erosion of the spiritual context and critical elements of religious practice of the Salt Song Landscape in the Pahrump Valley is occurring primarily in response to the continued development in and around the Pahrump area. The focus of development, both current and future, is being driven by the need for housing and businesses to serve the influx of temporary construction and permanent operational personnel needed to build and staff the solar development projects in the area. These projects, some currently proposed by the same parent company in the immediate vicinity of the Hidden Hills project (Sandy Valley project), would have similar impacts as the Hidden Hills project and, therefore, would contribute cumulatively to the significant adverse impacts on the Landscape. Staff is not proposing any mitigation for impacts to the Salt Song Trail landscape. **CUL-10** provides compensatory mitigation for cumulative impacts to the Ma-hav landscape and Pahrump Paiute Landscape, but not to a level of less than significant.

Built-Environment Resources

St. Therese Mission, Pahrump Airport, Element Solar, and Sandy Valley Solar projects are considered most likely to contribute to the cumulative impacts on historic/built-environment resources, specifically the OST-MR Northern Corridor. The Sandy Valley project would have direct, physical impacts to the OST-MR as it appears to have the potential to adversely affect springs and tracks and traces in Nevada just east of the project site. The other projects could potentially increase the adverse impacts to the setting, or visual quality, of the Pahrump Valley, adversely affecting a contributing element of the OST-MR. The construction of the Hidden Hills project would result in permanent adverse impacts related to the destruction of the tracks and traces of the OST-MR on the project site, as well as create a substantial visual intrusion on the landscape. This would result in significant and unmitigable adverse impacts to built-environment resources, specifically the OST-MR. Therefore, any additional adverse impacts to the OST-MR Northern Corridor from other projects would simply add a cumulative element to the existing significant and unmitigable impacts.

PROJECT CUMULATIVE IMPACTS CONCLUSION

The construction of other projects in the same vicinity could affect unknown cultural resources of the same types as those affected by the proposed project. Proponents for other projects in the area may be able to reduce the impact(s) to CRHR-eligible cultural resources through deliberate project planning, or reduce impacts to presently unknown cultural resources to a less than significant level by implementing construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for historical resources. However, significant and unmitigable cumulative impacts to the Pahrump Metapatch (archaeological) Landscape; Salt Song,; and the OST-MR Northern Corridor by the proposed project virtually guarantee that impacts from any other projects on these resources would result in an overall significant and unmitigable cumulative impact.

RESPONSE TO PUBLIC COMMENTS

Staff's responses to applicant and public comments are included in **Appendix 1**, PSA Response to Comments, Cultural Resources.

CONCLUSIONS, RECOMMENDATIONS, AND RECOMMENDED FINDINGS OF FACT

- Staff has evaluated the individual archaeological deposits found within the boundaries of the HHSEGS facility site and recommends that they are not historical resources under CEQA, and they are not contributors to the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape.

- Staff recommends that no mitigation is required for HHSEGS project impacts to the individual archaeological deposits found within the boundaries of the HHSEGS facility site.

- Staff recommends the adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8** to ensure that all significant impacts to archaeological historical resources discovered during HHSEGS project construction, including the potential project use of borrow and disposal sites, and operation are mitigated below the level of significance.

- Staff has identified the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, located just to the northeast of the HHSEGS facility site, as a historical resource under CEQA and recommends that it be assumed eligible for the California Register of Historical Resources (CRHR), under CRHR Criteria 1 and 4, for the purpose of the present siting case. The resource represents the aboriginal use of a locally significant ecological zone during still undetermined periods over probably at least the last 12,000 years.

- Staff concludes that the visual impact of the proposed HHSEGS project on the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape would severely degrade the ability of the resource to convey its association with

aboriginal lifeways of the Holocene epoch, potentially compromising its CRHR eligibility.

- Staff has not identified, and the applicant has not recommended, any mitigation measures that would reduce the HHSEGS project impacts to the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape to a less than significant level. Staff recommends the compensatory mitigation identified in Condition of Certification **CUL-11**; however, even with the adoption and implementation of **CUL-11**, the project would still have a significant and unmitigable impact on the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape and related impacts to affected Native American cultural practices.

- Staff has identified and evaluated three ethnographic landscapes within which the HHSEGS project is located (Salt Song, Pahrump Paiute Home, and Ma-hav Landscapes) and recommends that they be assumed to be historical resources under CEQA, for the purpose of the present siting case, and potentially eligible for listing in the CRHR, under, variously, Criteria 1, 2, 3, and/or 4.

- Staff concludes that the presence and visual impact of the HHSEGS proposed project on these three ethnographic landscapes would significantly impact the setting, feeling, and association aspects of the resources' integrity, aspects critical to the resources' ability to convey their associative, artistic, and information values, potentially compromising their CRHR eligibility.

- Staff concludes, in consultation with Native American Tribes and Salt Song Practitioners, that no level of mitigation is appropriate for mitigating impacts to the Salt Song Trail landscape due to the Salt Song Trail Landscape's importance for Southern Paiute that are responsible for ushering their deceased to the afterlife and in providing relief to grieving families.

- Staff recommends the adoption and implementation of mitigation in Condition of Certification **CUL-10** for the HHSEGS project's impacts on the Pahrump Paiute Home landscape and the Ma-hav landscape. However, even with the adoption and implementation of **CUL-10**, the project would still have significant and unmitigable impacts on the ethnographic landscapes and Native American spiritual practices dependent on these resources.

- Staff has identified a historic trail corridor, within which the HHSEGS project site is located, containing various converging and intermingled tracks and traces that comprise a portion of the Old Spanish Trail-Mormon Road. Staff recommends that this trail corridor be assumed to be a historical resource under CEQA, for the purpose of the present siting case, eligible for the CRHR under Criteria 1 and 4.

- Staff concludes that the HHSEGS project impacts on the Old Spanish Trail-Mormon Road Northern Corridor would be significant and that, even with adoption and full implementation of Conditions of Certification **CUL-9** and **CUL-10**, project impacts to this resource could not be mitigated to a less than significant level.

- Staff recommends that construction and operation of the HHSEGS project, in conjunction with past, present, and reasonably foreseeable projects in the archaeological, ethnographic, and built-environment Project Areas of Analysis, would result in significant and unmitigable cumulative impacts to one archaeological landscape, one ethnographic landscape (Salt Song Trail landscape), and one built-environment historical resource, as identified in this section. Although full implementation of all recommended conditions of certification would reduce the significance of the project-related impacts to some degree, thereby reducing the project's contribution to cumulative impacts to these resources, they would not reduce the cumulative HHSEGS project contribution to the total resource inventory for this project or that of the past, present, and foreseeable future projects in the vicinity to these resources to below the level of significance.

- Staff recommends that full implementation of all Cultural Resources conditions of certification would ensure compliance with all applicable laws, ordinances, regulations, and standards identified in **Cultural Resources Table 1**.

RECOMMENDED CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; and/or surface grading or subsurface soil work during pre-construction activities or site mobilization, and/or mowing activities and heavy equipment use in loose or sandy soils, at the site and for access roads and linear facilities, the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more Alternate CRS(s). The project owner shall submit the resumes and qualifications for the CRS, CRS alternates, and all technical specialists to the CPM for review and approval.

The CRS shall manage all cultural resources monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resources activities (e.g., geoarchaeology or data recovery), unless management of these is otherwise provided for in accordance with the cultural resources conditions of certification (Conditions). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs), Native American Monitors (NAMs), and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner.

No construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; and/or surface grading or subsurface soil work during pre-construction activities or site mobilization, and/or mowing activities and heavy equipment use in loose or sandy soils, at the site, access roads, and linear facilities, shall occur prior to Energy

Commission Compliance Project Manager (CPM) approval of the CRS and alternates, unless such activities are specifically approved by the CPM.

If, during operation of the power plant, circumstances develop that would require ground disturbance in soils or sediments previously undisturbed during project construction, no surface grading or subsurface soil work shall occur prior to submission of a Petition to Modify and CPM review and approval of a project-specific protocol for addressing unanticipated discoveries, consistent with the approved Cultural Resources Mitigation and Monitoring Plan (CRMMP).

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of the Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 C.F.R., part 61). In addition, the CRS and alternate(s) shall have the following qualifications:

1. Listing in the Register of Professional Archaeologists;

2. Qualifications appropriate to the needs of the project, including a background in anthropology, archaeology, history, architectural history, or a related field;

3. At least three years of archaeological or historical, as appropriate (per nature of predominant cultural resources on the project site), resources mitigation and field experience in California; and

4. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources. The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field, and one year experience monitoring in California; or

2. A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years experience monitoring in California; or

3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of monitoring experience in California.

CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialist(s), e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval.

The historian(s) must meet the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 CFR, part 61). Resume(s) of the selected historian(s) shall be submitted for review and approval by the CPM and shall include the names and telephone numbers of contacts familiar with their work on referenced projects and demonstrate, to the satisfaction of the CPM, that the historian has the appropriate training and experience to effectively implement all study requirements.

Verification: At least 45 days prior to the start of ground disturbance, the project owner shall submit the resumes for the CRS and alternate(s) to the CPM for review and approval.

At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS, if different from the alternate CRS, to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the Application for Certification and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If no alternate CRS is available to assume the duties of the CRS, the project owner shall designate a CRM to serve in place of a CRS for a maximum of 3 days. If cultural resources are discovered, ground disturbance shall remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming CRMs and attesting that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this condition.

At least 5 days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide letters to the CPM identifying the new CRMs and attesting to their qualifications.

At least 15 days prior to any technical specialists, other than CRMs, beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.

At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources Conditions.

CUL-2 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; and/or surface grading or subsurface soil work during pre-construction activities or site mobilization, and/or mowing activities and heavy equipment use in loose or sandy soils, at the project site, access roads, and linear facilities, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the Application For Certification (AFC), data responses, confidential cultural resources reports, all supplements, the Energy Commission cultural resources Final Staff Assessment (FSA), and the cultural resources conditions of certification from the Final Decision for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:24,000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS and CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification: At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, confidential cultural resources documents, all supplements, cultural resources conditions of certification, and the FSA to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.

Monthly, during ground disturbance, the project owner shall email an electronic copy of the MCR to Native Americans and other parties who have expressed or express an interest in that document.

Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

CUL-3 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; and/or surface grading or subsurface soil work during pre-construction activities or site mobilization, and/or mowing activities and heavy equipment use in loose or sandy soils, at the project site and at laydown areas, roads, and other ancillary areas in California, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by, or under the direction of, the CRS, to the CPM for review and approval. The CRMMP shall follow the content and organization of the draft model CRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall identify measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the conditions of certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. The conditions, as

written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources conditions of certification from the Commission Decision are contained in Appendix A."

2. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any CRHR-eligible (as determined by the CPM) resources. A prescriptive treatment plan may be included in the CRMMP for limited data types.

3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground disturbance and post-ground–disturbance analysis phases of the project.

4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.

5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.

6. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects.

7. A statement that all encountered cultural resources 50 years old or older shall be recorded on the appropriate Department of Parks and Recreation (DPR) 523 form(s) and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (e.g., survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum.

8. Among the categories of cultural resources subject to prescriptive treatment as a result of discovery during the construction and operation of the project, an explicit category for isolate, unexceptional prehistoric or historic artifacts, or groups of such artifacts, up to five in number in an

area of 25 square meters or less, of which the CPM shall be notified and which shall be reported completely in the MCR, but for which the CRS, having fulfilled all requisite documentation requirements, does not need the approval of the CPM to resume construction. This prescriptive treatment category shall specify that the CPM shall have the discretion to nullify this same category upon the CPM's determination that the CRS has inadvertently, or otherwise, misapplied explicit criteria set out in the category for what shall constitute unexceptional prehistoric and historic artifacts.

9. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

10. A statement demonstrating when and how the project owner will comply with Health and Human Safety Code 7050.5(b) and Public Resources Code 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the Native American Heritage Commission (NAHC) of the discovery of human remains.

11. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively.

12. A description of the contents, format, and review and approval process of the final Cultural Resource Report (CRR), which shall be prepared according to ARMR guidelines.

Verification: After approval of the CRS proposed by the project owner, the CPM will provide to the project owner an electronic copy of the draft model CRMMP for the CRS.

At least 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.

At least 30 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, data recovery) and as a result of the historical documentation of the Old Spanish Trail-Mormon Road Northern Corridor.

Within 90 days after completion of ground disturbance (including landscaping), if cultural materials requiring curation were generated or collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, to accept the

cultural materials from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-4 The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for approval. The final CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, DPR 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification: Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the tribal chairpersons of any Native American groups requesting copies of project-related reports.

CUL-5 Prior to, and for the duration of, construction-related ground disturbance, or grading, boring, and trenching, as defined in the General Conditions for this project; and/or surface grading or subsurface soil work during pre-construction activities or site mobilization, and/or mowing activities and heavy equipment use in loose or sandy soils, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site and at laydown areas, roads, and other ancillary areas in California. The cultural resources part of this training shall be prepared by the CRS and may be presented in the form of a video. The CRS is encouraged to include a Native American as a presenter in the training to contribute the Native American perspective on archaeological and ethnographic resources. During the training and during construction, the CRS shall be available (by telephone or in person) to answer questions posed

by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, as described in detail in **CUL-1**, resumes.

The training shall include:

1. A discussion of applicable laws and penalties under law;

2. Samples or visuals of artifacts that might be found in the project vicinity;

3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;

5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

6. Instruction that employees, if the CRS, alternate CRS, or CRMs are not present, are to halt work on their own in the vicinity of a potential cultural resources discovery, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;

7. An informational brochure that identifies reporting procedures in the event of a discovery;

8. An acknowledgement form signed by each worker indicating that they have received the training; and

9. A sticker that shall be placed on hard hats indicating that environmental training has been completed. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification: At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the cultural resources WEAP training program draft text, including Native American participation, graphics, and the informational brochure to the CPM for review and approval.

At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; and/or surface grading or subsurface soil work during pre-construction activities or site mobilization, and/or mowing activities and heavy equipment use in loose or sandy soils, at the project site and at laydown areas, roads, and other ancillary areas in California, the project owner shall notify the CPM of the date on which ground disturbance will ensue. The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor, full time, all ground disturbance at the project site, along the linear facilities routes in California, and at laydown areas, roads, and other ancillary areas wherever such ground disturbance occurs on and in Holocene-age alluvial landforms Qa1 and Qa2 (see CH2 2012a, Figure DR101-1), which compose much of the eastern portion of the project site. The purpose of monitoring the physical disturbance of these landforms is to minimize any impacts to previously unknown archaeological resources that are found during the course of project construction and operation, and to ensure that known cultural resources are not impacted in an unanticipated manner.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of ground-disturbing activities in the areas specified in the previous paragraph, for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the excavated spoils. The inspection of excavated spoils shall include periodic and systematic screening of five-gallon samples of such spoils through one-quarter-inch hardware cloth. For excavation areas where the excavated material is dumped no farther than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

A Native American monitor (NAM) shall be obtained to monitor ground disturbance full time in project areas where the CRS, alternate CRS, or CRMS are monitoring full time. Contact lists of interested Native Americans shall be obtained from the Native American Heritage Commission (NAHC), and the project owner shall, to the extent feasible, adhere to the NAHC's *Guidelines for Monitors/Consultants Native American Cultural, Religious, Burial Sites* (http://www.nahc.ca.gov/guidelines4mon.html). Preference in selecting a monitor shall be given to the Pahrump Paiute Tribe, a Native American community with traditional ties to the project area. Should no member or too few members of that community be able to serve as monitors for whatever reason, or should the CPM assess that no member or too few

members of that community are qualified under the above guidelines to serve as monitors, then the project owner shall seek and, to the extent feasible, accommodate the preferences of the Pahrump Paiute Tribe as to the Native American community affiliation of any other Native American monitors that are to monitor the construction of the project. If efforts to obtain the services of a qualified Native American monitor are ultimately unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these conditions.

Upon becoming aware of any incidents of non-compliance with the conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification: At least 30 days prior to the start of ground disturbance, the CPM will notify all Native Americans with whom the Energy Commission communicated during the project review of the date on which the project's ground disturbance will begin. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.

Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.

At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail or in some other form of communication acceptable to the CPM.

At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.

CUL-7 The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, and the CRMs in the event of a cultural resources discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in accordance with the opinion of the CRS.

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. If the discovery includes human remains, the project owner shall comply with the requirements of Health and Human Safety Code § 7050.5(b) and shall additionally notify the CPM and the NAHC of the discovery of human remains. No action with respect to the disposition of human remains of Native American origin shall be initiated without direction from the CPM. Monitoring, including Native American monitoring, and daily reporting, as provided in other conditions, shall continue during the project's ground-disturbing activities elsewhere, while the halting or redirection of ground disturbance in the vicinity of the discovery shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on

Sunday morning. Notification shall include a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), reasoned recommendations of CRHR eligibility, and recommendations for appropriate regulatory treatment, whether or not, in any given case, a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that have requested to be notified in the event of such a discovery within 24 hours of the discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.

4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with any recommendations of eligibility made in relation to the discovery and approved the CRS's proposed treatment, if any, including the curation of the artifacts, or other appropriate treatment; and any necessary treatment has been completed. Ground disturbance may resume only with the approval of the CPM.

In the event that heavy rain should coincide with an incomplete or compromised project drainage system during construction, and flooding occurs that impacts cultural resources beyond the project site boundaries, the project owner shall treat such impacted cultural resources as discoveries under this condition of certification, and all provisions of this condition shall apply, with the exception of the requirement to halt construction in the vicinity of the discoveries.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that

expressed a desire to be notified in the event of such a discovery, and the CRS must inform the CPM when the notifications are complete.

No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.

Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information.

CUL-8 If fill soils necessary to the construction or operation of the California components of the project must be acquired from any non-commercial borrow site or disposed of at any non-commercial disposal site, in California or elsewhere, the project owner shall have the CRS survey any such borrow or disposal site for cultural resources, including ethnographic and built-environment resources, and record on DPR 523 series forms any resources found, unless the project owner is able to submit reports of the results of surveys completed less than five years prior to the anticipated use of any subject borrow or disposal site, that document 100 percent coverage of the subject site. The adequacy of the documentation of any prior survey is subject to the approval of the CPM.

Upon the completion of any new requisite survey, the project owner shall convey the results and the CRS's recommendations for further action to the CPM. The CPM, in consultation with the project owner, shall determine what, if any, further action may be required. If the CPM determines that significant archaeological resources that the project cannot avoid are present at the borrow or disposal site, other conditions, which may include the elimination of a proposed non-commercial borrow or disposal site from consideration, shall apply. The project owner shall have the CRS report on the methods and results of these surveys in the final CRR.

Verification: As soon as the project owner knows that a non-commercial borrow site or disposal site will be used, the owner shall notify the CRS and CPM, and provide documentation, for the approval of the CPM, of any relevant previous archaeological surveys completed less than five years prior to the anticipated use of any subject borrow or disposal site.

In the absence of documentation for any cultural resource surveys completed less than five years prior to the anticipated use of any subject borrow or disposal site, the CRS shall survey any such borrow or disposal site for archaeological resources. Said survey shall occur at least 30 days prior to the disturbance of the ground on any such site. The project owner shall report the results of any cultural resources survey to the CPM, with recommendations for further action. The CPM, in consultation with the project owner, shall determine what subsequent action is warranted.

CUL-9 Prior to the start of construction-related ground disturbance or grading, boring, and trenching, as defined in the General Conditions for this project; and/or surface grading or subsurface soil work during pre-construction activities or site mobilization, and/or mowing activities and heavy equipment use in loose or sandy soils, at the project site and at laydown areas, roads, and other ancillary areas in California, the project owner shall fund a study of the Old Spanish Trail-Mormon Road Northern Corridor (OST-MRNC) by the Old Spanish Trail Association (OSTA).The project owner shall submit the OSTA study research design to the CPM for review and approval prior to the start of the investigation. The study shall not begin prior to CPM approval. No ground disturbance shall occur prior to completion of the OSTA study, unless such activities are specifically approved by the CPM. The OSTA study shall, at a minimum:

a. Ground-truth all potential OST-MRNC tracks and traces within the identified OST-MRNC in the Pahrump Valley; and

b. Produce a report identifying the confirmed OST-MRNC tracks and traces in the Pahrump Valley and justifying the confirmation or rejection of each, with a map showing the confirmed tracks and traces; and

c. Complete a DPR-523l form for each confirmed track and trace located on the HHSEGS project site and submit these forms with the report required in Part b.

