APPENDIX 2.3-1

Cultural Resources Technical Report

CULTURAL RESOURCES REPORT
for the
JACUMBA SOLAR ENERGY PROJECT,
SAN DIEGO COUNTY, CALIFORNIA
PDS2014-MUP-14-041 and PDS2014-ER-14-22-001

Lead Agency:

County of San Diego
Planning and Development Services
Contact: Donna Beddow
5510 Overland Ave, Suite 110
San Diego, California 92123

Prepared by:

Brad Comeau, MSc, RPA and Micah Hale, Ph.D., RPA
DUDEK
605 Third Street
Encinitas, California 92024

Approved by:

Micah Hale, Ph.D., RPA

Prepared for:

Jesse Marshall
NextEra Energy Resources
700 Universe Boulevard
Juno Beach, Florida 33408

SEPTEMBER 2015

Printed on 30% post-consumer recycled material.

NATIONAL ARCHAEOLOGICAL DATABASE (NADB) INFORMATION

Authors:	Brad Comeau, MSc, RPA and Micah J. Hale, PhD, RPA
Firm:	Dudek
Project Proponent:	NextEra Energy Resources 700 Universe Boulevard Juno Beach, Florida, 33408
Report Date:	September 2015
Report Title:	Cultural Resources Report for the Jacumba Solar Energy Project, San Diego County, California
Type of Study:	Phase I Survey and Phase II Archaeological Evaluation
New Sites:	CA-SDI-21492; CA-SDI-21493; CA-SDI-21494; CA-SDI-21495; CA-SDI-21496; CA-SDI-21497; CA-SDI-21498; CA-SDI-21499; CA-SDI-21500
Updated Sites:	CA-SDI-176; CA-SDI-4448; CA-SDI-4477; CA-SDI-7060; CA-SDI-7079; CA-SDI-20169; CA-SDI-20279; CA-SDI-20280; CA-SDI-20282; CA-SDI-20283; CA-SDI-20284; CA-SDI-20285; CA-SDI-20286; CA-SDI-20287; CA-SDI-20300; CA-SDI-7074/6119/19627; CA-SD-18765;
USGS Quads:	Jacumba Overextended South, CA/BC 1:24,000; T 18 S, R 8 E; Section 11.
Acreage:	304 acres (APE);
Permit Numbers:	PDS2013-MUP-14-041 and PDS2014-ER-14-22-001
Keywords:	Inventory; Extended Phase I Shovel Probing; Evaluation; distributional testing; lithic scatter; roasting pit; thermal feature; fire-affected rock; projectile point; groundstone; flakedstone tool; retouched flake; simple flake tool; formed flake tool; drill; biface; millingstone; human remains; debitage; quarry; radiocarbon dating; human remains; floatation; control unit; shovel test unit; shovel test pit; controlled surface collection; shovel scrape; mechanically excavated trench; geomorphology; open space preserve; not significant; not eligible; CRHR; County RPO; CA-SDI-176; CA-SDI-4448; CA-SDI-4477; CA-SDI-7060; CA-SDI-7079; CA-SDI-20169; CA-SDI-20279; CA-SDI-20280; CA-SDI-20282; CA-SDI-20283; CA-SDI-20284; CA-SDI-20285; CA-SDI-20286; CA-SDI-20287; CA-SDI-20300; CA-SDI-7074/6119/19627; CA-SD-18765; CA-SDI-21492; CA-SDI-21493; CA-SDI-21494; CA-SDI-21495; CA-SDI-21496; CA-SDI-21497; CA-SDI-21498; CA-SDI-21499; CA-SDI-21500

INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

Section **Page No.**

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

TABLE OF CONTENTS (CONTINUED)

Page No.

FIGURES

TABLE OF CONTENTS (CONTINUED)

Page No.

TABLES

TABLE OF CONTENTS (CONTINUED)

Page No.

APPENDICES

INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
AMSL	Above mean sea level
ADI	Area of Direct Impact
APE	Area of Potential Effect
APN	Assessor's Parcel Number
CCR	California Code of Regulations
CCS	Cryprocrystaline Silica
CCT	Core/Cobble Tool
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CRHR	California Register of Historical Resources
CM	Centimeters
CSC	Controlled Surface Collection
CU	Control Unit
ECO	East County
Emax	Energy Maximizing
ESJ	Energia Sierra Juarez
DPR	California Department of Parks and Recreation
G	Grams
GIS	Geographic Information System
FFT	Formed Flake Tool
GPS	Global Positioning system
HRS	Habitat Restoration Sciences
JDAD	Jacumba Discontiguous Archaeological District
JVAD	Jacumba Valley Archaeological District
KCRC	Kumeyaay Cultural Repatriation Committee
KG	Kilograms
MS	Million Years Ago
MET	Mechanically Excavated Trench
MLD	Most Likely Descendant
MM	Millimeters
NAHC	Native American Heritage Commission
PV	Photovoltaic
RPA	Register of Professional Archaeologists
RPO	Resource Protection Ordinance
RTF	Retouched Flake Tool
SCIC	South Coastal Information Center
SFT	Simple Flake Tool
SHPO	State Historic Preservation Officer
SSU	Shovel Scrape Unit
STP	Shovel Test Pit
STU	Shovel Test Unit

TCP	Traditional Cultural Property
TMD	Table Mountain District
Tmin	Time Minimizing
USACE	U.S. Army Corps of Engineers
USC	United States Code
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

MANAGEMENT SUMMARY

This report presents the results of Dudek's cultural resources inventory and evaluation for the Jacumba Solar Energy Project (Project), located in the unincorporated community of Jacumba, San Diego County, California. NextEra Energy Resources is proposing to construct and operate a photovoltaic solar energy facility and generator tie line (gen-tie) electric distribution line. The Proposed Project area covers approximately 304 acres in southeastern San Diego County. Through environmental constraints and project design evaluation, the Applicant has dedicated a portion of the property to Open Space Preserve. The proposed solar facility would be within an approximately 108-acre fenced area and would utilize photovoltaic (PV) fixed-tilt rack electric generation system technology to produce solar energy at the utility-scale. Approximately 184 acres of the property would be dedicated as Open Space Preserve. Approximately 5 additional acres would be an impact-neutral area that matches the setback from the U.S./Mexico international border. Existing roads and rights-of-way on the property that would not be altered (including Old Highway 80) totals approximately 3 acres. Finally off the project property but part of the project area is approximately 4 acres for the gen-tie corridor extending from the Jacumba Solar Energy Project property boundary to the East County (ECO) Substation. The Proposed Project could produce up to 20 megawatts (MW) of solar energy and would be located on approximately 108 acres within the Mountain Empire Subregional Plan area in unincorporated San Diego County.

The proposed project is located immediately north of the international border, south of Old Highway 80, and west of the Jacumba Mountains Wilderness. This project falls in Section 11 of the *Jacumba Overextended South*, *CA/BC* 1:24,000 USGS maps (Township 18S; Range 8E).

A records search performed at the South Coastal Information Center identified several previously recorded archaeological sites within the project area. Several sites located in the northern part of the project area near Old Highway 80 appeared potentially eligible from surface information and were avoided through project design changes. It was also determined that a low density scatter of lithic chipping debris covers the entire project area and general vicinity, negating the application of traditional site density requirements for site boundary delineation. A limited Extended Phase I shovel test program was implemented on a subjective basis to test for the presence of potential significant buried cultural deposits. A total of 18 shovel test pits were excavated at 12 separate locations. The Extended Phase I program generally confirmed surface expectations that very little opportunity for buried cultural deposits exists within the project area, other than within the five previously recorded archaeological sites to the north that were avoided through project design changes.

A revised project ADI generally covering the southern-southeastern third of the project area was targeted by a distributional survey and evaluation program. Consisting of sample units placed at regular intervals on an offset grid, and subjectively placed sample units, the distributional sampling program was able to characterize archaeological deposits over the entire ADI according to statistically valid artifact samples and probabilities. An additional intensive pedestrian survey was completed when traveling between grid sample units. Known locations of artifact concentration were also targeted to ensure no deposits were ignored. Backhoe trenches were excavated in certain locations to test for the presence of buried archaeological deposits and features, and some were also used to target an area in the southern part of the project area with known overlapping prehistoric roasting pit features.

Overall, the archaeological survey and evaluation program resulted in the delineation of nine new, small sites (CA-SDI-21492 through CA-SDI-214500) and the expansion of four previously recorded archaeological sites (CA-SDI-176, CA-SDI-4448, CA-SDI-7074/6119/19627, and CA-SDI-18765). Only two previously recorded sites intersect the ADI (CA-SDI-7074/6119/19627 and CA-SDI-18765). Of the nine newly recorded sites, only five (CA-SDI-21492, CA-SDI-21493, CA-SDI-21494, CA-SDI-21496, and CA-SDI-21497) are located within the ADI. In all, seven archaeological sites intersect the Project ADI. All newly identified sites and portions of previously recorded sites within the ADI were found to lack archaeological deposits that could be considered significant under the California Environmental Quality Act (CEQA) or San Diego County criteria and all are recommended as not eligible for listing in the California Register of Historical Resources (CRHR), local register, or the County Resource Protection Ordinance (RPO), respectively. One of the previously recorded sites was found to also overlap the gen-tie corridor; CA-SDI-7074/6119/19627 was previously evaluated on multiple occasions and the areas targeted during those evaluations which overlap the current project ADI were recommended not eligible for CRHR or National Register of Historic Places (NRHP) listing. A portion of the site located outside the Jacumba Solar Energy Project was evaluated during another project and was determined eligible for listing in the NRHP and CRHR (Williams and Whitley 2011). Therefore, the portions of the site which have been evaluated and found not eligible/not significant should be considered non-contributing elements to the overall significance/eligibility of the site. In addition, two concentrations within CA-SDI-7074/6119/19627 identified during one of the evaluations were avoided by project design and were not directly evaluated as potential contributing elements to the site's eligibility.

Two locations of possible human cremated remains were identified in separate parts of the Project area. These areas were immediately avoided during the evaluation program, and the treatment process followed the regulations set forth in California Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. The County Medical Examiner's office was notified and arrangements were made for the County's Forensic Anthropologist to examine all possible remains. After positive identification as possible or likely human of several bone fragments from both locations was made, the Native American Heritage Commission (NAHC) was notified and the Kumeyaay Cultural Repatriation Committee (KCRC) was named as the Most Likely Descendent (MLD). The KCRC subsequently named Clint Linton as the MLD representative who took custody of the bone fragments from both locations. The Project proponent and County archaeologist agreed to avoid the locations of both areas where potential human remains were discovered, with an appropriate buffer that would ensure their protection in perpetuity. Clint Linton was involved in the avoidance designation process in a subsequent meeting with the Project proponent.

While the current set of evaluated cultural resources within the Jacumba Solar ADI are recommended as not eligible for listing in the CRHR based primarily on CEQA Criterion 4—data potential (with all criteria being considered), under the County Guidelines all sites are considered "important." Although all sites are considered important under the County Guidelines the "importance" of sites herein recommended as not eligible for listing in the CRHR can be exhausted through the following additional mitigation measures: curation of artifacts and monitoring of all ground disturbance during construction for the entire project parcel. The maximum depth of monitoring shall be determined in consultation with the archaeologist of record, the project proponent, and County archaeological staff.

The requirement for monitoring also fulfills the potential for significant impacts to archaeological deposits discovered during Project implementation through grading or other earth-moving activities. It is unlikely that any newly identified buried archaeological deposits can be avoided during project implementation; however, all new discoveries will require immediate avoidance, conferral with the CEQA reviewing agencies on treatment, evaluation of significance, and, if avoidance is determined to be infeasible, mitigation through data recovery. In addition, any inadvertent discoveries of potential human remains or grave goods during project implementation will be treated in accordance with California law as defined Public Resources Code Section 5097.98 and Health and Safety Section Code 7050.5.

Artifacts collected during this evaluation program will be curated at the San Diego Archaeological Center (SDAC), a federally approved curation facility, unless the County agrees to different disposition. California Department of Parks and Recreation (DPR) forms for each resource documented are provided as a confidential appendix to this report and have been submitted to the South Coastal Information Center (SCIC) of the California Historical Resources Information System (CHRIS) at San Diego State University.

INTENTIONALLY LEFT BLANK

1.0 INTRODUCTION

This report presents the results of Dudek's cultural resources study for the Jacumba Solar Energy Project (Project) located in the unincorporated community of Jacumba, San Diego County, California (Figure 1-1). The Project falls in Section 11 of the *Jacumba Overextended South*, CA/BC 1:24,000 USGS maps (Township 18S; Range 8E).

The County of San Diego is the lead agency responsible for ensuring that this cultural resources study complies with cultural resources guidelines identified in the California Environmental Quality Act (CEQA) and San Diego County guidelines. A separate report was prepared in order to comply with Section 106 of the National Historic Preservation Act (NHPA) to satisfy the U.S. Army Corps of Engineers' (USACE) Section 106 consultation obligations. All cultural resources personnel that participated in this Project exceeded the Secretary of Interior's standards for their respective roles, and the Principal Investigator, Dr. Micah Hale, is listed as an approved archaeological consultant with the County of San Diego.

Thus, while this report meets the format and content guidelines established by the County of San Diego, it also meets the requirements of the Archaeological Resource Management Report (ARMR) report format and content guidelines recommended by the California Office of Historic Preservation (OHP 1995).

1.1 Project Description

The Proposed Project area covers approximately 304 acres in southeastern San Diego County. Through environmental constraints and project design evaluation, the Applicant has dedicated a portion of the property to Open Space Preserve. The proposed solar facility would be within an approximately 108-acre fenced area (Figure 1-2) and would utilize photovoltaic (PV) fixed-tilt rack electric generation system technology to produce solar energy at the utility-scale. Approximately 184 acres of the property would be dedicated as Open Space Preserve. Approximately 5 additional acres would be an impact-neutral area that matches the setback from the U.S./Mexico international border. Existing roads and rights-of-way on the property that would not be altered (including Old Highway 80) totals approximately 3 acres. Finally off the project property but part of the project area is approximately 4 acres for the gen-tie corridor extending from the Jacumba Solar Energy Project property boundary to the East County (ECO) Substation. The Proposed Project could produce up to 20 megawatts (MW) of solar energy and would be located on approximately 108 acres within the Mountain Empire Subregional Plan area in unincorporated San Diego County.

1.1.1 Area of Potential Effects and Area of Direct Impacts

The Area of Potential Effects (APE) and Area of Direct Impacts (ADI) for the Project are considered separate from the APE and ADI for the offsite Gen-Tie (Figure 1-3). The Project APE includes 289 acres within which 108 acres constitutes the ADI for construction of the solar facility. The offsite infrastructure APE includes 7 acres, within which 4 acres constitutes the ADI for construction of the Gen-tie and 3 acres is additional offsite APE consisting of existing roads and rights-of-way (ROW) that will be used but unimproved.

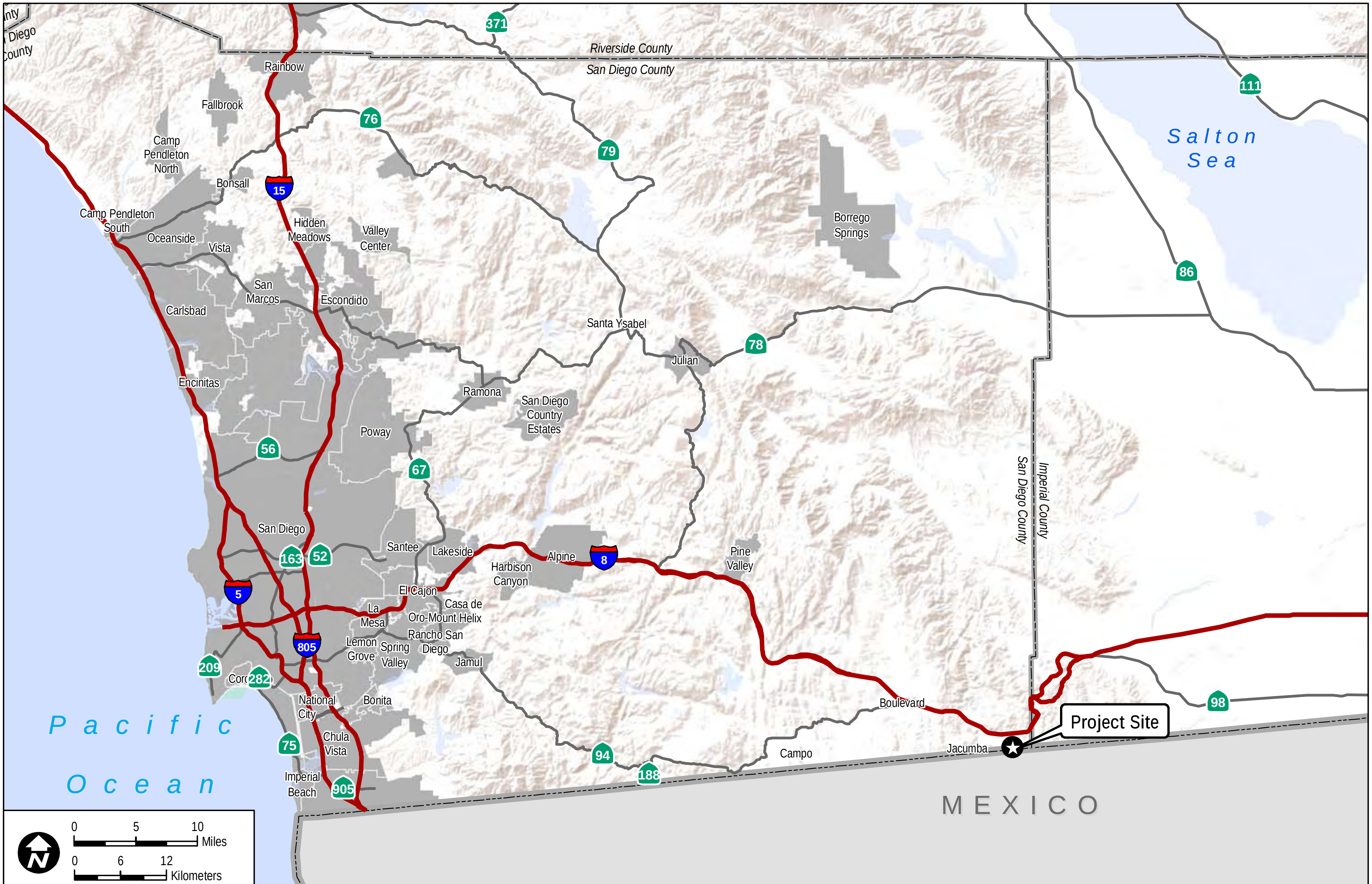
The vertical APE for the Project and offsite infrastructure is considered to be the sediments disturbed during Project and offsite infrastructure construction that has the potential to contain intact cultural deposits. The amount of disturbed sediments varies according to topography and construction needs, but is considered to average less than 3 feet, based on approximately two times the maximum depth at which archaeological deposits were identified during test excavations.

Table 1-1
Acreage for Project and Offsite Infrastructure

Area of Potential Effect (APE) or Area of Direct Impact (ADI)		Project Area (acres)	Project Property (acres)	Off Project Property (acres) (Gen-Tie and Access Roads)
Project ADI	Project site (solar facility)	108	Included (108)	Not included
Project APE	Open Space Preserve	184	Included (184)	Not included
Project APE	Setback Area	5	Included (5)	Not included
Offsite APE and ADI	Gen-tie corridor	4	Not included	Included (4)
Offsite APE	Existing Roads and rights-of-way (ROW) [including Old Highway 80)	3	Not included	Included (3)
	Total	**304**	**297**	**7**

1.1.2 Indirect Impacts Area of Potential Effects

A half-mile buffer around the maximum extents of the Project and Offsite APE was considered the APE for indirect impacts to cultural resources. No indirect effects to cultural resources will occur as a result of project implementation.



DUDEK

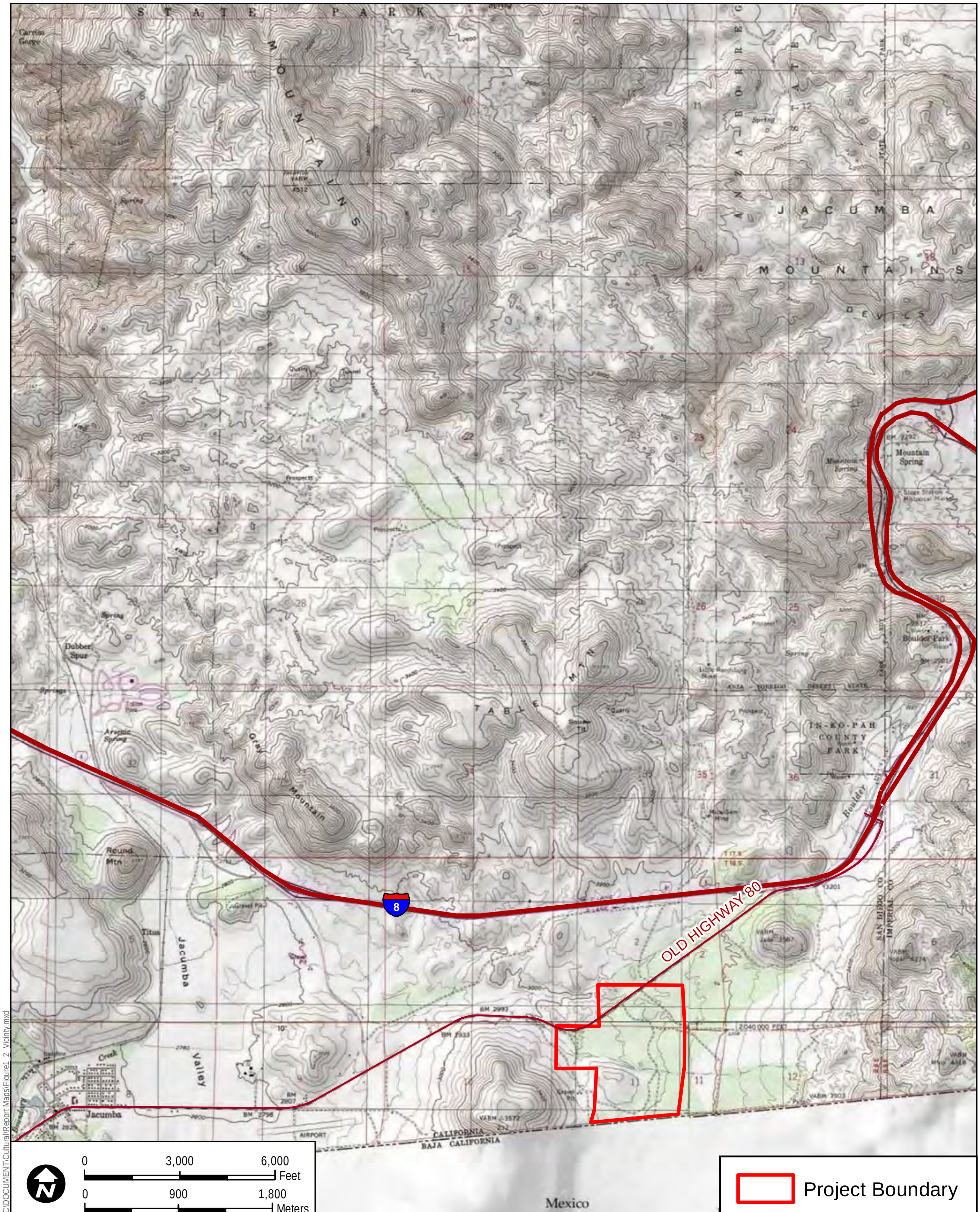
8477

FIGURE 1-1

Regional Map

Jacumba Solar Project

INTENTIONALLY LEFT BLANK



DUDEK

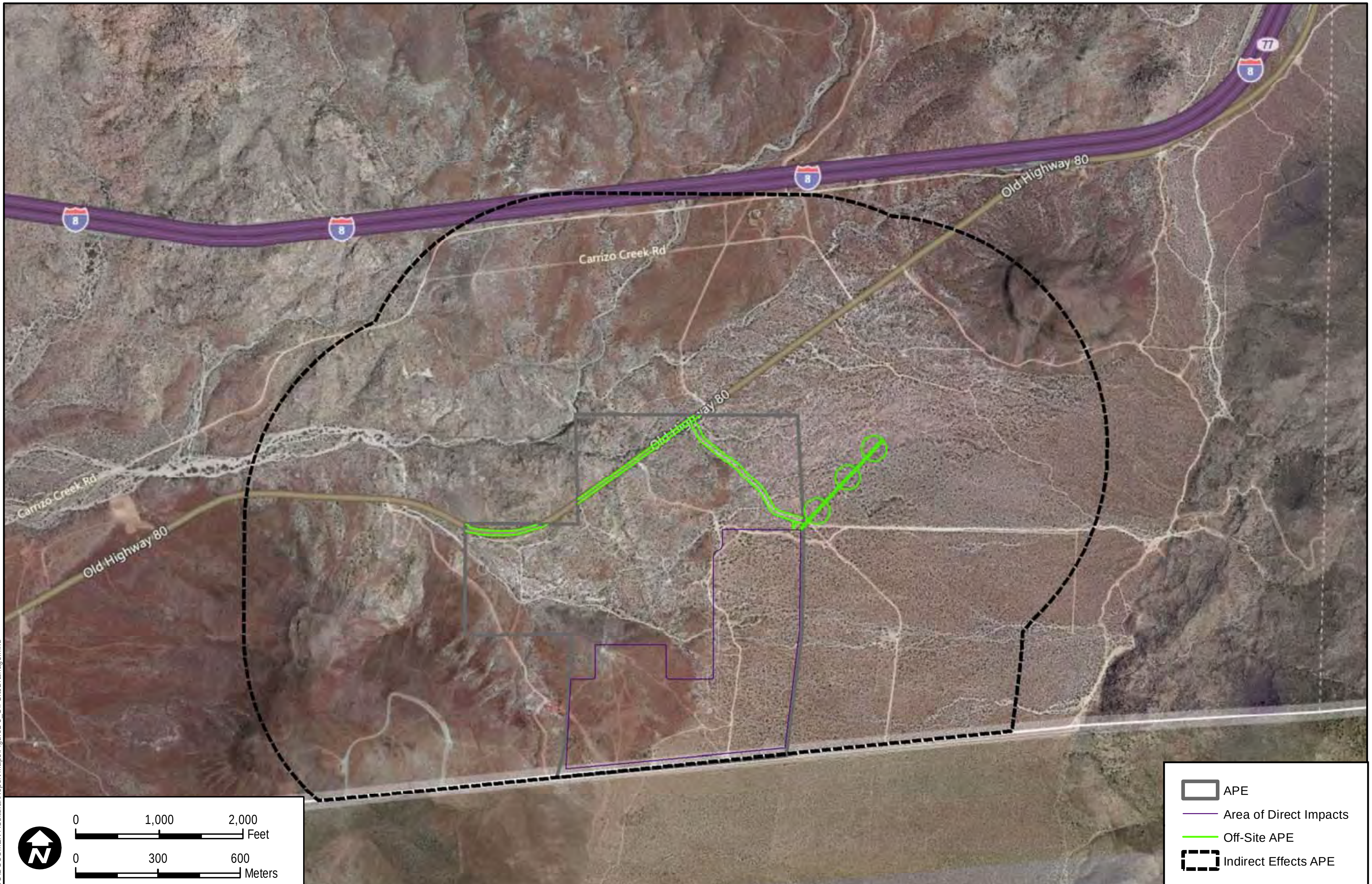
8477

FIGURE 1-2
Vicinity Map

Jacumba Solar Energy Project

Path: Z:\Projects\j847701\MAPDOC\DOCUMENT\Cultural\Report Maps\Figure1_2_Vicinity.mxd

INTENTIONALLY LEFT BLANK



Path: Z:\Projects\j847701\MAPDOC\DOCUMENT\Cultural\Report Maps\Figure1-3_Off-SiteDrainage.mxd

DUDEK

8477

SOURCE: BING 2014

FIGURE 1-3

APE/ADI for Cultural Resources

Jacumba Solar Energy Project

INTENTIONALLY LEFT BLANK

1.2 Existing Conditions

This section draws off of existing documentation completed for nearby projects such as San Diego Gas & Electric's (SDG&E) East County (ECO) Substation, Sunrise Powerlink, and the Energia Sierra Juarez (ESJ) U.S. Gen-Tie Line projects. Together, cultural resources documentation for these projects forms a substantial body of literature analyzing, in particular, aboriginal archaeological deposits.

1.2.1 Environmental Setting

Natural Setting

Within the Project boundaries, the Jacumba Solar Energy Project site is gently sloped with a small hill on the western portion of the site. The southwestern quadrant of the solar facility ranges in elevation from approximately 3,110 feet above mean sea level (amsl) to 3,140 feet amsl. The eastern portion of the solar facility ranges from 3,120 feet amsl to 3,140 feet amsl.

The Proposed Project is located in the eastern portion of the Peninsular Range Geomorphic Province of Southern California. The Peninsular Range Geomorphic Province is typified by northwest to southeast trending mountain ranges that parallel the trace of the San Andreas and related regional fault system. The Peninsular Ranges generally comprise the granitic of the Peninsular Ranges batholith and associated metamorphic rocks. West of the batholith, in the San Diego embayment, the Peninsular Range Geomorphic Province comprises sedimentary rocks ranging from Late Cretaceous to Pleistocene in age (Krazan 2011).

The majority of the Proposed Project site is underlain by the Tonalite of La Posta, a granitic formation produced by the subduction of the Farallon Plate beneath the North American Plate, approximately 95 million years ago (MA). The Tonalite of La Posta is characterized by the abundant white-weathering plagioclase feldspars. Surface exposures of the Tonalite of La Posta can be found in the northeast and southwest portions of the Project site. Adjacent to, and older than Tonalite of La Posta, is the migmatitic schist of Stephenson Peak, exposed on the western boundary of the Project site. The Stephenson Peak migmatitic schist is thought to have originated as a partial melt of predominantly metasedimentary rocks during the early stages of subduction in the Late and Middle Jurassic (Todd 2004).

Unconformably overlying both the Tonalite of La Posta and the Stephenson Peak schist in the southwestern portion of the Project site is the Anza Formation, an early Miocene age (~16 to 23 MA) coarse conglomerate sandstone. The Anza Formation, formed by weathering of continental rocks, is characterized by its reddish color, which results from the weathering of iron-bearing minerals. It is an indurated, unfossiliferous sandstone that is locally preserved by the flows of the Jacumba Volcanics.