At the same time as or after the completion of the OSTA study, the project owner shall fund a follow-up study of the OST-MRNC, to be conducted by a qualified historian. The project owner shall submit the follow-up study research design to the CPM for review and approval prior to the start of the investigation. The study shall not begin prior to CPM approval. This OST-MRNC documentation and evaluation study shall, at a minimum:

a. Produce a local historical context of the OST-MRNC in the Pahrump Valley, incorporating the information from the OSTA report and the Old Spanish Trail Documentation Project, and evaluating the role of the Mound, Browns, Weeping Rock, Hidden Hills Ranch, and Stump springs as key natural water sources for those traveling along this portion of the OST-MRNC;

b. Evaluate the identified OST-MRNC tracks and traces for NRHP and CRHR eligibility in the local context of the Pahrump Valley;

c. Evaluate the identified OST-MRNC for inclusion in the National Register of Historic Places (NRHP)-listed Old Spanish Trail-Mormon Road Historic District (Nevada), and the Old Spanish Trail National Historic Trail.;

d. Produce a report of investigations, including full documentation of the OST-MRNC and a recommendation, with full justification, on nominating the OST-MRNC for inclusion in the CRHR and/or the NRHP-listed Old Spanish Trail-Mormon Road Historic District (Nevada); documentation

shall adhere to the Secretary of the Interior's Guidelines for Architectural and Engineering Documentation and the National Park Service guidelines for Historic American Landscape Surveys.

The project owner shall ensure that all reports and resource documentation are submitted to the CPM and to the appropriate California Historical Resources Information System (CHRIS) Information Center. The project owner shall also provide all OST-MRNC reports and resource documentation to the interpretive facilities identified in **CUL-10** for use in the planning and completion of OST-MRNC interpretation and exhibits. The project owner shall ensure that all reports, resource documentation, and nominations are submitted to the appropriate federal and/or state agencies for nomination to the NRHR, CRHR, and the Old Spanish Trail National Historic Trail.

Verification: At least 90 days prior to the start of ground disturbance, the project owner shall submit an agreement or contract with the OSTA for required research on the tracks and traces of the OST-MRNC to the CPM for review and approval.
At least 60 days prior to the start of the OSTA study, the project owner shall submit the research design for the study and a recommended due date for the submission of the draft report and DPR 523L forms to the CPM for review and approval.

At least 30 days prior to the start of ground disturbance, the project owner shall submit the final OSTA study report and DPR 523L forms to the CPM. Construction-related ground disturbance may start after the CPM approves the final report and forms.

No later than 45 days after CPM approval of the OSTA study report, the project owner shall submit an agreement or contract with a qualified historian for the required documentation of the OST-MRNC to the CPM for review and approval.

At least 60 days prior to the start of the OST-MRNC documentation study, the project owner shall submit the research design for the study and a recommended due date for the submission of the draft report to the CPM for review and approval.

No later than 120 days after CPM approval of the OST-MRNC documentation study research design and due date, the project owner shall submit the draft study report to the CPM for review and approval.

Within 30 days of receiving CPM approval of the draft OST-MRNC documentation study report, the project owner shall submit the final OST-MRNC documentation study report to the CPM.

Within 10 working days of receipt, the project owner shall provide a copy of all study-related correspondence with OSTA and other agencies and organizations to the CPM.

Within 90 days after CPM approval of all OST-MRNC study reports and documentation, the project owner shall submit the final OSTA and OST-MRNC documentation study reports and DPR 523L forms to the California Historical Resources Information System (CHRIS) and to the Interpretive Center (**CUL-10**) Stakeholders Group for use in the planning and completion of OST-MRNC interpretation and exhibits.

Within 30 days after submitting all OST-MRNC documentation to the CHRIS and the Interpretive Center Stakeholders Group, the project owner shall provide documentation to the CPM confirming receipt of the materials.

CUL-10 The project owner shall negotiate, design, plan, cause to be built, staff, and maintain the infrastructure, and architectural and interior improvements necessary to implement interpretive and preservation objectives that will reduce the project's significant and feasibly unmitigable effects to the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, the Pahrump Paiute Home Landscape, the Ma-hav Landscape, and the Old Spanish Trail-Mormon Road Northern Corridor in Pahrump Valley. The interpretive and preservation objectives that the project owner shall implement include, at a minimum:

1. The construction and maintenance of an interpretive kiosk within one hundred yards of the facility site that presents broad overviews of the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, the Pahrump Paiute Home Landscape, the Ma-hav Landscape, and the Old Spanish Trail-Mormon Road Northern Corridor along with information on the nearby interpretive facilities where the public shall be able to access more in-depth interpretive programs for each resource. The presentation of the overviews and the delivery of information on nearby interpretive facilities could occur in conjunction with the implementation of **VIS-6**, as long as the implementation of that condition occurred within the specified distance from the facility site.

2. The delivery of passive museum displays and multi-media presentations, *and* hands-on, interactive exhibits, at extant interpretive facilities in Pahrump or adjacent valleys, the primary purposes of which shall be to facilitate the interpretation of the cultural landscapes and corridor, and visual resources. The specific interpretive modes shall include, at a minimum, the development and delivery of accessible[31], separate displays, presentations, *and* exhibits, of museum quality[32], for the following topics:

   - the genesis, paleoecology, and archaeology of the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape,
   - the seasonal subsistence cycle of the Pahrump Paiute Tribe, and
   - the Old Spanish Trail-Mormon Road Northern Corridor.

[31] "accessible" shall be herein defined as comporting with the *Smithsonian Guidelines for Accessible Exhibition Design* (http://accessible.si.edu/pdf/Smithsonian%20Guidelines%20for%20accessible%20design.pdf)

[32] "museum quality" shall be herein defined as comporting with the *Standards for Museum Exhibitions and Indicators of Excellence* as developed by the Standing Professional Committees Council of the American Association of Museums (http://name-aam.org/about/past-winners/standards-for-museum-exhibitions)

The interpretation of each of the above topic and subtopic areas shall facilitate separate consideration of the chronologic phases and sociocultural themes relevant to each such area. The planning, development, maintenance, and periodic renewal of these modes shall be done in consultation with stakeholders that actively participated in the consultation process conducted in conjunction with the review of the project owner's application for certification for this project.

3. The delivery of ethnographic reconstructions,[33] at an extant interpretive facility in Pahrump or adjacent valleys, the purpose of which shall be to facilitate the interpretation of the Native American use of the local landscape in the prehistoric and ethnographic periods. The specific interpretive modes shall include, at a minimum:

   - Native American installation and maintenance of an aboriginal horticultural garden reliant on natural spring water to the extent feasible, for public interpretation, and
   - the conjunctive Native American installation and maintenance, of an exploratory reconstructed village consisting of a few replica dwellings that allow public access to walk in, about, and through the village and garden area. Providing direct visitor access to a real garden, featuring native garden varietals, such as pumpkins, beans, and corn, set near the interpretive materials provided per item 2, above, will greatly enhance the visitor education experience beyond what passive interpretive materials would solely provide.

The planning, development, maintenance, and periodic renewal of these modes shall be done in consultation with representatives of the Native American communities that actively participated in the consultation process conducted in conjunction with the review of the project owner's application for certification for this project.

The project owner shall conduct each phase of the implementation of this condition in consultation with stakeholders who formally respond to the project owner's formal invitation to participate in such consultation, and shall also be able to provide evidence, to the satisfaction of the CPM, of all resultant consultation. At a minimum, the stakeholders should include, in addition to representatives of the hosting interpretive facilities, the Pahrump Paiute Tribe, the Old Spanish Trail Association, the Armagosa Conservancy, a representative of each municipality or county government in whose jurisdiction a hosting interpretive facility falls.

[33] "museum quality" shall be herein defined as comporting with the *Standards for Museum Exhibitions and Indicators of Excellence* as developed by the Standing Professional Committees Council of the American Association of Museums (http://name-aam.org/about/past-winners/standards-for-museum-exhibitions)

The CPM, in consultation with the California and Nevada Bureau of Land Management, will provide active and discretionary oversight to ensure that the negotiated venues for the delivery of the mitigation objectives, the design of the delivery modes, the environmental planning for those modes, and actual mode delivery, maintenance, and efforts of periodic renewal are consistent with the intent of this condition.

Verification: No later than 12 months after the CPM's issuance of the notice to proceed for the project, the project owner shall conclude negotiations with the facilities that will host the delivery of the mitigation objectives for **CUL-10**. The project owner shall submit, for CPM for review and approval, a report of these negotiations and their respective outcomes, and shall further include, as appendices, formal correspondence from each host facility that specifies precisely what mitigation objectives that the facility has agreed to host, the period of time for which the facility has agreed to host them, and any conditions that the host facility has placed on their agreement with the project owner.

No later than 6 months after the CPM's issuance of the notice to proceed for the project, the project owner shall submit, for CPM for review and approval, a draft consultation protocol that sets out the precise manner in which the project owner intends to interact with the stakeholders whose input the project owner shall seek as the project owner negotiates, designs, plans, constructs, and maintains the delivery modes for the mitigation objectives of this condition. The minimum stakeholder group shall include, to the extent feasible, representatives of the hosting interpretive facilities, the Pahrump Paiute Tribe, the Old Spanish Trail Association, the Armagosa Conservancy, a representative of each municipality or county government in whose jurisdiction a hosting interpretive facility falls. The draft protocol shall include, as appendices, proofs of contact for each of the above members of the minimum stakeholders group and any additional potential stakeholders with whom the project owner has made contact, and an initial stakeholder list.

No later than 18 months after the CPM's issuance of the notice to proceed for the project, the project owner shall submit, for CPM for review and approval, a draft, host facility-approved, initial design proposal for each delivery venue for each mitigation objective in this condition.

No later than 24 months after the CPM's issuance of the notice to proceed for the project, the project owner shall submit, for CPM for review and approval, the host facility-approved, final design for each delivery venue for each mitigation objective in this condition.