Although not exposed at the surface within the Project boundary, a massive plug of the Jacumba Volcanics rises approximately 500 feet above the surrounding valley on the western edge of the Project boundary. Abundant cobble to boulder size (> 6 cm diameter) fragments of the Jacumba Volcanics were found on the ground surface at the Project Site, and were heavily exploited by aboriginal occupants. The Jacumba Volcanics are lower to middle Miocene (~19 MA) basalts and andesites that formed during the initial stages of rifting that accompanied the onset of strike slip faulting in the Salton Trough. Coincident in time with the onset of faulting in the Salton Trough, the Peninsular Ranges block to the west of the San Andreas fault began to rise, lifting the Miocene volcanics and older plutonic rocks about 500 m above the desert floor to the east (Todd 2004). Continued uplift, faulting and erosion created the alluvial valley in which the Project Site is located.

Quaternary alluvium unconformably overlies the Miocene and older formations in the majority of the Project site (Figure 1-4). Older alluvial deposits, referred to as terrace deposits, are exposed in the southwest portion of the project site, where they overlie the Anza Formation. These comprise unconsolidated sand, silt and gravel. They are distinguished from younger alluvial deposits because they are cut by modern streams. Younger alluvial deposits are exposed at the surface throughout the eastern portion of the project site. Trenching to ~1.5 m in the younger alluvium indicates that it thins to the north, where decomposed granite was encountered at <1 meter below ground surface. The base of the alluvium was not encountered in trenches in the southern portion of the Project Site.

A variety of soil types typical of those found in the surrounding geologic region occur within the Project site. Soils within the Project boundary consist of loose silty sand in the upper-most soils (approximately 18–24 inches), known to have low strength characteristics and highly compressible when saturated (Krazan 2011). Below the upper soils (approximately 4 to 20 feet below grade), medium-to-very dense soils consisting of sand and silty sand with varying gravel content are present, with strong and slightly compressible characteristics (Krazan 2011). Weathered sandstone bedrock exists below the medium-to-very-dense soils (Krazan 2011).

Soils within the Proposed Project boundary all have similar characteristics; all are primarily coarse sands with some loam, are well-drained with low-to-moderate runoff potential, have a high wind erosion susceptibility, low shrink/swell potential, and low-to-moderate risk of corrosion (NRCS 2014). Site-specific testing within the Proposed Project area indicated the soils would not be classified as corrosive, based on California Department of Transportation (Caltrans) guidelines. The soils on site tend to have significant fractions of gravel and cobbles. The soils are generally poorly developed, meaning they are young, support fairly thin topsoils, and do not differ greatly in character from the underlying weathered bedrock material (which in this case, is also referred to as decomposed granite). None of the soil units identified above are on the County of San Diego's (County's) list of hydric or clay soils (County of San Diego 2007b, Tables 1 and 2).

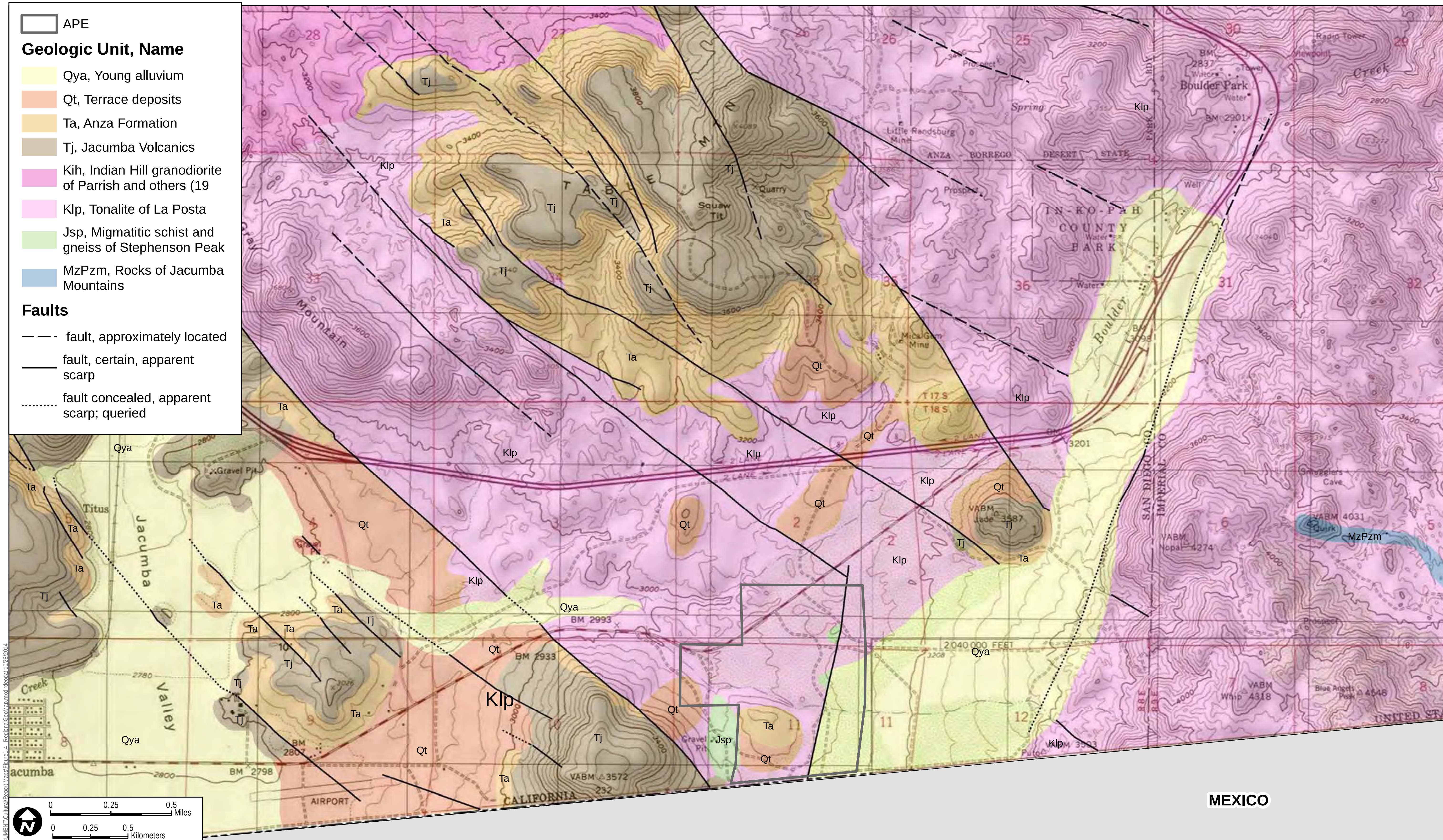
Disturbances to the area are generally limited to off-road vehicle activity, as evidenced by vehicle tracks. Although, transient occupation, including squatters have left rubbish and certainly contributed to the creation of incipient trails and two track roads. The impact of transient occupation on archaeological deposits is unclear (there is no evidence of looting), however any such activity seems to have been minimal given the large amounts of cultural material remaining on the surface. The visibility of roasting pit remains within some of the dirt roads, including sediments and burned rocks, indicates that some deposits have indeed been impacted.

The climate is classified as Mediterranean Hot Summer, or Csa in the Köppen classification (Pryde 2004). Rainfall is about 24 cm per year, based on rain gauge averages between 1963 and 2011, falling primarily between December and March. The average January daily minimum temperature is 4°C (39°F), and the average July daily maximum is 32°C (90°F). The climate would have imposed few constraints on prehistoric hunter-gatherers in the region.

The predominant natural vegetation community of the region is chaparral, although perhaps mixed with coastal sage scrub (Pryde 2004). Typical plant species can include laurel sumac (*Rhus laurina*), black sage (*Salvia mellifera*), manzanita (*Arctostaphylos* spp.), redshank (*Adenostoma sparsifolium*), oak (*Quercus* spp.), chamise (*Adenostoma fasciculatum*), California lilac (*Ceanothus* spp.)*,* and Juniper tree (*Juniperus* spp.) along with various grasses and legumes. Riparian species are associated with major drainages, though none are discernable in the project area. Mammals, birds, and reptiles within these communities provided potential food resources to prehistoric inhabitants. In the general region, much of the natural vegetation in low-lying areas has been displaced by modern land uses for grazing and orchards. However, the steep mountain slopes harbor relatively intact, dense desert scrub and juniper woodland communities, such as those currently present. These vegetation communities have been in place since the early Holocene when the climate became somewhat warmer and drier (Axelrod 1978).

Common animals within this area may include coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), cottontail *(Sylvilagus audubonit),* black-tailed jackrabbit (*Lepus californicus bennettii)*, deer mouse *(Peromyscus maniculatus)* song sparrow *(Melospiza melodia),* as well as a number of other species of birds, mammals, reptiles and amphibians.

INTETIONALLY LEFT BLANK



DUDEK

8477
OCTOBER 2014

SOURCE: Todd 2004, SanGIS 2012, National Geographic 2013.

FIGURE 1-4
Regional Geologic Map

Cultural Resources Report

INTENTIONALLY LEFT BLANK

Cultural Setting

Evidence for continuous human occupation in southern California spans the last 10,000 years. Various attempts to parse out variability in archaeological assemblages over this broad time frame have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. Each of these reconstructions describes essentially similar trends in assemblage composition in more or less detail. The prehistoric sequence within the general Jacumba region is particularly complicated by potential overlap with aboriginal groups traveling west from the Colorado Desert and Imperial Valley. To overcome potential issues in the application of disparate cultural sequences, this research employs a common set of generalized terms used to describe chronological trends in assemblage composition: Paleoindian (pre-5500 BC), Archaic (8000 BC–AD 500), Late Prehistoric (AD 500–1769), and Ethnohistoric (post-AD 1769).

Paleoindian (pre-5500 BC)

Evidence for Paleoindian occupation in Southern California is tenuous, especially considering the fact that the oldest dated archaeological assemblages look nothing like the Paleoindian artifacts from the Great Basin. One of the earliest dated archaeological assemblages in coastal Southern California (excluding the Channel Islands) derives from CA-SDI-4669/W-12, in La Jolla. A human burial from CA-SDI-4669 was radiocarbon dated to 9,590–9,920 years before present (95.4% probability) (Hector 2006). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of groundstone, battered cobbles, and expedient flake tools). Given the coastal bluff setting of this site, it is not surprising that its inhabitants made use of fish and shellfish taken through passive means (i.e., bone gorge and sinker fishing, shellfish gathering). There is no evidence at this site for economically significant exploitation of large game; rather, the assemblage is wholly consistent with what early researcher's termed the "Millingstone Horizon" (Wallace 1955), or "La Jolla" culture (Warren 1964, 1968).

In the Jacumba region, SDG&E's East County (ECO) Substation uncovered more than a hundred roasting pits within loosely consolidated alluvium from the surface to more than 20 feet below the surface. Several such features had calibrated radiocarbon dates on charcoal that were older than 6,000 BC; one of these dated as old as 7,590-7,750 BC—squarely within the Paleoindian period, even by Great Basin standards (Williams et al. 2014b). These early roasting pits rarely include artifacts other than burned rocks and the occasional piece of debitage and a recycled piece of groundstone. Noticeably absent from the ECO assemblage are those artifacts considered typical of Paleoindian toolkits, such as large projectile points or knives, and formed flake tools. Interestingly, the landform on which the old roasting pits were identified contained hundreds of roasting pits that spanned the Holocene in age with radiocarbon dates reaching to just prior to Ethnohistoric times (Williams et al. 2013). However, there is no significant variability in roasting pit structure, content, or associated artifactual assemblage throughout the deposit. Together with data from specialized ethnobotanical studies identified fragments of cactus seed, juniper seed, and yucca, the overall archaeological assemblage indicates the area was occupied for millennia to exploit locally and seasonally abundant plants including yucca or agave.

Aside from a few discoveries of Lake Mojave or Silver Lake projectile points, typical Paleoindian assemblages that include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of groundstone tools are not discernable in southern California. For comparison, prime examples of "typical" pattern are sites that were studied by Emma Lou Davis (1978) on China Lake Naval Air Weapons Station near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (CA-MNO-679)—a multicomponent fluted point site, and CA-MNO-680—a single component Great Basined Stemmed point site (Basgall et al. 2002). At CA-MNO-679 and CA-MNO-680, groundstone tools were rare while finely made projectile points were common.

Turning back to Southern California, the fact that some of the earliest dated assemblages are dominated by processing tools runs counter to traditional notions of mobile hunter–gatherers traversing the landscape for highly valued prey. Evidence for the latter—that is, typical Paleoindian assemblages—may have been located along the coastal margin at one time, prior to glacial desiccation and a rapid rise in sea level during the early Holocene (pre-7500 BP) that submerged as much as 1.8 kilometer of the San Diego coastline. If this were true, however, it would also be expected that such sites would be located on older landforms near the current coastline. Some sites, such as CA-SDI-210 along Agua Hedionda Lagoon, contained stemmed points similar in form to Silver Lake and Lake Mojave projectile points (pre-8000 BP) that are commonly found at sites in California's high desert (Basgall and Hall 1990). CA-SDI-210 yielded one corrected radiocarbon date of 6520-7520 BC (8520–9520 BP; Warren et al. 2004). However, sites of this nature are extremely rare and cannot be separated from large numbers of milling tools that intermingle with old projectile point forms.

Warren et al. (2004) claimed that a biface manufacturing tradition present at the Harris site complex (CA-SDI-149) is representative of typical Paleoindian occupation in the San Diego region that possibly dates between 8,365-6,200 BC (Warren et al. 2004, p. 26). Termed San Dieguito (Rogers 1945), assemblages at the Harris site are qualitatively distinct from most others in the San Diego region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (Warren 1964, 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is hotly debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos' interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools at the Harris site complex, is very different than nearly all other assemblages throughout the San Diego region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key early-Holocene sites. Producing finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short-lived, but that it was not as economically successful as the Archaic strategy. Such a conclusion would fit with other trends in southern California deserts, wherein hunting-related tools are replaced by processing tools during the early Holocene (Basgall and Hall 1990).

Indeed, the San Dieguito complex is the apex of easterly cultural sequences defined for the Colorado Desert and adjacent areas east of the Peninsular Range. Malcolm Rogers (1966) initially separated the San Dieguito complex into three phases that were based on an evolutionary concept that more refined tools are the result of cultures learning refined manufacture techniques and incorporating greater complexity through time. As a result, the San Dieguito complex portrayed early assemblages from simple (San Dieguito I) to complex (San Dieguito III), relative to one another. In Imperial County, the general lack of radiocarbon dates associated with perceived San Dieguito sites has stunted modern refinement of Roger's San Dieguito complex, both in terms of chronology and assemblage content. Cobble terraces exposed during the Pleistocene were available to both Paleoindian and later aboriginal groups. The ease of acquiring toolstone from desert pavements was probably attractive to hunter-gatherers traversing the region throughout prehistory, complicating definition of chronological variability in flakedstone reduction trajectories. As a result, speculation has emerged that the San Dieguito complex persisted for much of the Holocene, whether or not it changed in coastal regions or areas farther to the north.

Notwithstanding sample bias in trying to refine southern California Paleoindian sequences, including geomorphological transitions surrounding the Salton Trough that make discovery of well-preserved early surfaces in the western Colorado Desert near impossible, the early dates associated with strikingly Archaic-looking toolkits implies that little technological variability actually existed in the last 10,000 years (Hale 2010).

Archaic (8000 BC–AD 500)

The more than 1500-year overlap between the presumed age of Paleoindian occupations and the Archaic period (see Warren et al. 2004) highlights the difficulty in defining a cultural chronology in southern California desert region. If San Dieguito is the only recognized Paleoindian component, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong connections between San Dieguito and the Lake Mojave complex of the Great Basin. Thus, the Archaic pattern is the earliest local socioeconomic adaptation to southern California coastal and desert/peninsular environments (Hale 2001, 2009).

The Archaic pattern is relatively easy to define with assemblages that consist primarily of processing tools: millingstones, handstones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in all environments across San Diego County, from the coast past the Peninsular Range, with little variability in tool composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurs until the bow and arrow is adopted after AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remains low. After the bow is adopted, small arrow points appear in large quantities and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped millingstones and handstones decrease in proportion relative to expedient, unshaped groundstone tools (Hale 2009). Thus, the terminus of the Archaic period is equally as hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complimented only by the addition of the bow and ceramics.

Several cultural sequences that chronologically fit within southern California's "Archiac" period have been identified in the Mojave Desert, such as Deadman Lake, Pinto, and Gypsum periods (Sutton et al. 2007). However, these appear to be regionally specific and are generally not manifest south of the Transverse Ranges, particularly in San Diego and Imperial Counties other than isolated occurrences of time-sensitive projectile points. As with any time-sensitive artifact, its form can have strikingly different chronological placement by region such that a "Pinto" projectile point cannot be assumed to confer the same age estimates on an archaeological assemblage in say, San Diego or Imperial counties that it does in the Mojave Desert.

Reasons for the rapid and early development of a generalized processing economy have cited environmental deterioration or population growth as primary agents of change. Environmental deterioration cannot account for its development since southern California environments have had established plant communities for much of the last 15,000 years (Axelrod 1978; see Hale 2001) that varied mostly in vertical distribution. Indeed, the Pinto period seems to have thrived during the Archaic period, even if specific local manifestations are less obvious than others (Basgall et al. 2002). Population growth itself also presents a weak case as a primary agent of change since the archaeological record is either too incomplete to support such an analysis or because it implies a shift in mobility rather than population density. Archaic period sites reflect serial site occupation rather than either high residential mobility or sedentism (Basgall and True 1985; Hale 2001). Rather, the best explanation for the appearance and persistence of the Archaic pattern is that it represents a strongly stable socioeconomic strategy tailormade for southern California with its rich crops of roots and tubers, seeds, and nuts and small animals.

Late Prehistoric (AD 500–1769)

The period of time following the Archaic and prior to Ethnohistoric times (AD 1769) is commonly referred to as the Late Prehistoric (M. Rogers 1945; Wallace 1955; Warren et al. 2004). However, several other subdivisions continue to be used to describe various shifts in assemblage composition, including the addition of ceramics and cremation practices. In northern San Diego County, the post-AD 1450 period is called the San Luis Rey Complex (True 1980), while the same period in southern San Diego County is called the Cuyamaca Complex and is thought to extend from AD 500 until Ethnohistoric times (Meighan 1959). Rogers (1929) also subdivided the last 1,000 years into the Yuman II and III cultures, based on the distribution of ceramics and the presumed spread of Yuman-speaking groups into the Colorado Desert (Moriarty 1966, 1967). There, the Patayan pattern was defined to characterize the appearance of paddle and anvil pottery from Arizona sometime after the first-century AD (Rogers 1945; Waters 1992).

Despite these regional complexes, each is defined by the addition of arrow points and ceramics, and the widespread use of bedrock mortars. Vagaries in the appearance of the bow and arrow and ceramics make the temporal resolution of late complexes difficult, including the local Cuyamaca complex manifestation. For this reason, the term Late Prehistoric is well-suited to describe the last 1,500 years of prehistory in the San Diego region.

Temporal trends in socioeconomic adaptations during the Late Prehistoric period are poorly understood. This is partly due to the fact that the fundamental Late Prehistoric assemblage is very similar to the Archaic pattern, but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock surfaces; bowl mortars are actually rare in the San Diego region. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred prior to AD 1400. True (1980) argued that acorn processing and ceramic use in the northern San Diego region did not occur until the San Luis Rey pattern emerged after approximately AD 1450. For southern San Diego County, the picture is less clear. The Cuyamaca Complex is most recognizable after AD 1450 (Hector 1984). Similar to True (1980), Hale (2009) argued that an acorn economy did not appear in the southern San Diego region until just prior to Ethnohistoric times, and that when it did occur, a major shift in social organization followed.

Considering eastern influences from the Colorado Desert, early agricultural practices never gained traction in California, and western Colorado Desert evidence for aboriginal agriculture is virtually non-existent, absent early ethnohistoric accounts of Fort Mojave Indians (Kroeber 1925). It is likely that the stable Archaic economy persisted into the Late Prehistoric era and absorbed the efficiencies of certain technological innovations including the bow and arrow and ceramics. Locally, however, Tizon Brownware ceramic vessels dominate archaeological assemblages; Colorado buffware fragments are relatively rare, and could have been obtained simply through trade. Aboriginal agriculture probably hit a socioeconomic brick wall in southern California where a stable economy focused on generalized but regular exploitation of locally abundant plant foods was simply too efficient and socially reinforced to allow a labor intensive practice of agriculture take root (Bettinger 1999; Hale 2010).

Ethnohistoric (post-AD 1769)

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the San Diego region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the San Diego region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century (Bean and Shipek 1978; Boscana 1846; Fages 1937; Geiger and Meighan 1976; Harrington 1934; Kroeber 1925; Laylander 2000; Sparkman 1908; White 1963). The principal intent of these researchers was to record the precontact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as "salvage ethnography," was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his "memory culture" approach (Lightfoot 2005:32) by recording languages and oral histories within the San Diego region. Ethnographic research by Dubois, Kroeber, Harrington, Spier, and others during the early twentieth century seemed to indicate that traditional cultural practices and beliefs survived among local Native American communities. These accounts supported, and were supported by, previous governmental decisions which made San Diego County the location of more federally recognized tribes than anywhere else in the United States: 18 tribes on 18 reservations that cover more than 116,000 acres (CSP 2009).

It is important to note that even though there were many informants for these early ethnographies who were able to provide information from personal experiences about native life before the Europeans, a significantly large proportion of these informants were born after 1850 (Heizer and Nissen 1973); therefore, the documentation of pre-contact, aboriginal culture was being increasingly supplied by individuals born in California after considerable contact with Europeans. As Robert F. Heizer (1978) stated, this is an important issue to note when examining these ethnographies, since considerable culture change had undoubtedly occurred by 1850 among the Native American survivors of California.

The traditional cultural boundaries between the Luiseño and Kumeyaay Native American tribal groups have been well defined by anthropologist Florence C. Shipek (1993; as summarized in San Diego County Board of Supervisors 2007:6):

> In 1769, the Kumeyaay national territory started at the coast about 100 miles south of the Mexican border (below Santo Tomas), thence north to the coast at the drainage divide south of the San Luis Rey River including its tributaries. Using the U.S. Geological Survey topographic maps, the boundary with the Luiseño then follows that divide inland. The boundary continues on the divide separating Valley Center from Escondido and then up along Bear Ridge to the 2240 contour line and then north across the divide between Valley Center and Woods Valley up to the 1880-foot peak, then curving around east along the divide above Woods Valley.

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007). As the project area is located approximately 25 km south of the San Luis Rey River, the Native American inhabitants of the region spoke using the Ipai language subgroup of the Yuman language group. Ipai and Tipai, spoken respectively by the northern and southern

Kumeyaay communities, are mutually intelligible. For this reason, these two are often treated as dialects of a larger Kumeyaay tribal group rather than as distinctive languages, though this has been debated (Luomala 1978; Laylander 2010).

Victor Golla has contended that one can interpret the amount of variability within specific language groups as being associated with the relative “time depth” of the speaking populations (Golla 2007:80). A large amount of variation within the language of a group represents a greater time depth then a group’s language with less internal diversity. One method that he has employed is by drawing comparisons with historically documented changes in Germanic and Romantic language groups. Golla (2007:71) has observed that the “absolute chronology of the internal diversification within a language family” can be correlated with archaeological dates. This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

Golla suggests that there are two language families associated with Native American groups who traditionally lived throughout the San Diego County region. The northern San Diego tribes have traditionally spoken Takic languages that may be assigned to the larger Uto–Aztecan family (Golla 2007:74). These groups include the Luiseño, Cupeño, and Cahuilla. Golla has interpreted the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 2,000 years. Other researchers have contended that Takic may have diverged from Uto–Aztecan ca. 2600 BC–AD 1, which was later followed by the diversification within the Takic speaking San Diego tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010). The majority of Native American tribal groups in southern San Diego region have traditionally spoken Yuman languages, a subgroup of the Hokan Phylum. Golla has suggested that the time depth of Hokan is approximately 8,000 years (Golla 200774). The Kumeyaay tribal communities share a common language group with the Cocopa, Quechan, Maricopa, Mojave, and others to east, and the Kiliwa to the south. The time depth for both the Ipai (north of the San Diego River, from Escondido to Lake Henshaw) and the Tipai (south of the San Diego River, the Laguna Mountains through Ensenada) is approximated to be 2,000 years at the most. Laylander has contended that previous research indicates a divergence between Ipai and Tipai to have occurred approximately AD 600–1200 (Laylander 1985). Despite the distinct linguistic differences between the Takic-speaking tribes to the north, the Ipai-speaking communities in central San Diego, and the Tipai southern Kumeyaay, attempts to illustrate the distinctions between these groups based solely on cultural material alone have had only limited success (Pigniolo 2004; True 1966).

The Kumeyaay generally lived in smaller family subgroups that would inhabit two or more locations over the course of the year. While less common, there is sufficient evidence that there were also permanently occupied villages, and that some members may have remained at these locations throughout the year (Owen 1965; Shipek 1982, 1985; Spier 1923). Each autonomous tribelet was internally socially stratified, commonly including higher status individuals such as a tribal head (*Kwaaypay*), shaman (*Kuseyaay*), and general members with various responsibilities and skills (Shipek 1982). Higher-status individuals tended to have greater rights to land resources, and owned more goods, such as shell money and beads, decorative items, and clothing. To some degree, titles were passed along family lines; however, tangible goods were generally ceremonially burned or destroyed following the deaths of their owners (Luomala 1978). Remains were cremated over a pyre and then relocated to a cremation ceramic vessel that was placed in a removed or hidden location. A broken metate was commonly placed at the location of the cremated remains, with the intent of providing aid and further use after death. At maturity, tribal members often left to other bands in order to find a partner. The families formed networks of communication and exchange around such partnerships.

Areas or regions, identified by known physical landmarks, could be recognized as band-specific territories that might be violently defended against use by other members of the Kumeyaay. Other areas or resources, such as water sources and other locations that were rich in natural resources, were generally understood as communal land to be shared amongst all the Kumeyaay (Loumala 1978). The coastal Kumeyaay exchanged a number of local goods, such as seafood, coastal plants, and various types of shell for items including acorns, agave, mesquite beans, gourds, and other more inland plants of use (Luomala 1978). While evidence for limited marine resource use exists in inland areas, terrestrial animals and other resources would have provided a much larger portion of sustenance. Game animals consisted of rabbits, hares (*Leporidae*), birds, ground squirrels, woodrats (*Neotoma*), deer, bears, mountain lions (*Puma concolor*), bobcats (*Lynx rufus)*, coyotes (*Canis latrans*), and others. In lesser numbers, reptiles and amphibians may have been consumed.

A number of local plants were used for food and medicine. These were exploited seasonally, and were both traded between regional groups and gathered as a single tribelet moved between habitation areas. Some of the more common of these that might have been procured locally or at higher elevation varieties would have included buckwheat (*Eriogonum fasciculatum*), *Agave*, *Yucca*, lemonade berry (*Rhus integrifolia*), sugar brush (*Rhus ovata*), sage scrub (*Artemisia californica*), yerba santa (*Eriodictyon*), sage (*Salvia*), *Ephedra*, prickly pear (*Opuntia*), mulefat (*Baccharis salicifolia*), chamise (*Adenostoma fasciculatum*), elderberry (*Sambucus nigra*), oak (*Quercus*), willow (Salix), and *Juncus* grass among many others (Wilken 2012).

The Historic Period (post-AD 1542)

European activity in the region began as early as AD 1542, when Juan Rodríguez Cabrillo landed in San Diego Bay. Sebastián Vizcaíno returned in 1602, and it is possible that there were subsequent contacts that went unrecorded. These brief encounters made the local native people aware of the existence of other cultures that were technologically more complex than their own. Epidemic diseases may also have been introduced into the region at an early date, either by direct contacts with the infrequent European visitors or through waves of diffusion emanating from native peoples farther to the east or south (Preston 2002). It is possible, but as yet unproven, that the precipitous demographic decline of native peoples had already begun prior to the arrival of Gaspar de Portolá and Junípero Serra in 1769.

Spanish colonial settlement was initiated in 1769, when multiple expeditions arrived in San Diego by land and sea, and then continued northward through the coastal plain toward Monterey. A military presidio and a mission to deal with the local Kumeyaay and Ipai were soon firmly established at San Diego, despite violent resistance to them from a coalition of native communities in 1776. Private ranchos subsequently established by Spanish and Mexican soldiers, as well as other non-natives, appropriated much of the remaining coastal or near-coastal locations (Pourade 1960–1967). No land grants were established in the mountains of eastern San Diego County, leaving the local Kumeyaay relatively unaffected by the arrival of the Spanish and Mexican immigrants.

Mexico's separation from the Spanish empire in 1821 and the secularization of the California missions in the 1830s caused further disruptions to native populations in western San Diego County. Some former mission neophytes were absorbed into the work forces on the ranchos, while others drifted toward the urban centers at San Diego and Los Angeles or moved to the eastern portions of the county where they were able to join still largely autonomous native communities. United States conquest and annexation, together with the gold rush in Northern California, brought many additional outsiders into the region. Development during the following decades was fitful, undergoing cycles of boom and bust.

United States conquest and annexation, together with the gold rush in northern California, brought many additional outsiders into the region. Development during the following decades was fitful, undergoing cycles of boom and bust.

The Campo-Jacumba region was largely considered unsettled southern California territory—a fact that drew to the region a few prominent ranchers such as the McCain family. Originally from Arkansas and Texas, the McCain family began ranching in California as early as 1858 in the Mendocino region, and after an aborted return trip to Arkansas, decided to settle in what is now known as McCain Valley in 1868 (Ní Ghabhláin et al. 2010; Wade et al. 2008). With the McCain family alongside several small sheep and cattle ranching outfits tied to the Laguna Mountain area (just northwest of McCain Valley), ranching thrived until the mid-twentieth century. After this time, ranching dwindled in productivity due to several reasons, including more productive cattle outfits to the north, a collapse in the demand for wool, and the appropriation of some prime pasturelands (such as Laguna Meadows) by the National Parks

Service for watershed protection and conservation (see Wade et al. 2008). In its heyday, cattle ranching associated with McCain Valley to the west spread as far south as the lower portions of northern Baja (Wade et al. 2008). Not surprisingly, the intensification of ranching and homesteading in the McCain Valley area lead to conflicts with local Kumeyaay inhabitants. One such conflict, recounted by Tom Lucas, a local Kwaayimii Indian, was the apparent last stand of some Kumeyaay families in conflict with the McCain family that took place near McCain Valley in Campo or Jacumba in the 1880s (Carrico 1983, 1987). However, it is also true that many of the Native American inhabitants were employed by local ranchers, including Tom Lucas (Carrico 1983). Wade et al. (2008) provide a region-wide overview of ranching in San Diego County including eligibility considerations.