No later than 30 months after the CPM's issuance of the notice to proceed for the project, the project owner shall initiate construction or installation of each delivery venue for each mitigation objective in the approved final designs.

No later than 36 months after the CPM's issuance of the notice to proceed for the project, the project owner shall ensure, and provide the CPM evidence, that each delivery venue for each mitigation objective in the approved final designs is in full operation.

For the operational life of the project, through project decommissioning, the project owner shall provide evidence in the annual compliance report for the project that each delivery venue for each mitigation objective in the approved final designs continues to be maintained.

CUL-11 The project owner shall design and implement a multidisciplinary program of primary research on the geology, geomorphology, hydrology, ecology, and archaeology of the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape, which is delineated and described in the cultural resources section of the Final Staff Assessment for the HHSEGS project. The scale of the research shall be sufficient to provide reliable interpretative synopses, from both processual and historical perspectives, of each of these disciplines. The measure of research sufficiency, should any dispute arise, shall be the expert opinion of research institution faculty members who actively pursue research and publish in peer-reviewed journals in each discipline. The CPM shall select the faculty members whose opinion would be sought to resolve any dispute.

The project owner shall develop, under the direct and active supervision of a qualified professional geoarchaeologist, a draft formal research design that includes a proposed budget for the research and submit the design plan simultaneously to the CPM for review and approval, and to Native American tribes who have expressed an interest in commenting or participating in the research program for review and comment.

Upon the CPM's approval of the research design, the project owner shall implement the program as designed. The project owner shall ensure that the research team shall provide regular quarterly progress reports to the CPM for review and comment.

Following completion of the research program, the project owner shall submit the research program's draft final report simultaneously to the CPM for review and approval, and to the Native American tribes who have been actively involved in the research process for review and comment.

The project owner shall also ensure that the research program's approved final report, completed DPR 523 series forms, and other associated documentation are submitted to the appropriate California Historical Resources Information System (CHRIS) Information Center(s) and other repositories, both in California and Nevada.

The project owner shall provide a copy of all final documents and study-related correspondence with other agencies and organizations to the CPM in a timely manner.

The project owner shall ensure the curation of all research documentation related to the execution of this research program and the material culture recovered as a result in a curation facility that meets federal curation

standards. The project owner shall also be responsible for any curation fees associated with the program.

The project owner shall develop and execute professional and public outreach initiatives that would clearly benefit the public.

Verification: No later than 90 days from the start of construction, the project owner shall submit a draft formal research design to the CPM for review and approval.

No later than 90 days subsequent to the CPM's approval of the formal research design, the project owner shall, unless otherwise stipulated by the CPM, initiate the implementation of the research design and complete the fieldwork portion of it without interruption.

No later than 90 days subsequent to the CPM's approval of the formal research design and every 90 days thereafter until the submission to the CPM of the draft final report of the research program, the project owner shall submit a brief report on the progress of the different phases of research and on the preliminary research results to that date.

No later than 270 days subsequent to the completion of the fieldwork portion of the formal research design, the project owner shall, unless otherwise stipulated by the CPM, provide the CPM with written proof of the submission of the approved final report and complete DPR 523 series forms to the appropriate CHRIS Information Center(s) and to other appropriate regional repositories in California and Nevada. The CPM shall make the final determination which other repositories, in addition to CHRIS Information Centers, are appropriate.

No later than 270 days subsequent to the completion of the fieldwork portion of the formal research design, the project owner shall, unless otherwise stipulated by the CPM, provide draft proposals for the professional and public outreach initiatives that are to be one result of this research to the CPM for review and approval.

No later than 390 days subsequent to the completion of the fieldwork portion of the formal research design, the project owner shall, unless otherwise stipulated by the CPM, provide the CPM with written proof of the completion of the CPM-approved professional and public outreach initiatives.

CULTURAL RESOURCES ACRONYM GLOSSARY

HIDDEN HILLS SOLAR ELECTRIC GENERATING PROJECT

A.D.	After the Birth of Christ
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
B.C.	Before the Birth of Christ
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	Conditions of Certification
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DPR 523	Department of Parks and Recreation cultural resource inventory form
EIC	Eastern Information Center, University of California, Riverside
FSA	Final Staff Assessment
HHSEGS	Hidden Hills Solar Electric Generating System
KOP	Key Observation Point (see also VISUAL RESOURCES section of FSA
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NAM	Native American Monitor
NRHP	National Register of Historic Places

OHP	Office of Historic Preservation
OSTA	Old Spanish Trail Association
OST-MR	Old Spanish Trail-Mormon Road
OST-MRNC	Old Spanish Trail-Mormon Road Northern Corridor
PAA	Project Area of Analysis. The project site (see below) plus what additional areas staff defines for each project that are necessary for the analysis of the cultural resources that the project may impact.
Project Site	The bounded area(s) identified by the applicant as the area(s) within which they propose to build the project.
PSA	Preliminary Staff Assessment
SHPO	State Historic Preservation Officer
Staff	Energy Commission cultural resources technical staff
WEAP	Worker Environmental Awareness Program

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The "(tn: 00000)" in a reference below indicates the transaction number under which the item is catalogued in the Energy Commission's Docket Unit. The transaction number allows for quicker location and retrieval of individual files.

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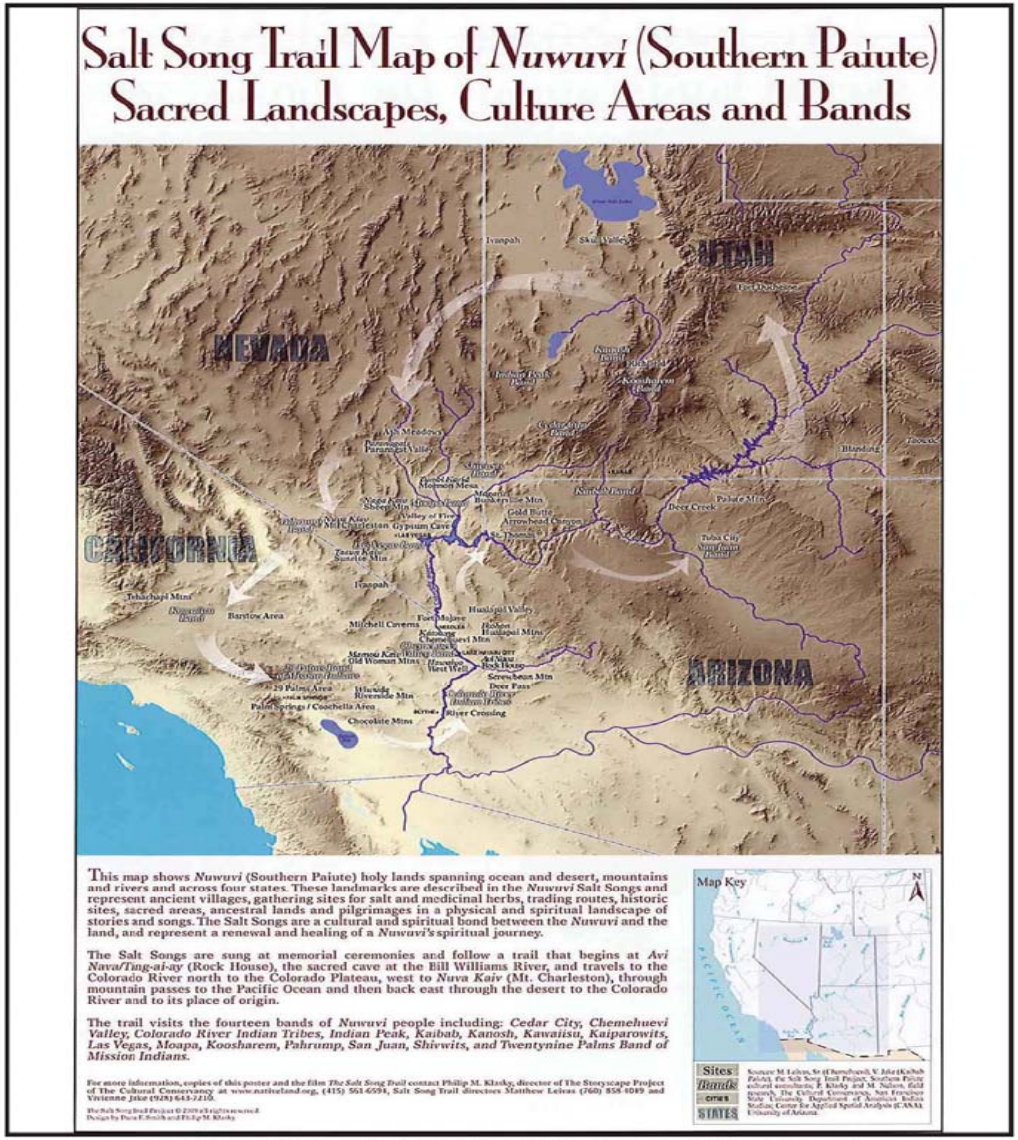
HHSEGS EVIDENTIARY HEARINGS
CALIFORNIA ENERGY COMMISSION
CULTURAL RESOURCES UNIT
ETHNOGRAPHIC RESOURCES (Staff EXHIBIT #333)

CULTURAL RESOURCES - FIGURE 8
Hidden Hills Solar Generating System (HHSEGS) - Salt Song Trail Map of Nuwuvi (Southern Paiute)
Sacred Landscapes, Culture Areas and Bands