Several railroad routes were planned to pass through the region but each was abandoned, until 1906, when John D. Spreckels incorporated the San Diego and Arizona Railroad. Construction on the railroad began in 1907 (Kimball 1985). The local population grew slowly during the construction of Morena Dam and the San Diego and Arizona Railroad. In the meantime, civil unrest was common across the border just to the south. The Mexican Revolution began in the fall of 1910, and by the following spring a Mexican rebel camp was located just 6 mi. from Campo. Refugees fled to Campo, which was partially protected by U.S. soldiers.

Finally, on November 16, 1919, the San Diego and Arizona Railroad was completed, and the first train passed through the Campo Valley, carrying prominent San Diego residents, including John D. Spreckels. While some residents felt that the new railroad line would ruin the beautiful landscape of San Diego County's backcountry, many others were strong advocates for the rail line, predicting that it would increase the economic capacity of the area by enabling the shipment of cattle and sheep as well as fruit, vegetables, and honey out of Campo (San Diego Union, 4 July 4 1915:7). The railroad finally provided a direct link for San Diego to the eastern United States.

1.2.2 Records Search Results

South Coastal Information Center (SCIC) staff conducted a records search for the proposed project parcel and a 1.0-mile buffer surrounding the project area on November 16, 2011. SCIC records indicate that 22 previous cultural resources studies have been performed within the records search area; of these, seven have covered at least a portion of the project area (Table 1-2). Five additional recent studies have been performed which cover at least a portion of the project area but were not included in the SCIC records at the time of the search (Berryman and Whitaker 2010), Jordan 2010; Rosenberg and Smith 2008; Williams 2011; Williams and Whitley 2011). Two hundred sixteen cultural resources were identified in the records search area, including 184 sites and 32 isolates. Of these, 17 sites have been recorded wholly or partially in the project area (Table 1-3). Two of these are located within the project ADI: CA-SDI-

7074/6119/19627 and CA-SDI-18765. The records search results are included in the report as Confidential Appendix A.

Directly within the project area, Rosenberg and Smith (2008) conducted an archaeological survey and evaluation program of a portion of a prehistoric stone quarry, CA-SDI-18765. Their study was restricted to property boundaries, resulting in delineation of site boundaries with an arbitrary polygon along property lines. The evaluation involved surface recordation and subsurface excavation through their entire study area. The study did not identify any significant cultural deposits and recommended the site as not eligible for listing in the NRHP, CRHR, or the local register.

Jordan (2010) evaluated a previously recorded prehistoric artifact scatter, CA-SDI-6119, contained within the northern part of the project area, and overlapping the northern ADI boundary. That study significantly expanded the site boundaries to the southeast to include newly identified archaeological materials. Jordan's (2010) evaluation involved surface mapping and artifact collection, as well as subsurface excavation; the evaluation concluded that the resource is likely the result of redeposited material and lacks eligibility for listing in CRHR and County registers.

Williams and Whitley (2011) completed eligibility evaluations of portions of another previously recorded prehistoric artifact scatter overlapping the Jacumba Solar Gen-Tie ADI, CA-SDI-19627, subsequent to ASM combining sites CA-SDI-6119 and CA-SDI-19627. That evaluation failed to identify significant cultural deposits in the tested areas of the site which were subsequently recommended not eligible for listing in the local, state, or national registers. Untested parts of the CA-SDI-19627 are similar to tested portions, but two concentrations along the southern site boundary that were avoided have not been evaluated. Berryman and Whitaker (2010) also evaluated the site through surface survey, recommending the site as not eligible for listing in the NRHP.

Additional archaeological investigations have occurred to evaluate inadvertent discoveries during SDG&E's ECO Substation project, but final documentation for these efforts is not yet available (BLM Personal Communication, 2014). However, during this process, site CA-SDI-7074 (which subsumed numerous other previopusly recorded sites in the ECO Substation project) was combined with site CA-SDI-6119/19627. Site CA-SDI-7074, which is outside the project area, was evaluated by Williams and Whitley (2011) and was determined eligible for listing in the NRHP. No significant cultural deposits have been identified during these evaluations that occurred at sites intersecting access roads and intersections with Old Highway 80.

Table 1-2
Previous Cultural Resource Investigations Performed Within 1.0 Mile of the Project Area

Author	Year	SHPO ID	Title
Previous Studies Covering a Portion of the Project Area			
Arrington, C.	2006	ARRINGT01	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California.
Berryman, J. and Whittaker, J.	2010		Final Report Prehistoric Artifact Scatters, Bedrock Milling Stations and Tin Can Dumps: Results of a Cultural Resources Study for the SDG&E East County Substation Project, San Diego County, California
Bureau of Land Management (Townsend)	1984	BLM 1	Final Environmental Assessment for the Table Mountain Study Area Wind Energy Development.
California Desert District	1987	CALDESDI1	Jacumba Discontiguous Archaeological District
Cook, J.R. and Fulmer, S.G.	1980	CookJ58	Archaeology and History of the McCain Valley Study Area, Eastern San Diego County, California: A Class II Cultural Resource Inventory
Cook, J.R. Huntley, D. and Andrews, S.	2000	CookJ125	Final: A Cultural Resources Inventory of the Proposed AT&T / PF.net Fiber Optics Conduit Ocotillo to San Diego, California.
Hector, S., Moslak, K., and Pallette, D.	2007	Hector190	Archaeological Survey of Eastern Sand Diego County Roads, Trails, and Campgrounds.
Johnson, Melissa J.	1976	Johnson 04	An Archaeological Inventory and Assessment of Corridor Segments 46 and 49, preferred Southern Route, San Diego County.
Jordan, Stacey	2010		Final Archaeological and Historical Investigations for the Energia Sierra Juarez U.S. Gen-Tie Project, Jacumba, California.
Rosenberg, S.A. and Smith, B.F.	2008		Archaeological Survey of the Airport Mesa Staging Area Project.
Williams, B.	2011		Cultural Resources Survey of the 138 kV Realignment along the Old Highway 80 Alternative for the East County Substation Project, San Diego County, California.
Williams, B., and D. Whitley	2011		Eligibility Recommendations for Four Archaeological Sites in San Diego Gas & Electric's East County (Eco) Substation Project, San Diego County, California.
Previous Studies within 1.0 mile of the Project Area			
BLM	1980	BLM 02	Table Mountain District National Register of Historic Places.
Caterino, D.	2005	Caterino01	The Cemeteries and Gravestones of San Diego County: An Archaeological Study.
Cook, J.R. and Fulmer, S.G.	1980	CookJ 24	The Archaeology of the McCain Valley Study Area in Eastern San Diego County, California: A Scientific Class II Cultural Resource Inventory.
Cook, J.R. and Fulmer, S.G.	1981	COOKJ 25	The Archaeology of the McCain Valley Study Area in Eastern San Diego County, California: A Scientific Class II Cultural Resource Inventory.
Garcia-Herbst, A., Iverson, D., Laylander, D., and Williams, B.	2010	GARCIA12	Final Inventory Report of the Cultural Resources within the Approved San Diego Gas and Electric sunrise Powerlink Final Environmentally Superior Southern Route, San Diego and Imperial Counties, California.
McCoy, L.C. and Thesken, J.	1979	McCoy 14	Archaeological Survey of the Mazzanti Property, Jacumba, CA.
MSA, INC.	1980	MSA19	Focused Draft Environmental Impact Report GPA 80-02 Mountain Empire No.4.

Table 1-2
Previous Cultural Resource Investigations Performed Within 1.0 Mile of the Project Area

Author	Year	SHPO ID	Title
Rosenberg, S.A. and Smith, B.F.	2007	ROSENBE27	An Archaeological Survey for the Airport Mesa Road Project, San Diego County, California.
Scientific Resource Surveys, Inc.	1982	SRS 30	Archaeological Report-Volume II Data Presentation on the Re-Survey, Surface Collection and Test Excavations of the Archaeological Resources on the Manzantti Property Located in the Jacumba Area of the County of San Diego, TPM 13416 Log79222.
Scientific Resource Surveys, Inc.	1981	SRS75	The Re-Survey, Surface Collection and Test Excavations of the Archaeological Resources on the Mazzanti Property Location in the Jacumba Area of the County of San Diego, TPM 13416, Log #79-22-2.
SWCA	2008	SWCA05	Final Cultural Resources Survey of Alternative for the Sunrise Powerlink Project in Imperial, Orange, Riverside, and San Diego Counties, California.
Townsend, J.	1984	TOWNSEND01	Southwest Powerlink Cultural Resources Management Plan.
Various	Various	HISTORI278	Table Mountain District
White, C.W.	1978	White 10	Documentation of the Phase II (Plant Site to Devers and Miguel Substation) Archaeological Inventory Report (Draft).
Wirth Associates	1987	WIRTH13; WIRTH 30; WIRTH 33	Jacumba Archaeological District

Table 1-3
Previously Recorded Cultural Resources Located Within the Project Area

Resource Number	Period	Type	Dimensions	Report Reference
Sites within the ADI				
CA-SDI-7074/6119/ 19627	Multi-component	Habitation/ Lithic scatter / roasting pits /Historic refuse / historic foundation	590 x 250 m	Jordan, 2010; Berryman and Whitaker, 2010; Williams and Whitley, 2011
CA-SDI-18765	Prehistoric	Quarry/Bedrock milling	305 x 137 m	Rosenberg and Smith, 2008
Sites within the Project Area				
CA-SDI-176	Prehistoric	Habitation	230 x 120 m	Treganza,1940s; Hedges, 1979; Hector et al., 2006; Berryman and Whitaker, 2010
CA-SDI-4448	Prehistoric	Artifact scatter and roasting pit	51-250 sq. m	Waldron, 1976
CA-SDI-4477	Prehistoric	Temporary Camp	1001-5000 sq. m	Easland, 1976; Hector et al., 2006
CA-SDI-7060	Prehistoric	Habitation	635 x 396 m	Townsend, 1979; Donovan, 1981; Hector et al., 2006; SWCA, 2008; Garcia-Herbst, et al., 2009; Berryman and Whitaker, 2010;

Table 1-3
Previously Recorded Cultural Resources Located Within the Project Area

Resource Number	Period	Type	Dimensions	Report Reference
CA-SDI-7079/7080/7081	Multi-component	Artifact scatter and Refuse scatter	218 x 220 m	Cottreau, 1979; Moore, 1979; Townsend, 1979; Berryman and Whitaker,2010
CA-SDI-20169	Historic	Refuse scatter	70 x 85	Cook et al., 2010
CA-SDI-20279	Multi-component	Refuse scatter and Artifact scatter	45 x 40 m	Williams, 2011
CA-SDI-20280	Prehistoric	Lithic scatter	10 x 15 m	Williams, 2011
CA-SDI-20282	Prehistoric	Lithic scatter	30 x 20 m	Williams, 2011
CA-SDI-20283	Prehistoric	Artifact scatter	25 x 25 m	Williams, 2011
CA-SDI-20284	Prehistoric	Artifact scatter	10 x 20 m	Williams, 2011
CA-SDI-20285	Prehistoric	Artifact scatter	20 x 25 m	Williams, 2011
CA-SDI-20286	Prehistoric	Artifact scatter	40 x 35 m	Williams, 2011
CA-SDI-20287	Prehistoric	Lithic scatter	12 x 8 m	Williams, 2011
CA-SDI-20300	Prehistoric	Temporary Camp	175 x 35 m	Williams, 2011

Note: m = meters; sq. m = square meters

1.3 Applicable Regulations

Cultural resource regulations that apply to the project area are the County of San Diego RPO, the Local Register, CEQA, and provisions for the CRHR. Within this framework, historic and archaeological districts, sites, buildings, structures, and objects are assigned significance based on their exceptional value or quality in illustrating or interpreting the heritage of San Diego County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance.

1.3.1 State Level Regulations

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. The act defines historical resources as “any object, building, structure, site, area, or place that is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California” (Division I, Public Resources Code, Section 5021.1[b]).

Lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed project’s impacts to historical resources. Mitigation of adverse impacts is required if the proposed project will cause substantial adverse change. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) is considered to materially impair the resource's significance. The CRHR is used in the consideration of historical resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the National Register of Historic Places (NRHP) and some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory, may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise. CEQA significance criteria are modeled after those identified in Section 106.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852), which consist of the following:

1. it is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
2. it is associated with the lives of persons important to local, California, or national history; or
3. it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or
4. it has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In the event that Native American human remains or related cultural material are encountered, Section 15064.5(e) of the State CEQA Guidelines (as incorporated from Public Resources Code section 5097.98) and Health and Safety Code Section 7050.5 define the subsequent protocol. In the event of the accidental discovery or recognition of any human remains, no further disturbance shall occur in the area of the find until the County Coroner has made the necessary findings as to origin.. If the remains are determined to be of Native American origin, the Coroner shall contact the Native American Heritage Commission (NAHC) who will identify the Most Likely Descendant (MLD). The property owner or their representative are required to consult with the MLD to determine the proper treatment and disposition of the human remains. The MLD may make recommendations to the property owner or their representative, or the person responsible for the excavation work, for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code section 5097.98 (California Code of Regulations, Title 14; Chapter 3; Article 5; Section 15064.5(e)).

1.3.2 San Diego County Local Register of Historical Resources

The County maintains a Local Register that was modeled after the CRHR. Significance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of San Diego County in history, architecture, archaeology, engineering, or culture. Any resource that is significant at the national or state level is by definition also significant at the local level. The criteria for eligibility for the Local Register are comparable to the criteria for eligibility for the CRHR and NRHP, but significance is evaluated at the local level. Local Register criteria includes the following:

1. Resources associated with events that have made a significant contribution to the broad patterns of California or San Diego County's history and cultural heritage;
2. Resources associated with the lives of persons important to our past, including the history of San Diego and our communities;
3. Resources that embody the distinctive characteristics of a type, period, region (San Diego County), or method of construction, or represent the work of an important creative individual, or possesses high artistic values; and
4. Resources that have yielded or are likely to yield, information important in prehistory or history.

Districts are significant resources if they are composed of integral parts of the environment that collectively (but not necessarily as individual elements) are exceptional or outstanding examples of prehistory or history.

The County also treats human remains as "highly sensitive." They are considered significant if interred outside a formal cemetery. Avoidance is the preferred treatment.

Under County guidelines for determining significance of cultural and historical resources, any site that yields information or has the potential to yield information is considered a significant site (County of San Diego 2007a: 16). Unless a resource is determined to be "not significant" based on the criteria for eligibility described above, it will be considered a significant resource. If it is agreed to forego significance testing on cultural sites, the sites will be treated as significant resources and must be preserved through project design (County of San Diego 2007a:19).

1.3.3 County of San Diego Resource Protection Ordinance (RPO)

The County uses the CRHR criteria to evaluate the significance of cultural resources. In addition, other regulations must be considered during the evaluation of cultural resources. Specifically, the County of San Diego's RPO defines significant prehistoric and historic sites as follows:

> Sites that provide information regarding important scientific research questions about prehistoric or historic activities that have scientific, religious, or other ethnic value of local, regional, State, or Federal importance. Such locations shall include, but not be limited to:
>
> 1. Any prehistoric or historic district, site, interrelated collection of features or artifacts, building, structure, or object either:
>   a. Formally determined eligible or listed in the National Register of Historic Places by the Keeper of the National Register; or
>   b. To which the Historic Resource ("H" Designator) Special Area Regulations have been applied; or
> 2. One-of-a-kind, locally unique, or regionally unique cultural resources which contain a significant volume and range of data or materials; and
> 3. Any location of past or current sacred religious or ceremonial observances which is either:
>   a. Protected under Public Law 95-341, the American Religious Freedom Act, or Public Resources Code Section 5097.9, such as burials, pictographs, petroglyphs, solstice observatory sites, sacred shrines, religious ground figures, or
>   b. Other formally designated and recognized sites which are of ritual, ceremonial, or sacred value to any prehistoric or historic ethnic group.

2.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

According to CEQA (§15064.5b), a project with an effect 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. CEQA defines a substantial adverse change:

Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.

The significance of an historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

- When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
- If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, and this section, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
- If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21083.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of section 21083.2. The time and cost limitations described in Public Resources Code Section

21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.

- If an archaeological resource is neither a unique archaeological nor an historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5 (d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

When an initial study identifies the existence of, or the probable likelihood, of Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the Native American Heritage Commission as provided in Public Resources Code SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the Native American Heritage Commission. Action implementing such an agreement is exempt from:

- The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5); and
- The requirements of CEQA and the Coastal Act.

According to the County's Guidelines (County of San Diego, 2007a: 21-22), any of the following will be considered a potentially significant impact to cultural resources:

- The project causes a substantial adverse change in the significance of a historic resource as defined in §15064.5 of the State CEQA Guidelines. This shall include the destruction, disturbance or any alteration of characteristics or elements of a resource that cause it to be significant, in a manner not consistent with the Secretary of Interior Standards.
- The project causes a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5 of the State CEQA Guidelines. This shall include the destruction or disturbance of an important archaeological site or any portion of an important archaeological site that contains or has the potential to contain information important to history or prehistory.
- The project disturbs any human remains, including those interred outside of formal cemeteries.
- The project proposed activities or uses damaging to significant cultural resources as defined by the Resource Protection Ordinance and fails to preserve those resources.

3.0 RESEARCH DESIGN

The objective of the evaluation portion of this project was to obtain archaeological assemblage data that could be used to evaluate historical significance under CEQA and County guidelines. The following discussion identifies potential questions and appropriate archaeological evidence within a series of broad research themes that derive from theory about human behavior and ecology. General issues pertinent to the assessment of the sites include determination of the extent and integrity of cultural deposits, age, cultural affiliation, site function, and subsistence. Given the extensive research completed at archaeological sites in the local area, this research design has been developed to address the kinds of resources identified during the inventory completed for this project, and to build on the extensive research completed at archaeological sites in the local area. Notably, this research design considers only the most basic historic themes since only two small historic period refuse deposits were identified in the project ADI.

3.1 Integrity and Structure of Archaeological Deposits

Delineation of the horizontal distribution and vertical depth of an archaeological site is necessary for an assessment of research potential. Of particular importance is the integrity of the deposits: whether or not features or surfaces are preserved and whether the potential exists for identifying horizontal and vertical spatial patterning in the evidence for prehistoric behavior.

A variety of post-depositional disturbance processes can greatly alter the original character of prehistoric sites (e.g., Gross and Robbins-Wade 2008; Schiffer 1987; Waters 1992). Formation processes such as alluvial deposition, erosion, bioturbation, and modern disturbance can considerably affect the integrity of archaeological sites. Here, attempts are made to identify and interpret the processes that formed the site, with particular attention given to the character of post-depositional processes and the extent to which they have affected the integrity of the archaeological deposits.

The testing program applied to archaeological deposits within project area have been used to address the following issues:

- Does the horizontal and vertical extent of the archaeological record represent continuous or discrete occupation?
- Is it possible to discern depositional versus post-depositional processes that have contributed to the present condition of the archaeological record? In other words, what are the factors, both natural and anthropogenic, that have altered the position and condition of artifacts?

- What kinds of features have been preserved (e.g., hearths, earth ovens)? Are there features that are highly disrupted by postdepositional processes but that are still recognizable? Can these features be associated with particular functions?
- By examining spatial patterns in the horizontal distribution of artifacts, is it possible to discern areas that were associated with specific functions? Do patterns in the vertical distribution of artifacts tell us anything about changes in the function, materials exploited, or human activities through time?
- At historical archaeological sites, is there evidence of overlapping dump episodes, such as multiple points of concentration or concentration of artifacts of a certain age?

Investigating the integrity of archaeological deposits has at its core investigation of the structure of these deposits. Human occupation can sometimes result in the development of discrete occupation areas that take advantage of particularly convenient landforms, or patches of useful resources. Indeed, such a “mapping-on” strategy is common to residentially mobile hunter-gatherers that are thought to have inhabited the region for the entire Holocene. However, it was noticed during the inventory phase for this project that a low-density scatter of lithic chipping debris is scattered over the whole of the project area and beyond the project limits. As such, traditional archaeological site definitions based on a minimum artifact density (i.e., 3 or more artifacts within a 25 m^2 area) were irrelevant. Instead, a distributional sampling program was employed, collecting artifacts from the surface and subsurface on regular and subjective intervals. From these sampling methods, the following questions can be used to address the structure of archaeological deposits:

- Is it possible to better define occupational loci based on statistical analysis of artifact densities generated from these sampling methods?
- Is there any discernable spatial patterning within and between loci that can be used to interpret overall human occupation of the landscape?
- How can identified loci be managed considering site boundary requirements of the local California Historical Resource Information System (CHRIS) information center, and thus facilitate agency management of the resources?

3.2 Chronological Placement

Chronological issues are basic to any archaeological research design, as they provide the primary framework of prehistory. Previous research in the southern San Diego region has documented a range of prehistoric sites dating to both the Archaic (6000 BC to AD 500) and Late Prehistoric periods (post-AD 500), and more recently, even to the Paleoindian period (pre-6000 BC) with a series of roasting pits identified at San Diego Gas & Electric’s (SDG&E) East County (ECO) substation radiocarbon dated as early as 9,700 years BP. The ECO substation project is located less than a quarter-mile northeast of the Jacumba Solar project area and data recovery efforts there at prehistoric site CA-SDI-7074 documented more than 100 "thermal features" having radiocarbon dates spanning much of the last 10,000 years of prehistory. The ECO project documented assemblages with large numbers of crude flake and cobble tools with smaller frequencies of late Holocene markers such as arrow points and ceramics. Groundstone there is also somewhat common, represented by millingstones and handstones (rather than mortars and pestles). The distribution of such artifacts was found to be widespread, but also occurred in recognizable clusters. Aside from arrow points and ceramics, the same basic toolkit of crude flake and cobble tools, and groundstone characterized deposits identified more than 20 feet (7 meters) deep. To be sure, thermal features were one of the most common site constituents identified on that project—these consisting mostly of a scatter of burned rock and ash-infused sediments with low frequencies of associate artifacts and virtually no faunal bone.

The ECO substation project essentially resulted in the determination that the local area was inhabited over the last 10,000 years for very similar purposes, probably roasting of locally abundant plants, such as agave along with the opportunistic exploitation of other locally available foods and lithic raw material.

Along these lines, potential research issues derived from this basic problem include:

- How did the transition from the Archaic period to the Late Prehistoric period occur? This transition is characterized by shifts in food storage and cooking technology with the inception of ceramics, and a shift in hunting technology with the addition of the bow and arrow. These shifts did not occur simultaneously (cf. McDonald et al. 1993), and their implications for local population expansion in the Late Prehistoric period are unknown.
- Was there a shift in emphasis of acorn use during the Late Prehistoric period? The mortar and pestle appear to have been added to the repertoire of food processing tools during the Late Prehistoric period, but in limited quantities compared to handstones (Hale 2001, 2009; Hale et al. 2010). Is there evidence for earlier use of bedrock mortars? Is the addition of the mortar and pestle correlated to the inception of ceramics in the region and/or intensified use of a particular resource?

Because chronological controls are essential to any archaeological investigation, several other basic questions concerning the temporal data potential of evaluated sites pertain to the current study, including:

- Can the chronological placement of project sites be determined?

- What kinds of chronometric data can project sites provide? Of those obtained during survey, how well do they correlate in terms of the age estimates they provide (e.g., projectile point types vs. obsidian hydration dates; cans vs. bottles).
- Are there data indicating the presence of multiple occupation episodes at project sites?
- Do diagnostic artifacts appear to fit with temporal patterns recognized in the surrounding region? Are there any unique diagnostic items present?
- Can chronometric data from project sites help to refine dating schemes in the local region?

Potential chronometric evidence from the Project site includes radiocarbon dates, obsidian hydration measurements, and diagnostic artifact forms. Radiocarbon dates are generally the most precise and reliable form of chronometric evidence, and they provide the foundation for the region's prehistoric chronology. However, obsidian hydration measurements may have a more direct cultural interpretation as they are individually less expensive to run, and they can address very late prehistoric to protohistoric time periods that cannot be distinguished through radiocarbon dating. Chronologically diagnostic artifacts include various projectile point forms and pottery, although these only define very broad time periods. Specific types or attributes of buffware ceramics may have a potential to define somewhat more precise time ranges, but that potential is not yet well established.

For historic sites, time sensitive artifacts are usually limited to items with maker's marks, specific can manufacture styles, or coins. However, it is common for dates of manufacture for a particular artifact to be much broader than those for another artifact class, making a determination for age of consumption for any given class difficult, if not impossible. For this reason, the date of refuse disposal is more pertinent for refuse deposits that are not located at homesites; and this is usually determined by the early manufacture date on the youngest artifact for each dump event. Hale et al. (2010) document a widespread pattern of dumping items of mixed manufacture and consumption age as the result of homesite cleanup and off-site dumping. If refuse deposits are located at a homesite, assessing the age of consumption for historic artifacts is an approximation based on overlapping manufacture dates, taking into account the earliest and latest possible dates. Assemblages that cannot be securely placed chronologically would be less likely to possess a significant research potential. Of course, archival research can provide direct information on the date of construction and occupancy for historic homesites and lands used for agricultural, ranching, or mining.

3.3 Settlement and Site Function

Interpretation of the study sites depends upon an assessment of their places within the larger settlement-subsistence system of their occupants. Sites belonging to functional types that are relatively ubiquitous within the region would be less likely to be considered significant than unusual site types. Sites with evidence of multiple functions may possess richer information content than relatively simple sites; on the other hand, single-function sites may have a greater research potential than multiple-function sites if the residues from the various activities at the latter cannot be effectively differentiated.

Evidence for the functional uses represented by the site come from surface observations made during both the survey and testing phases, as well as through the results of subsurface excavations. Interpretations of functions rest upon both the range and the relative and absolute frequencies of various classes of features, artifacts, and ecofacts.

Widespread and substantial occupation during the Late Prehistoric period has been documented in the vicinity of the APE and within the greater Peninsular Ranges (Berryman and Whitaker 2010; Cook 1985; Hector 1984; Jordan 2010; Meighan 1959; Williams et al. 2012), particularly during the last 1,000 years, based on large numbers of ceramic sherds. The Late Prehistoric is a time when significant shifts in settlement and subsistence may have occurred.

While several important prehistoric sites and ethnohistoric villages have been extensively studied in the area, including in the nearby town of Jacumba, the character of settlement and subsistence shifts have not been fully explored. A key variable in understanding social organization during this time is the kind of socioeconomic shifts that occurred after adoption of the bow and arrow and the subsequent widespread use of ceramics. Specific data requirements include information on arrow point manufacture, general patterns of lithic reduction, and raw material use, including the use of exotic stone. Was arrow point production occurring at sites in the project area, or were points being discarded in exhausted condition? What does the debitage assemblage imply about the production and/or maintenance of stone tools at project sites?

Information on ceramic vessel forms and functions, and their diversity, is also critical for determining whether residential occupation was brief or prolonged. How many kinds of vessels are indicated in the assemblage and for what purposes were they used? The latter is particularly important for understanding intensification in the exploitation of plant foods (see Eerkens 2001). Is there evidence, in the form of clay residues and other manufacturing residues, that clay vessels were being manufactured at sites in the project area? Finally, the manufacture and use of groundstone implements in conjunction with the ubiquitous milling elements within the project area can help clarify the nature of site occupation and settlement duration. Shaped handstones and pestles can be an indication that populations are somewhat mobile, implying use in off-site contexts; the idea being that shaping can reduce mass, thereby reducing transport costs (Hale 2001).

Recent archaeological investigations in the local area have revisited archaeological districts defined on federal, BLM lands in an effort to better understand the nature of human occupation that can link archaeological deposits together. While the archaeological districts (Table Mountain

District—TMD, and Jacumba Discontiguous Archaeological District—JDAD) were defined based on property boundaries, their definition attempted to link similar kinds of resources. Considering the single most common identifying element of archaeological sites inside and outside of the districts is lithic quarrying for stone tool manufacture, the current project investigation can add significant data that can be used to clarify local settlement. The local exposure of basalt cobbles in the southern part of the project area was extensively quarried for stone tool manufacture. What was left behind can be as valuable for understanding prehistoric mobility as the lithic materials that were discarded at nearby non-quarry sites. A detailed lithic analysis of all quarry and non-quarry archaeological deposits within the project study area will help clarify local hunter-gatherer mobility. These analyses can also benefit from comparison to extensive quarry studies completed for the Otay Mesa area well to the west near San Diego (e.g., McDonald et al. 1986), or for desert pavement quarries located in the southeastern Mojave near Twentynine Palms (e.g., Giambastiani et al. 2008).

Considering historical archaeological sites, the kinds of artifacts present, the activities they represent, and their overall proportions can give some indication of where refuse originated, and why it was abandoned at its place of discard. The main question for historical archaeological sites is:

- What is the nature of refuse at historic sites? Are proportions of consumptive, household, industrial, and other artifacts substantial enough to derive context of origin(s)?
- Are any maker's marks on historic artifacts indicative of specific places of manufacture? Do they provide any information about where particular goods might have been purchased or otherwise obtained?

These kinds of questions are relevant for understanding the nature of historical occupation, including at homesites or agricultural facilities (i.e., field worker residential areas). Archival research helps bolster field data by documenting past historical landowners, lease holders, or residents, and by documenting historical changes in the local landscape. While it is virtually impossible to tie historic refuse deposits to residential or agricultural sites, it is possible to identify potential sources of refuse and make informed assumptions about its origin.

3.4 Subsistence

The issues related to subsistence are interwoven with the previously discussed settlement, and this section complements the issues discussed previously. Unfortunately, animal remains were noticeably lacking, limited to an insignificant amount of small rodent bone of questionable origin. However, plant remains have been identified in more recent studies from adjacent projects. Among the questions addressed are the following:

- Are floral and faunal remains present in archaeological deposits?

- Which specific resources were exploited?
- Can changes in the emphasis on specific resources be detected and are these changes related to changes in procurement?
- With respect to floral resources, Williams et al. (2013) identified remains of cactus and juniper seed, and yucca fiber in roasting pits. Are such remains present in archaeological deposits within the project site?

To address these issues, floral remains were targeted through flotation of feature sediments. Subsistence is often assessed indirectly through technology. Groundstone tools are a good indicator that plant processing occurred, while projectile points generally indicate animal exploitation. With such tools noticeably absent in the project area, and general vicinity, subsistence must be indirectly inferred from crude, heavy flake-based implements. Such inferences have been the norm in greater San Diego County since the earliest archaeological work was completed, and especially during the 1960s emphasis on investigating "Millingstone Horizon" assemblages with their abundant scraping tools (e.g., Kaldenberg 1976; Warren 1967). The robust archaeological literature compiled for the region in the decades since has helped refine assumptions about the purpose of cobble tools, making inferences about subsistence less tenuous (Buonasera 2013; Hale 2001; Kowta 1969).