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
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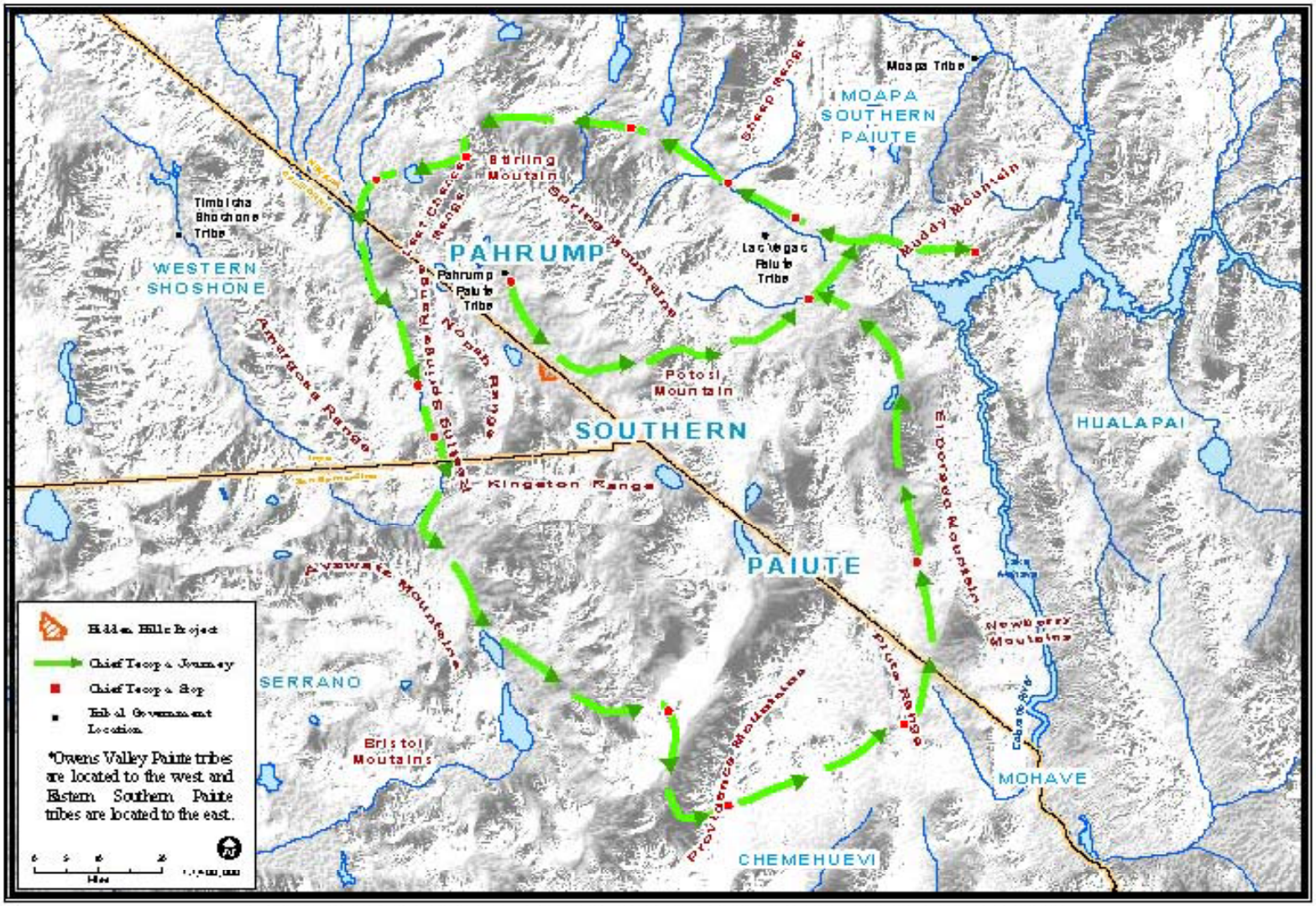
CULTURAL RESOUCES - FIGURE 4

Hidden Hills Solar Electric Generating System (HHSEGS) - Tribal Ancestral Territories and Tribal Government Locations in and around Pahrump Valley



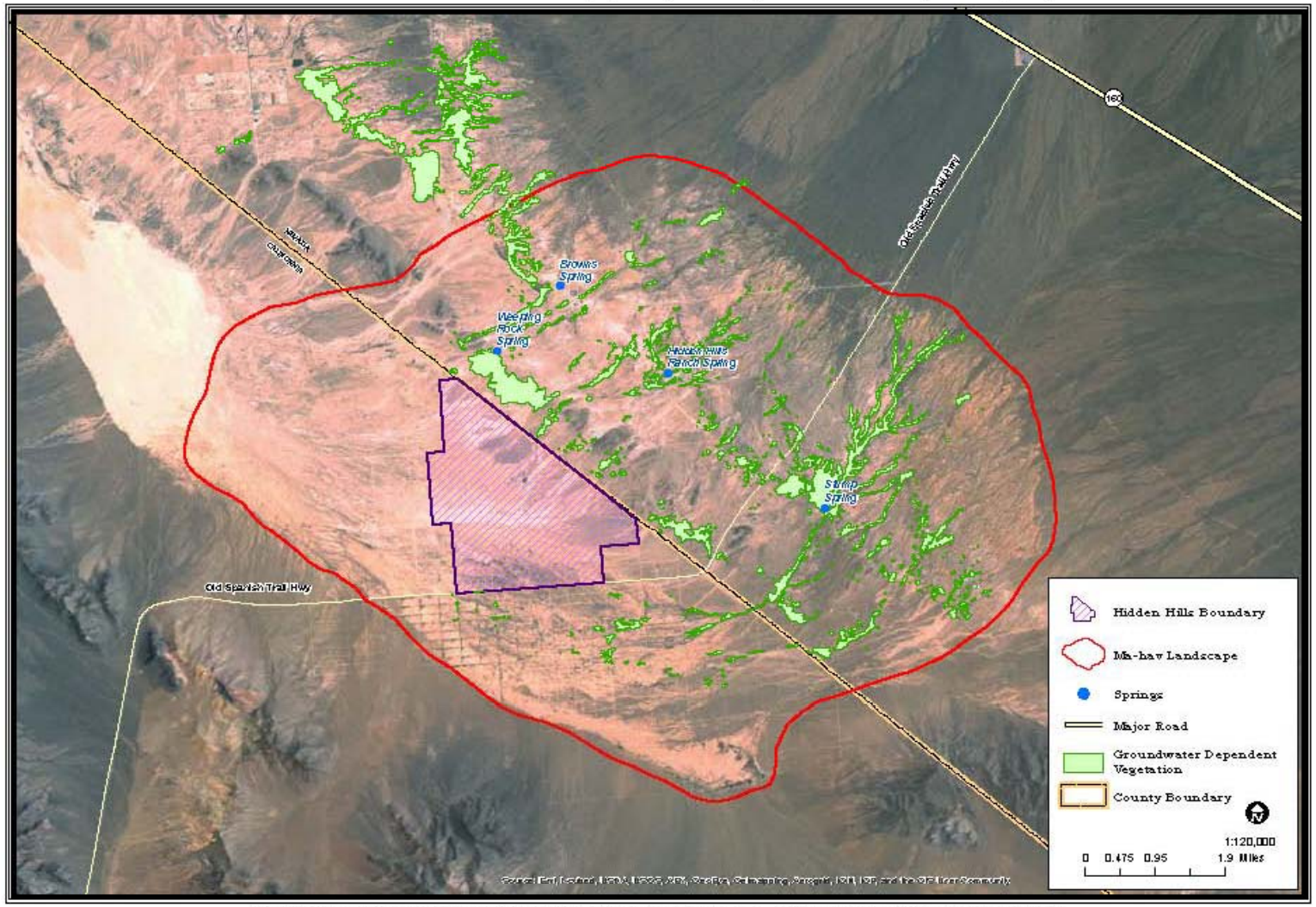
CULTURAL RESOUCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from *Handbook of North American Indian* Volumes 8 and 11, and *Chief Tecopa and The Hikos* by Celeste Lowe.

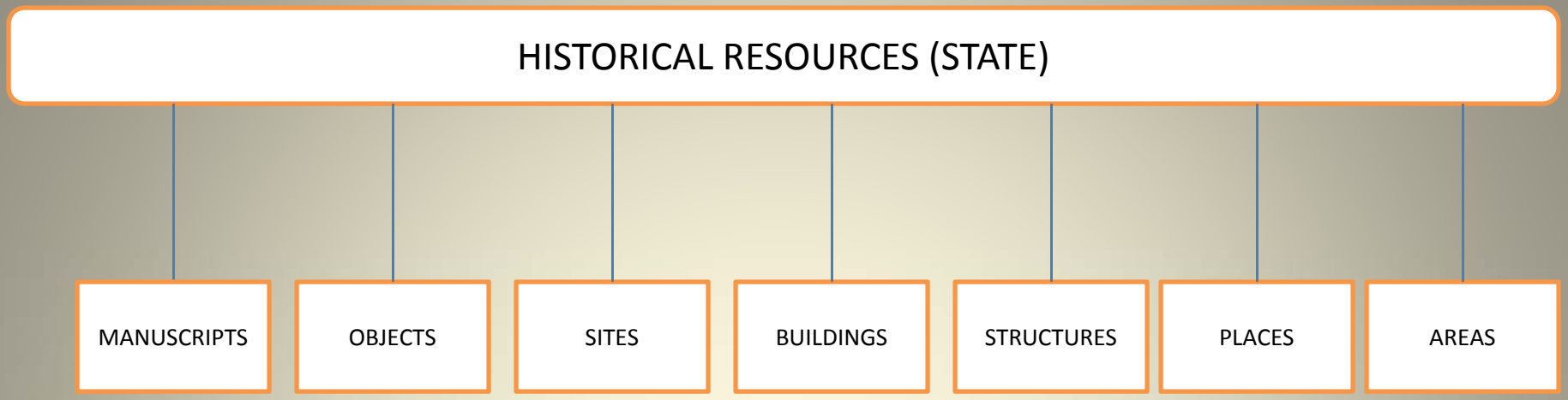
CULTURAL RESOUCES - FIGURE 9

Hidden Hills Solar Electric Generating System (HHSEGS) - Ma-hav Landscape Vicinity Map