As with prehistoric sites, the issues related to subsistence at historic sites are also interwoven with the previously discussed settlement organization, and this section complements the issues discussed previously.

The primary question to address at historic sites is:

- Are artifacts present that provide information on the kinds of foods consumed (i.e., food cans, glass bottles, etc.)?

The data necessary to address this issue is generally limited to the kinds of food containers and food processing items found at historical archaeological sites as well as potential food remains, such as butchered animal remains.

3.5 Prehistoric Quarrying

The Jacumba Solar project area includes a low knoll in the southwestern portion of the project that contains abundant basalt and quartz cobbles, many of which were exploited for the production of expedient stone tools, such as large flake or cobble-based cutting and chopping tools. The commonality of lithic raw material exposures in the greater Jacumba region, such as Table Mountain, has apparently been a draw to prehistoric hunter-gatherers since lithic reduction has been the primary characteristic identified by archaeologists when defining archaeological sites (see Townsend 1984). The Table Mountain District (TMD, May 1976) was essentially defined as an intensively occupied prehistoric landscape that included several “village” locations with relatively diverse artifact assemblages, but all were underlain by stone tool production debris. Similarly, the Jacumba Discontiguous Archaeological District (JDAD, Townsend 1984), or Jacumba Valley Archaeologcial District (JVAD) as it is currently known (Williams et al. 2014), contains many areas of aboriginal habitation, but its primary constituent is lithic stone tool manufacturing debris. Both the TMD and JVAD overlap basalt landforms that have abundant quantities of easily accessible raw material suitable for the production of stone tools.

As is specifically mentioned in the JVAD update, the district boundaries are arbitrarily drawn based on management considerations, including property boundary lines. Both the Table Mountain District and JVAD are defined for federal lands administered by the BLM. The Jacumba Solar project area is situated on private lands and abuts the southern JVAD boundaries. The Jacumba Solar project will not be included in the federally designated JVAD. However, the basalt exposure located in the southern part of the current project area, along with cobbles from this source located in adjacent drainages were extensively exploited by the aboriginal occupants that frequented both archaeological districts. Thus, the interpretation of lithic quarrying in the Jacumba Solar project must also consider regional analyses of the same sort.

To date, no synthetic analysis of prehistoric lithic quarrying in the local area has occurred, although all interpretations converge on the idea that raw cobbles were used to produce expedient stone tools (see Williams et al. 2011). This interpretation is based on the general lack of late-stage bifaces and finely retouched flake tools (i.e., formed flake tools), and the abundance of crude, heavy cobble tools and minimally retouched flakes. In fact, it is likely that if tools were produced for immediate, local use, it is also likely that a large number of prehistoric tools would not have been recognized as more than lithic reduction debris due to a lack of use wear. The local basalt is very hard and would have resisted ancillary damage from contact with softer materials, such as plants.

The current study can make a significant contribution to understanding lithic quarrying in general because it contains a small portion of a basalt cobble source. The distributional sampling methods employed to evaluate the quarry and surrounding project ADI will provide clear analytical data on the kinds of tools manufactured from local stone and used on local resources.

Additionally, analyses of lithic quarrying within the project site can help address issues of mobility and technological investment. If stone was being reduced to prepare tools or tool blanks for transport off site, the debitage assemblage should reflect that. Given the abundance of lithic raw material in the greater Jacumba region, it is unlikely that bulky, unprepared flakes or cobbles would be transported very far if it is just as easy to opportunistically procure another cobble in transit to another location for resource procurement or processing (Bleed 1987; Hale 2001;

Horsefall 1987). An analysis of remaining debitage and tested cobbles from within the project area will go far toward formally addressing these questions. The analysis of local prehistoric quarrying will be augmented by studies completed in adjacent regions to broaden the local perspective on hunter-gatherer settlement and resource extraction.

3.6 Prehistoric Thermal Features

Aside from lithic quarrying, prehistoric thermal features comprise one of the most locally unique and ubiquitous archaeological signatures relevant to understanding human occupation of the region. To be clear, thermal features (hereafter, roasting pits) are not uncommon in southern California; extensive “cobble pavements” (Gallegos et al. 1999) are widely known from Archaic “Millingstone Horizon” sites and are thought to be the remains of multiple roasting events, leaving large accumulations of burned rock (often including recycled groundstone tools) (Hale 2001). However, the concentration and sheer frequency of roasting pits in the Jacumba region, and along the slopes of the Chocolate Mountains in the western Colorado Desert in the absence of robust, focused midden deposits is unique. Schaefer et al. (2014) completed an extensive study of roasting pits in Imperial County concluding that they were used primarily for processing seasonally abundant vegetable foods along the changing shoreline of Ancient Lake Cahuilla. However, due to erosion and other taphonomic processes, the features analyzed by Schaefer et al. (2014) are poorly dated.

In a separate study for SDG&E’s ECO Substation already mentioned, Williams et al. (2013) describe a landform containing numerous thermal features from the surface to more than 20 feet below the surface and having good preservation of organic materials. These features date from just before Spanish contact to the early Holocene (nearly 10,000 years old), and have low variability in structure and content (most tend to have only charcoal-infused sediments and burned rock, lacking other artifacts). Similar to Schaefer et al. (2014), Williams et al. (2014b) concluded that these roasting pits were used primarily for processing locally abundant plants, including but not limited to cactus, juniper seeds, and yucca.

While the Jacumba area to the west has ample evidence of anthropogenic sediments (midden), the local area tends to lack large accumulations of occupational debris that would signal prolonged occupation in specific areas. Rather, the local assemblage seems to have been focused on targeting seasonally specific foods and lithic raw material.

Several roasting pits were identified in the Jacumba Solar project area, essentially the same as those found to the north and east on the ECO Substation project. Targeted sampling of roasting pits was also completed. There is potential for the current project assemblage to address the potential overlap of roasting pit plant processing and exploitation of local lithic raw material. Existing roasting pit studies did not fully explore the functional relationship between flaked lithic tools and roasting pits; i.e., were local basalt cobbles reduced to manufacture stone tools used in chopping or scraping yucca or agave plants in preparation for roasting? Given the close proximity of a basalt exposure to roasting pits within the project area, these kinds of questions may be met with more substantial data.

4.0 ANALYSIS OF PROJECT EFFECTS

4.1 Methods

This section describes the techniques employed to identify and evaluate archaeological resources within the project area. All methods exceed the Secretary of Interior's guidelines, as do all project personnel for their respective roles. Additionally, all methods were pre-approved by the County archaeologist prior to implementation.

As described in Chapter 1, prior to initiating fieldwork, pre-field research was completed consisting of a records search at the SCIC to obtain records for previously recorded cultural resources and any other relevant documentation including but not limited to previous cultural resources investigation reports and GIS data.

Minimally, all identified resources were recorded with a real-time corrected Trimble GeoXT Global Positioning System (GPS) receiver with sub-meter accuracy. An Apple 3rd Generation iPad equipped with the ESRI ArcGIS application was also used for mapping and navigation. Standard Department of Parks and Recreation (DPR) 523 series resource forms were used to document all resources, including updating previously recorded sites. Overall, documentation of cultural resources complied with the Office of Historic Preservation (OHP) and Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740) and the California Office of Historic Preservation Planning Bulletin Number 4(a).

For reasons described in the next section, traditional site definition concepts were not applicable to the current study because of the presence of a low density of flaked lithic debris covering the general area, including and overlapping the Jacumba Solar project parcel.

4.1.1 Field Methods

Inventory

Typical archaeological evaluation procedures involve site-specific excavation and recordation, whereby surface and subsurface boundaries are generated based upon the presence and absence of features and artifacts and the relative density of artifacts over a specific area. In San Diego County, archaeological sites are generally defined as consisting of three or more artifacts in a 25 square meter area, or the presence of at least one feature, with sites delineated from each other by an absence of cultural materials over a distance of 30 m or so. Prior to the current evaluation, a constraints study and an intensive pedestrian survey of the entire project parcel was completed.

The survey was conducted in less than 20 m intervals; however, actual survey transect spacing depended on ground visibility. Areas with dense vegetation required shorter, 10 m transect spacing and areas with excellent ground visibility at times allowed for a maximum transect width of 20 m. All survey transects were oriented parallel to the long-axis of the utility corridor APE, or to major topographic features. Transect spacing was kept using a combination of compasses but field tablets with a mobile ESRI GIS application with real-time locations plotted on aerials were used to help navigate the survey and ensure the entire corridor was covered. The crew moved together as a team to ensure accurate transect spacing and to facilitate resource identification. Upon discovery of an artifact or feature, the entire crew stopped while the person who made the find determined what it was. At the same time, all other crew members more closely inspected the area around their individual transects. All artifact concentrations and features were recorded during transect sweeps.

When recording a site, visible artifacts were marked with pin flags to delineate the size and boundaries of its surface deposit. Once artifacts and features were identified, crew members completed the following tasks, irrespective of site type: set a temporary datum; fill out field versions of DPR resource forms; produce a site sketch map; make a detailed surface artifact inventory; fully describe any features; take high-resolution digital site photographs, including close-ups of important or prominent features and diagnostic artifacts; record UTM coordinates at the site datum, at the locations of formal artifacts, and the site boundary. Each concentration was assigned a temporary resource identifier for tracking during post field data processing. No artifact collections were made during the inventory.

The inventory itself resulted in the delineation of 51 prehistoric and 4 historic artifact concentrations. Four artifact concentrations were identified as previously recorded sites located towards the northern end of the project area; these were recommended for avoidance based on the possible presence of midden deposits: CA-SDI-176, CA-SDI-4477, CA-SDI--7060, and CA-SDI-20300. All other prehistoric artifact concentrations consisted primarily of low densities of flaked lithic debris and were not thought to have the potential for significant buried deposits. The artifact concentrations were not formally defined as sites due to the presence of a low density scatter of flaked lithic debris that spanned all concentrations.

Extended Phase I Shovel Probing

To better understand the boundaries of artifact concentrations and to test assumptions about the potential for buried deposits at prehistoric sites, an extended phase I shovel probing program was completed on subjective intervals, including areas outside of recorded site boundaries (Comeau 2012; Appendix B). Shovel probing involved excavation 0.25-x-0.5-m shovel test pits (STP) in locations which had a higher potential to contain subsurface deposits, based on artifacts observable on the surface, or geologic context. All excavated matrix was dry screened through 1/8-inch wire mesh. In all, 18 STPs were excavated at 12 of the prehistoric sites or concentrations delineated in the Project area during the inventory (Table 4-1). No artifacts were collected during shovel probing; all artifacts found during screening of STPs were counted and placed back in the unit and backfilled. Notes were made on sediment character and whether the potential existed for substantial buried deposits (see Comeau 2012—Appendix B).

Table 4-1
Extended Phase I Results

Site/ Concentration	Type	STPs Excavated	Subsurface Recovery	Potential for Significant Deposits
SDI-4477	Prehistoric Habitation	2	Yes	Moderate
SDI-4462 (This site was later determined to be located outside of revised project area)	Artifact Scatter	1	No	Low
SDI-20300	Temporary Camp	2	Yes	Low
SDI-18765	Prehistoric Quarry	2	Yes	Low
JS-G	Lithic Scatter	1	No	Low
SDI-4448	Quarry	2	Yes	Low
JS-I	Ceramic Scatter	1	Yes	Low
JS-J	Lithic Scatter	1	No	Low
CA-SDI-21493	Artifact Scatter	2	Yes	Low
JS-L	Lithic Scatter	1	No	Low
JS-N	Lithic Scatter	1	No	Low
SDI-176	Prehistoric Habitation	2	Yes	High

Overall, artifact densities were found to vary considerably but were present in consistently low frequencies (Table 4-1). It was determined that traditional site definition parameters based on minimum artifact density requirements could not be used to delineate areas of focused human habitation (i.e., sites). Such a finding is consistent with past archaeological investigations in the area that have resulted in constant changes to site boundaries based on newly identified low density clusters of artifacts. In fact, site records updated by the same investigators attest to this fact. For example, one site in the project area, CA-SDI-6119, has been expanded at least three times since it was originally recorded; its boundary now overlaps the boundary of two other sites (CA-SDI-7074 and CA-SDI-19627) which necessitated combining them into a single site.

The small valley that runs through the project area is subject to both rapid alluvial and colluvial sediment deposition—sheet wash from the adjacent hills to the west and east. This dynamic depositional and erosional environment continually alters the ground surface exposing, obscuring, and transporting cultural materials.

Archaeological Evaluation: Distributional Sampling

The low-density scatter of flaked lithic debris that spans the overall region, including the project parcel made implementation of traditional site-specific methods inappropriate. While artifact concentrations were identified, delineating site boundaries was more of an arbitrary exercise than it otherwise would be without the intervening low density artifact scatter. For this reason, a distributional sampling methodology was developed. The distributional sampling program was based off of Overly (2003) who explored a "persistently used landscape" consisting of an obsidian quarry and prehistoric habitation areas at Little Hot Creek in Mono County, California (see also Dunnell and Dancey 1983; Ebert 1992).

The core of distributional sampling methods is based off of a critique of the *apriori* assumptions inherent in a site-specific sampling approach linking human behavior to specific kinds of habitation, essentially ignoring the continuous behavior of humans that generates the archaeological record. That is, artifact clusters (or, "sites") are only one part of the archaeological record. Current federal, state and local cultural resources guidelines set arbitrary site definitions, such as minimum artifact density requirements for prehistoric sites. The "site" concept is a necessary management tool indispensable in ensuring compliance with cultural resources laws and guidelines. However, the guidelines themselves cannot easily accommodate resource management that takes the focus off of sites. Even high-level landscape management tools, such as archaeological districts, tend to default back to site-specific management approaches as districts simply become defined as accumulations of "sites" or "isolates"—those accumulations of artifacts that do not meet site density requirements.

The notion of a "site" may be arbitrarily defined in any given management context, but it is also true that sites can be real. Hunter-gatherers certainly did focus behaviors in certain locations at varying levels of intensity producing "sites" varying in the size, distribution, and content of discarded things forming the archaeological record. Reasons for spatially focused behavior are innumerable but the social imperative of human behavior likely played a large role: hunter-gatherers commonly foraged, processed food, ate, and slept in groups of two or more depending on the kind of activities pursued (Bettinger 1999; Binford 1980; Jochim 1980; Kelly 1995; Yengoyan 1968). Togetherness on the landscape is also a dynamic concept since an individual hunter-gatherer may not consider traveling a kilometer away from a partner to acquire toolstone, a solitary act. The archaeological signature of the embedded economic activities completed by the pair might look very different; the one acquiring toolstone, possibly preparing raw material for transport, the other opportunistically foraging and/or processing at the same time. This illustration reinforces the critique that defining an archaeological site is an incomplete and mostly arbitrary exercise that makes basic assumptions about human behavior tethered to a circumscribed area.