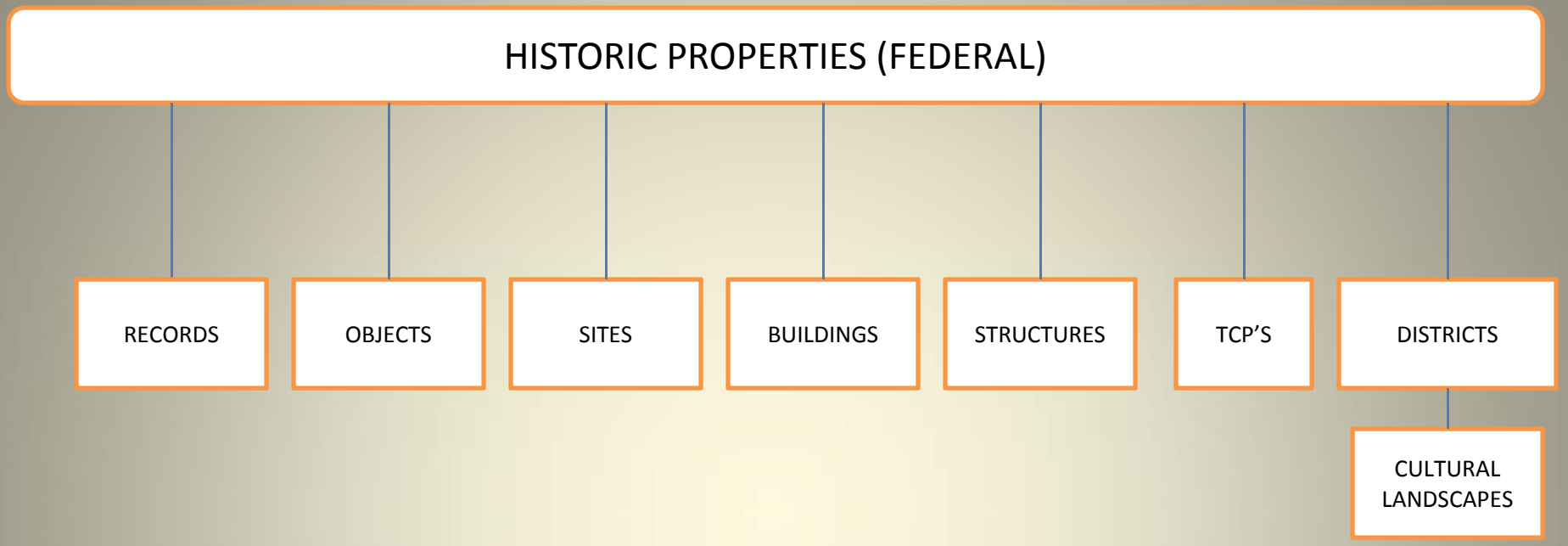
CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: US Major Highway - USDA National Agriculture Imagery Program (NAIP) imagery and USGS Digital Ortho Quarter, Quad, CH2M HILL, Tele Atlas North America, Inc (2010).



PLACES = TRADITIONAL CULTURAL PROPERTIES

AREAS = CULTURAL LANDSCAPES

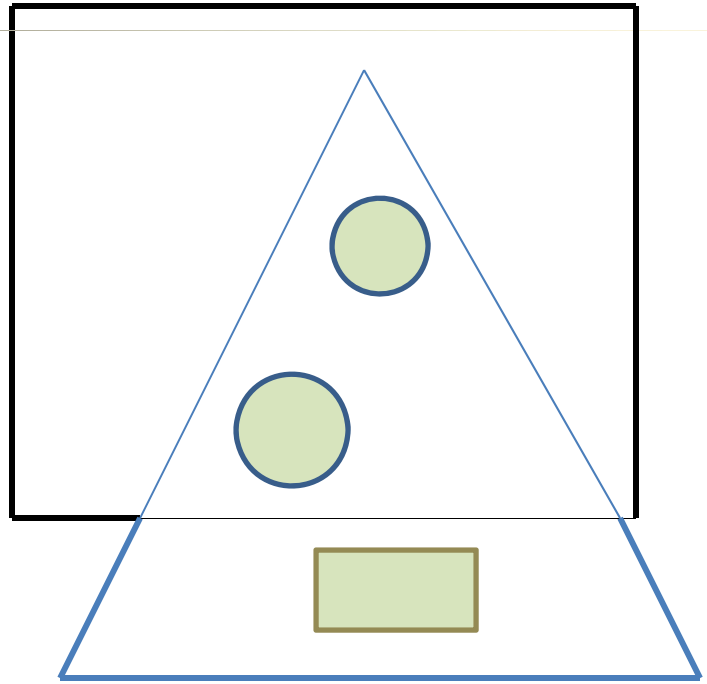


PLACES = TRADITIONAL CULTURAL PROPERTIES

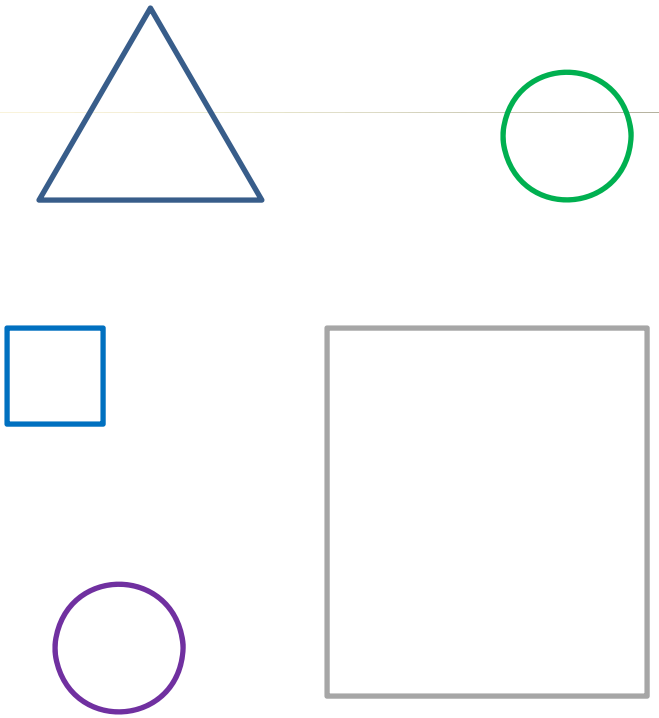
AREAS = CULTURAL LANDSCAPES

CONTIGUOUS AND DIS-CONTIGUOUS

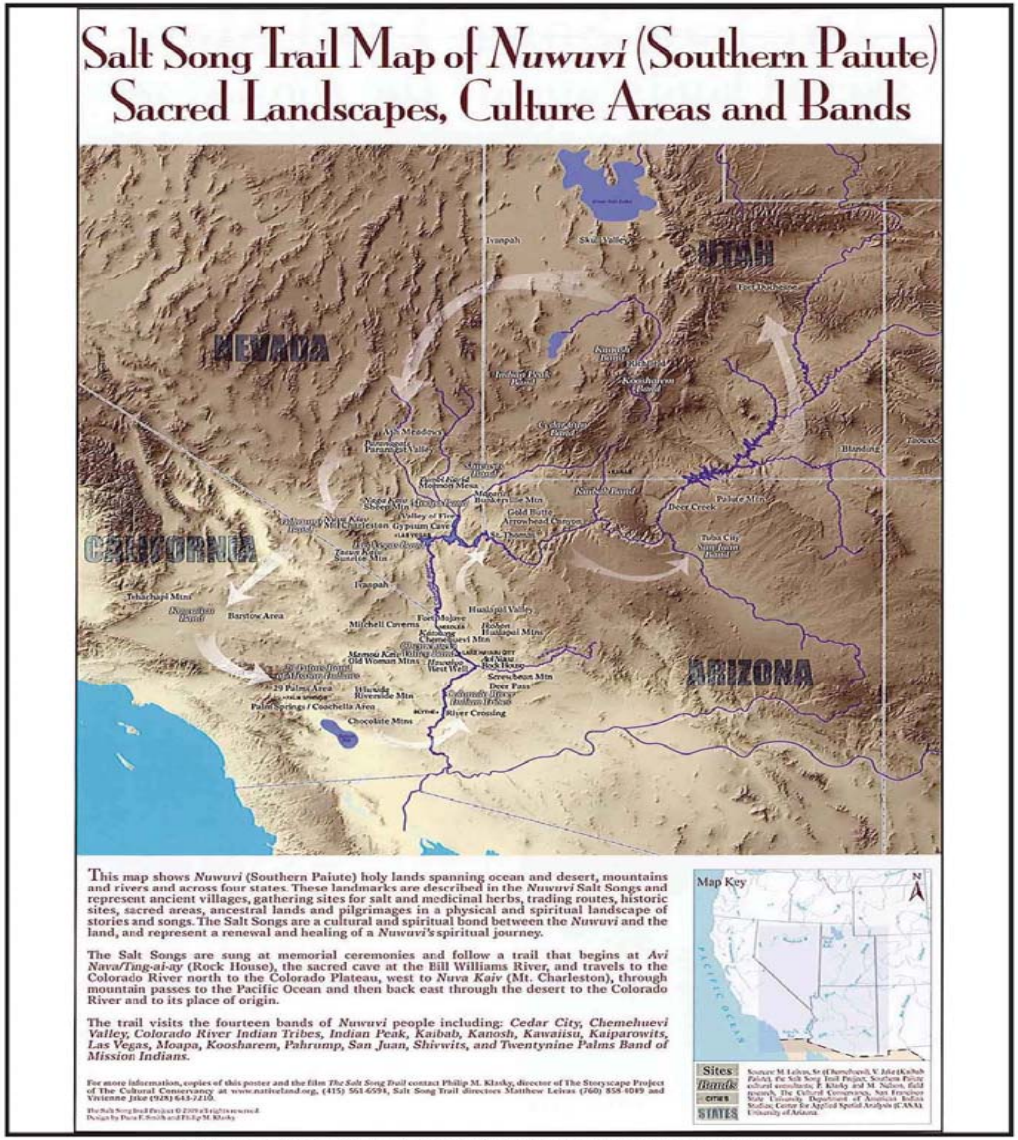
CONTGUOUS-(ONE CULTURAL THEME IN THE SAME OR OVERLAPPING SPACE)



DIS-CONTIGUOUS-(ONE CULTURAL THEME IN VARIOUS SPACES WITH NO OVERLAP)



CULTURAL RESOURCES - FIGURE 8
Hidden Hills Solar Generating System (HHSEGS) - Salt Song Trail Map of Nuwuvi (Southern Paiute)
Sacred Landscapes, Culture Areas and Bands



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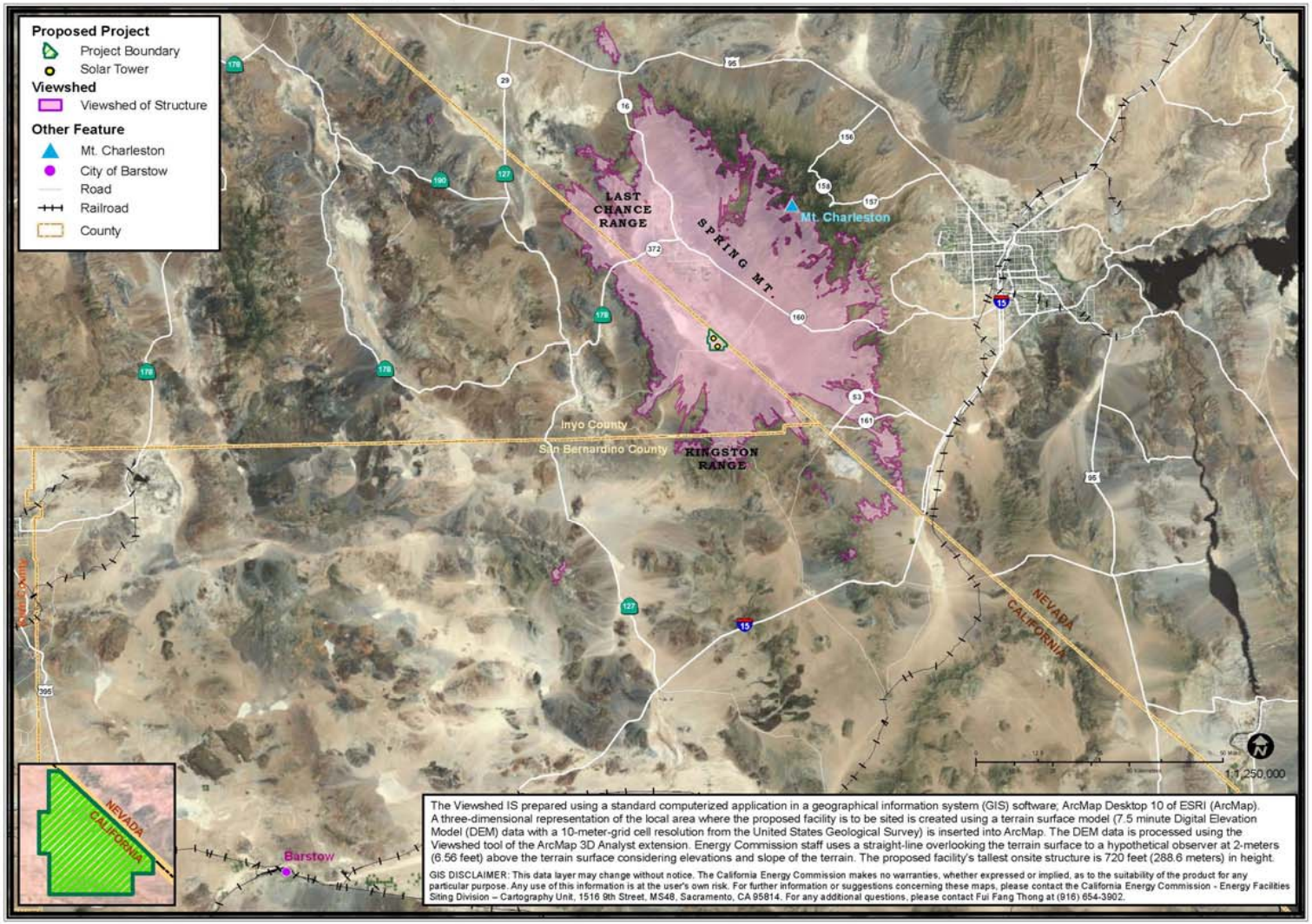
CULTURAL RESOURCES - REBUTTAL FIGURE 1

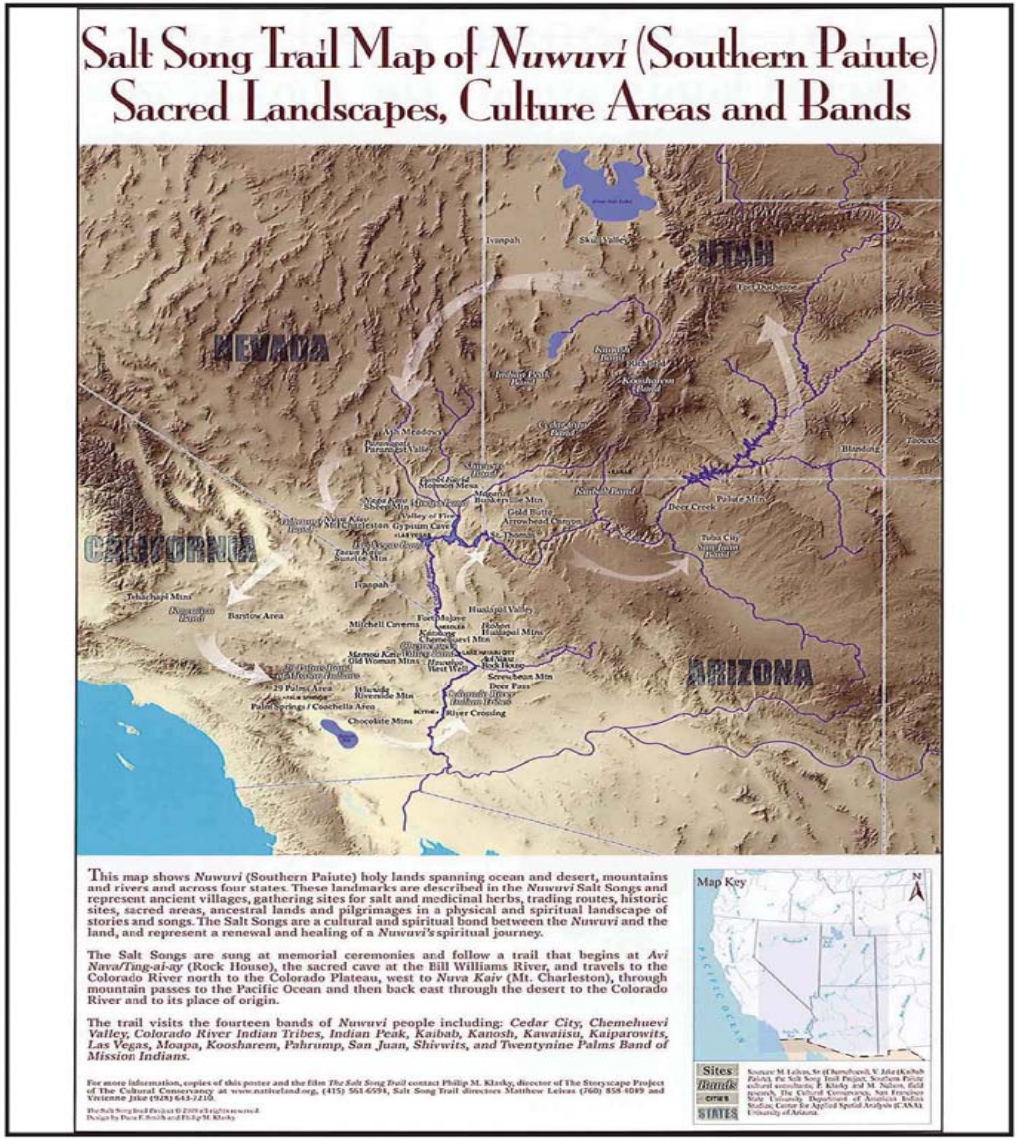
Hidden Hills Solar Electric Generating System (HHSEGS) - Viewshed from Mt. Charleston Towards HHSEGS Project Area and City of Barstow



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI, USGS - 2012, OpenStreetMap January 2013, BING Aerial Imagery, and California Energy Commission

CULTURAL RESOURCES - FIGURE 8
Hidden Hills Solar Generating System (HHSEGS) - Salt Song Trail Map of Nuwuvi (Southern Paiute)
Sacred Landscapes, Culture Areas and Bands



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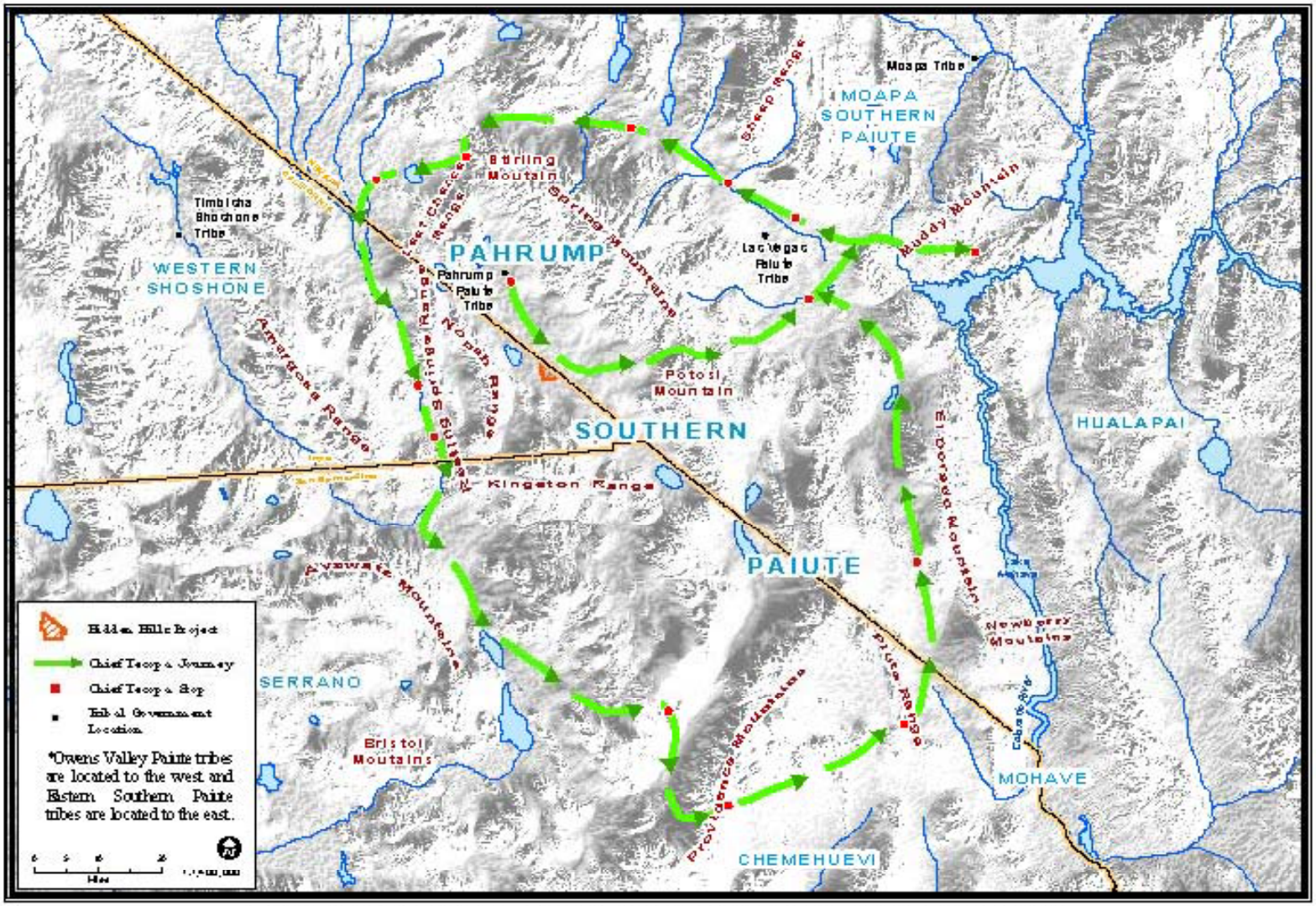
CULTURAL RESOUCES - FIGURE 4

Hidden Hills Solar Electric Generating System (HHSEGS) - Tribal Ancestral Territories and Tribal Government Locations in and around Pahrump Valley



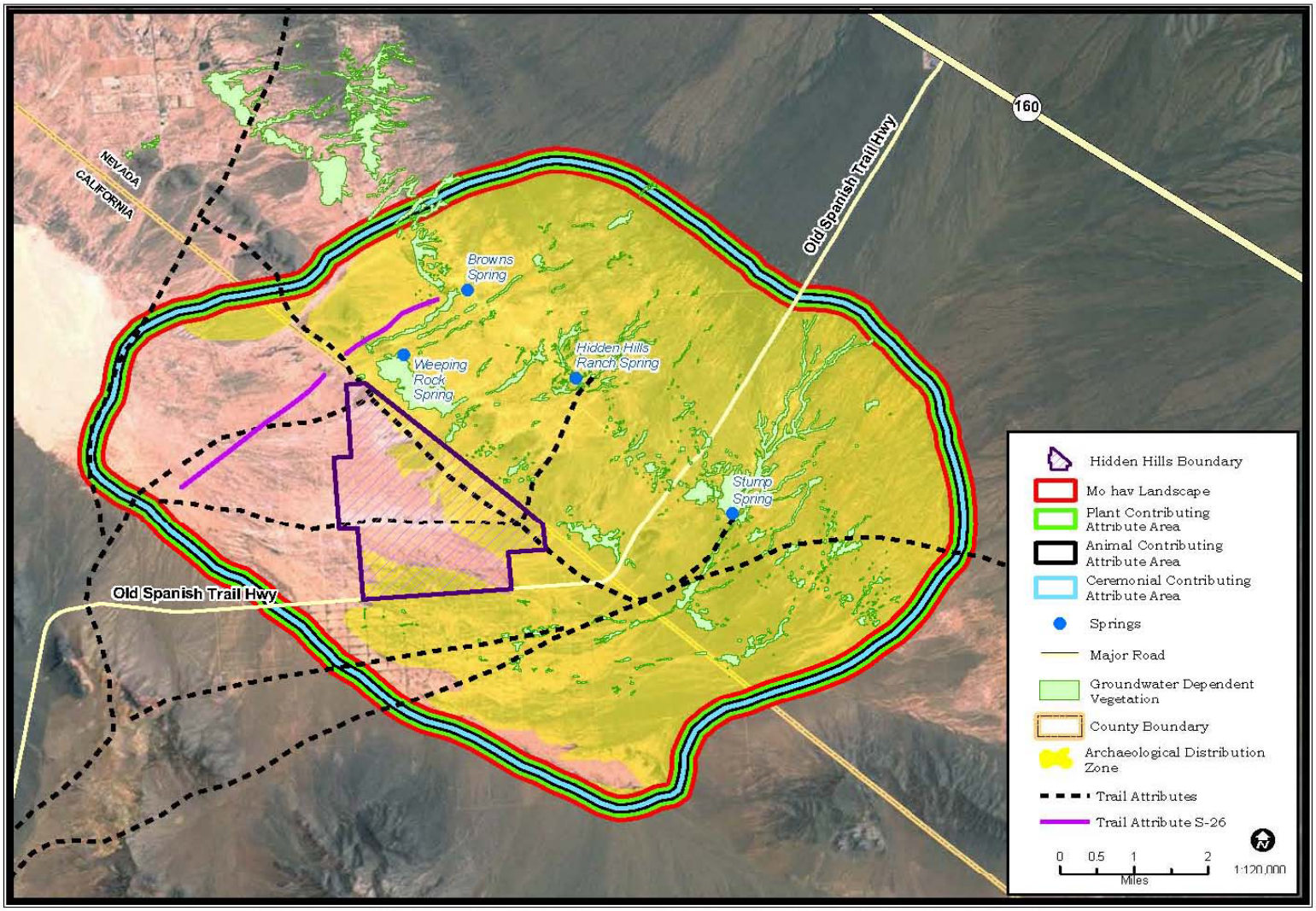
CULTURAL RESOUCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from *Handbook of North American Indian* Volumes 8 and 11, and *Chief Tecopa and The Hikos* by Celeste Lowe.

CULTURAL RESOUCES - REBUTTAL FIGURE 2

Hidden Hills Solar Electric Generating System (HHSEGS) - Mo hav Landscape Attribute Map



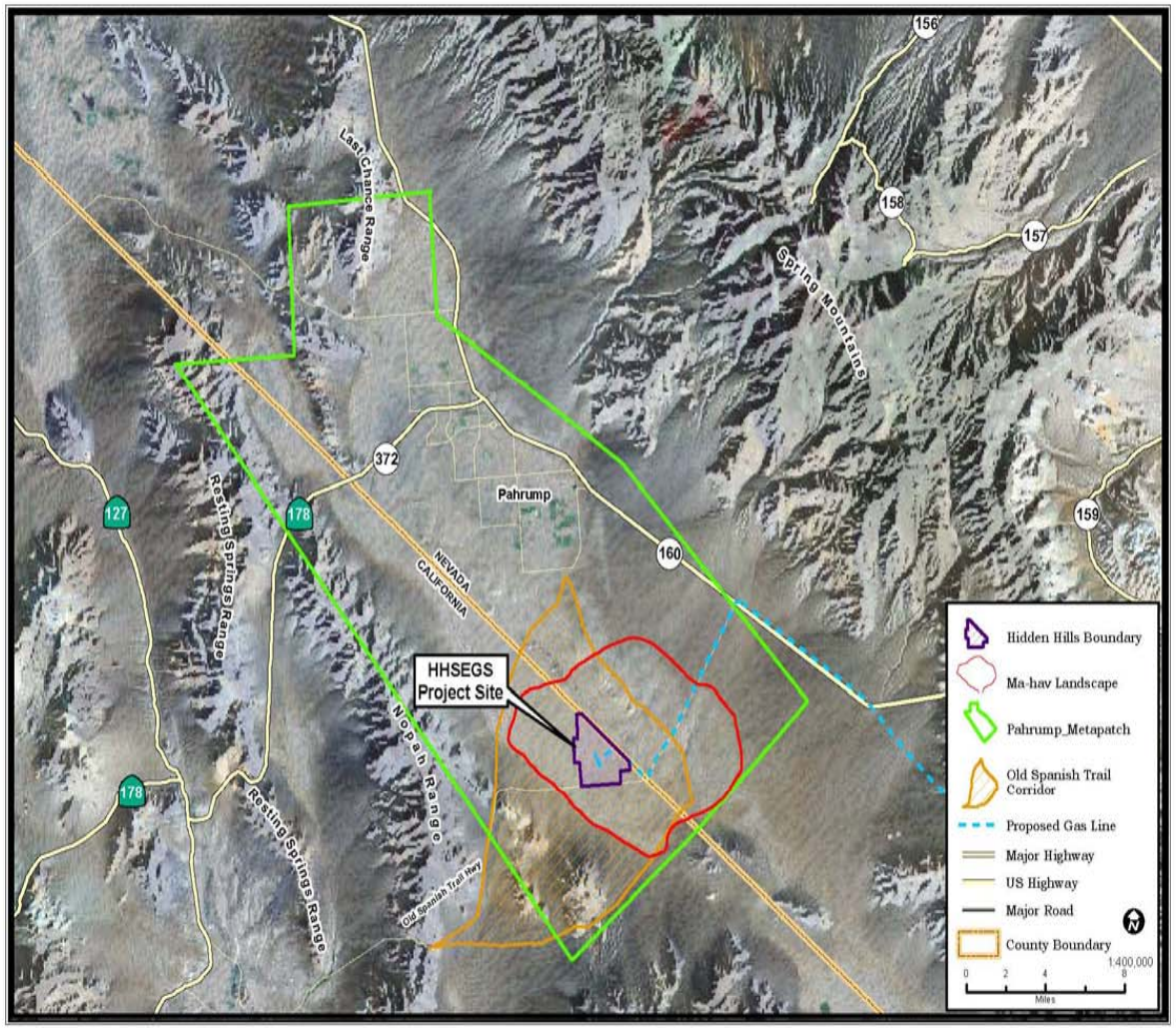
CULTURAL RESOUCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: US Major Highway - USDA National Agriculture Imagery Program (NAIP) imagery and USGS Digital Ortho Quarter, Quad, CH2M HILL, Tele Atlas North America, Inc (2010).

CULTURAL RESOURCES REBUTTAL - FIGURE 3

Hidden Hills Solar Electric Generating System (HHSEGS) - Ma-hav Landscape, Pahrump Metapatch, and Old Spanish Corridor Vicinity Map



CULTURAL RESOURCES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Landsat - NASA (2002), SRTM Shaded Relief - USGS (2005), US Major Highway - Tele Atlas North America, Inc (2010) - BLM/National Park Service - Archaeological Features by Commission Staff.