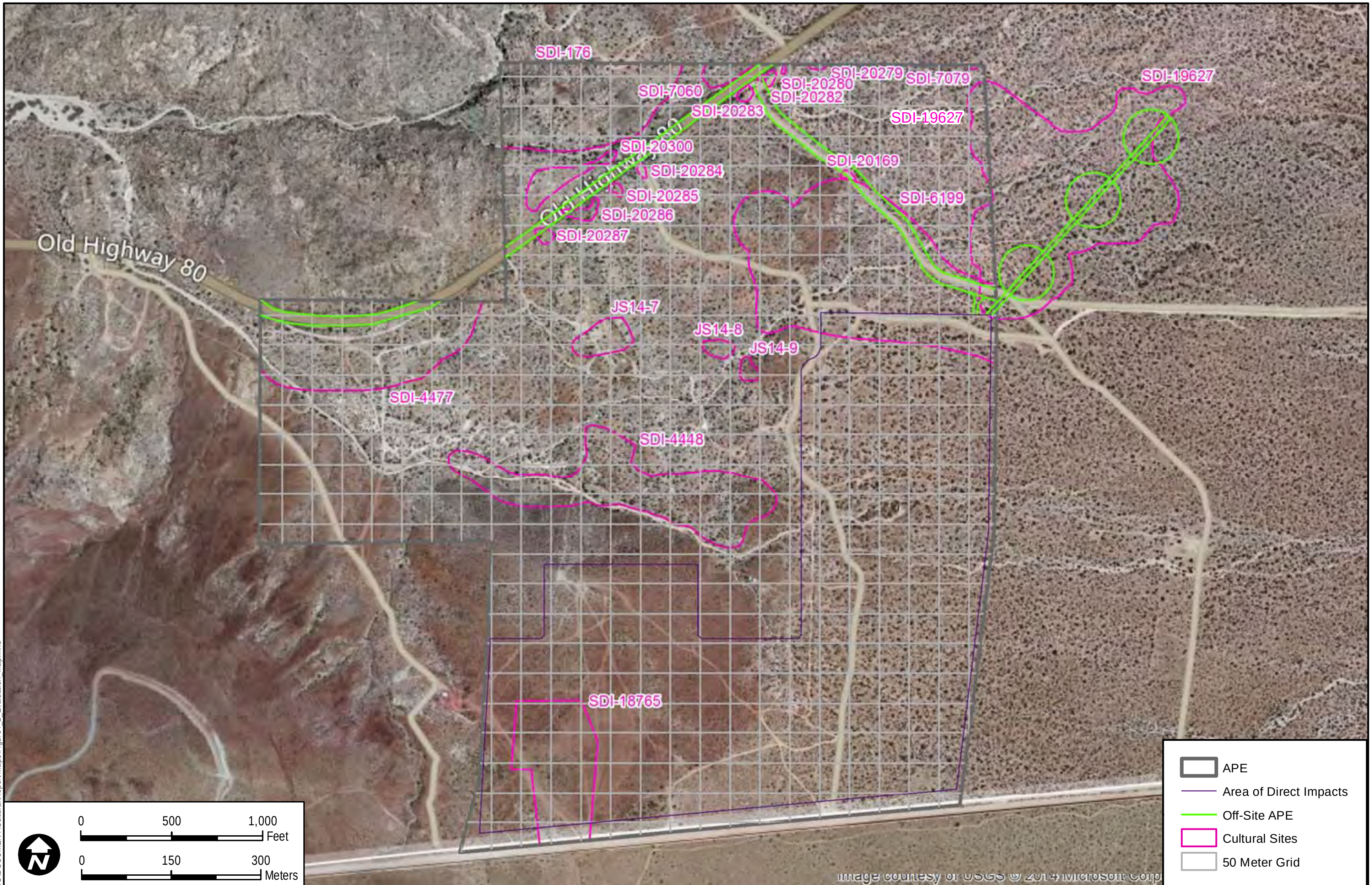
Thus, it is obvious that the notion of a “site” is imperative in management of cultural resources in order to fulfill federal, state, and local requirements governing the treatment of cultural resources. It is also obvious that the definition of a site is arbitrary and is sometimes defied by local archaeological deposits. Without drawing an enormous circle around a large area, such as the Jacumba Solar Project and the surrounding vicinity, it is sometimes suitable to alter strategies aimed at defining cultural deposits that can be evaluated against federal, state, and local significance criteria. The distributional sampling method employed in this study does just that.

The distributional sampling program had as its primary goal the collection of artifacts at arbitrary intervals irrespective of the presence of a definable archaeological site at the interval locations. A 50 m grid was established over the entire project ADI to serve as the arbitrary sample platform (Figure 4-1). This grid spacing was chosen because it provided adequate coverage of areas known to have artifact concentrations as well as those that lacked concentrations based on inventory results. Grid samples were selected on 100 m offset intervals such that the space between any two sample locations in any cardinal direction was 100 m, but no more than 70 m apart in diagonal directions. To complement the standardized grid interval, subjectively placed samples were also completed within concentrations not covered by the grid. In this sense, “traditional” site-specific evaluation methods were also employed so that no blind eye was cast upon known resources.

A complimentary intensive pedestrian survey was completed between grid sample intervals in order to ensure that no concentration of cultural material went untreated by the evaluation program. Crew members spread 10 m apart to survey between grid samples on north-south or east-west transects. This additional survey resulted in some subjective placement of sample units.

Each grid interval sample had as its base analytical unit a 10-x-10-m Controlled Surface Collection (CSC). The CSC was divided into four 5-x-5-m cells and all artifacts on the surface were collected within each cell. At most locations, a 1-x-1-m Surface Scrape Unit (SSU) was excavated to an average depth of 10 cm to recover near-surface artifacts. Additionally, 0.25-x-0.5-m STPs were excavated in cases where surface evidence suggested buried deposits might be present or as random subsurface samples. In other cases, where artifacts were obviously clustered in loose sandy matrix, a 1-x-0.5-m Shovel Test Unit (STU) or a 1-x-1-m Control Unit (CU) was excavated to recover a representative sample of subsurface artifacts and to provide for the characterization of subsurface deposits in a sediment profile. Additional subjectively placed STUs were excavated to sample potential thermal features which were identified on the ground surface.

INTENTIONALLY LEFT BLANK



DUDEK

8477

SOURCE: BING 2014

FIGURE 4-1

Inventory Results

Jacumba Solar Energy Project

Path: Z:\Projects\j847701\MAPDOC\DOCUMENT\Cultural\Report Maps\Figure4_1_Evaluation_Map.mxd

INTENTIONALLY LEFT BLANK

Regardless of method, all excavated matrix was screened through 1/8-in. (3 mm) wire mesh and all cultural materials were collected and transported back to Dudek's laboratory facilities for processing and curation preparation. Subjectively placed CSCs and excavation units of various kinds were also completed in specific areas, as appropriate (see Figure 4-1). In addition, random grab samples and individual piece-plot surface artifacts were collected in specific areas, such as at the quarry to ensure collection of representative raw materials or tested cobbles, or at artifact concentrations not covered by a nearby CSC. Finally, 0.5 m-wide backhoe trenches (MET, or mechanically excavated trenches) were excavated to a maximum depth of 1.5 m to explore for deeply buried deposits, such as the buried roasting pits identified at the nearby ECO Substation. METs were excavated by Dudek's subsidiary, Habitat Restoration Sciences (HRS) and varied in length, depending on situational needs. Some METs were also used to explore roasting pit deposits that were spread over a relatively large area.

4.1.2 Native American Correspondence and Participation

The Native American Heritage Commission (NAHC) was contacted several times to request a search of their Sacred Lands Files, most recently on October 22, 2014. The NAHC responded indicating that there are Native American cultural resources in the Jacumba Quad that may be impacted and recommended contacting the Ewiiaapaayp Tribal Office for more specific information. Additionally, specific outreach efforts were initiated by the project proponent to augment the formal consultation efforts on the part of the lead agency. County staff have also initiated formal government-to-government consultation through the NAHC. Native American correspondence documents are included in Confidential Appendix B.

Red Tail Monitoring and Research, Inc. provided Kumeyaay Native American monitors during all field studies, from survey to evaluation. Bobo Linton, Gabe Kitchen and Phillip Pena represented Red Tail during various sessions of fieldwork and presided over all archaeological findings. Clint Linton, President of Red Tail, was designated the Most Likely Descendent (MLD) representative by the Kumeyaay Cultural Repatriation Committee (KCRC)—the organization officially designated by the NAHC as the MLD for purposes of consulting with the landowner's representative regarding the disposition and treatment of human remains and grave goods.

4.2 Results

This section describes the results of the overall cultural resources study completed for the Jacumba Solar Project. The overall project parcel is discussed first, describing measures taken to avoid cultural resources located in the northern parts of the project area. This is followed by a summary and analysis of the distributional evaluation program completed for the project's ADI and site specific evaluation of historic period resources in the ADI. The gen-tie corridor is discussed last, drawing largely off of past archaeological work in that area and augmented by a current pedestrian survey.

4.2.1 Inventory Results and Avoidance of Archaeologcial Sites through Project Design

An intensive pedestrian survey was completed on two occasions in December 2012 and again from July to August 2014. The first pedestrian survey in December 2012 identified artifacts spread in variable density across the project parcel. The second pedestrian survey focused on refining boundaries for previously recorded and newly recorded sites in the Project parcel but not inside the ADI. The distributional evaluation program was determined to be the best method for identifying and evaluating archaeological deposits in the ADI due to the presence of a basalt knoll in the southwestern part of the ADI that appeared to have been used prehistorically to quarry lithic raw materials.

In all, the inventory resulted in the recordation of 18 previously recorded archaeological sites and nine newly identified sites (Table 4-2) (Figure 4-2a and 4-2b). Following the initial intensive pedestrian survey and prior to implementing an archaeological evaluation program, consideration was given to avoidance of project impacts to previously recorded archaeological sites that appeared from the surface to have historical significance or to be eligible for listing in the NRHP, CRHR, or local register. It was determined that the project could be redesigned to avoid 16 previously recorded and four newly recorded archaeological sites and the Project ADI was redesigned to ensure their avoidance (Table 4-2) (Figure 4-1). Other than portions of CA-SDI-7074/6119/19627 and CA-SDI-18765 that were previously evaluated (Berryman and Whitaker 2010; Jordan 2010; Williams and Whitley 2011), none of the other archaeological sites within the avoidance area were evaluated for their eligibility to be listed in the NRHP, CRHR, or local register. Rather, unevaluated archaeological sites outside of the ADI were presumed eligible for the purposes of avoidance. Site forms for all recorded archaeological sites can be found in Appendix C.

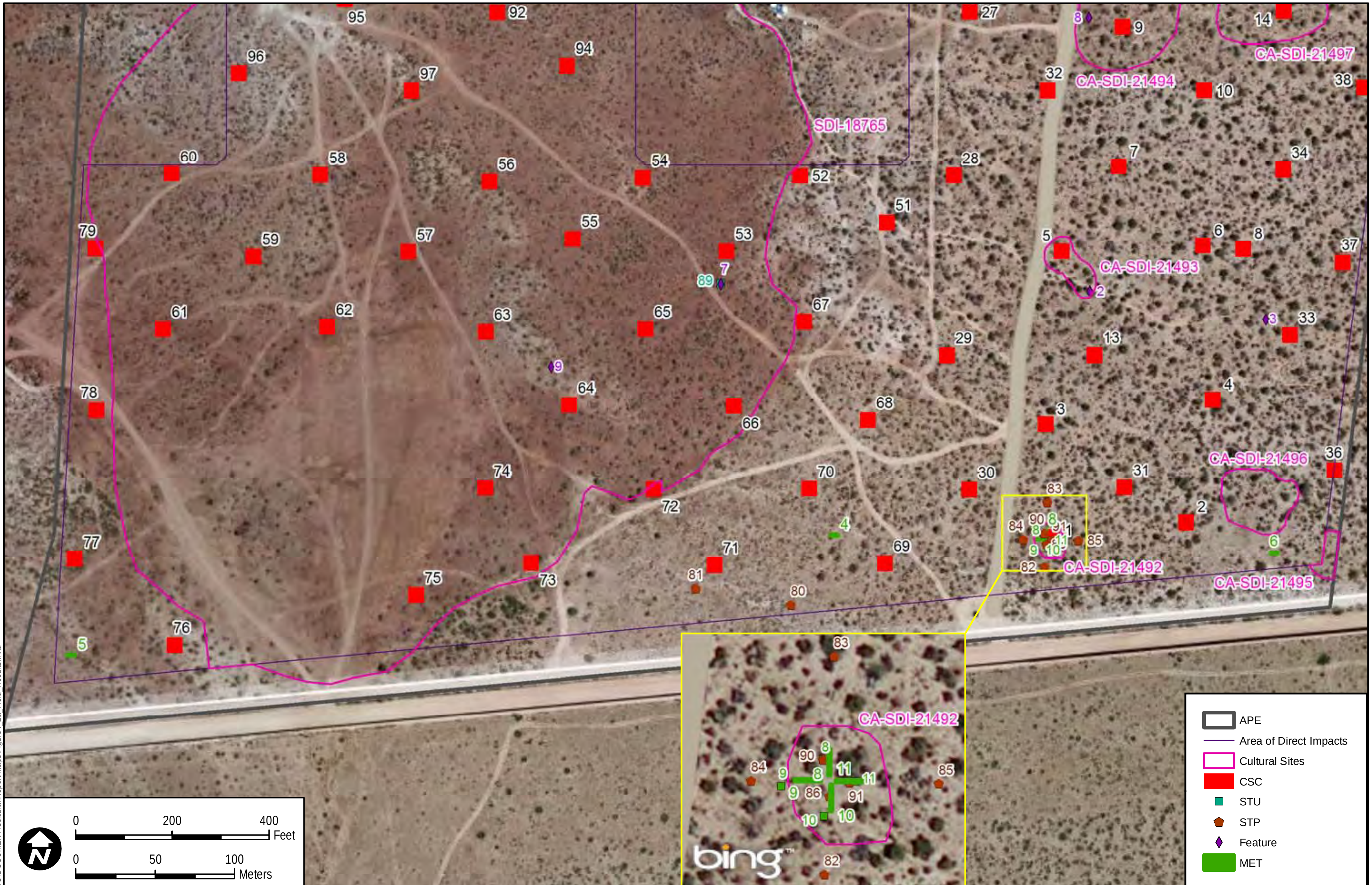
Table 4-2
Cultural Resources Recorded Within the Project Area

Resource Number	Period	Type	Dimensions	Report Reference
Sites within the ADI				
CA-SDI-7074/6119/ 19627	Prehistoric/Historic	Habitation/ Lithic scatter / roasting pits / Historic refuse and foundation	590 x 250 m	Jordan, 2010; Berryman and Whitaker 2010; Williams and Whitley 2011
CA-SDI-18765	Prehistoric	Quarry/Bedrock milling	305 x 137 m	Rosenberg and Smith, 2008
CA-SDI-21492	Prehistoric	Lithic Scatter/Roasting Pit	22 x 18	This report

Table 4-2
Cultural Resources Recorded Within the Project Area

Resource Number	Period	Type	Dimensions	Report Reference
CA-SDI-21493	Prehistoric	Lithic Scatter/Roasting Pit	38 x 31	This report
CA-SDI-21494	Prehistoric	Artifact Scatter	81 x 85	This report
CA-SDI-21496	Historic	Refuse Deposit	41 x 49	This report
CA-SDI-21497	Historic	Refuse Deposit	43 x 70	This report
Sites within the Project Area				
CA-SDI-176	Prehistoric	Habitation	230 x 120 m	Treganza,1940s; Hedges, 1979; Hector et al., 2006; Berryman and Whitaker 2010
CA-SDI-4448	Prehistoric	Artifact scatter and roasting pit	51-250 sq. m	Waldron, 1976
CA-SDI-4477	Prehistoric	Temporary Camp	1001-5000 sq. m	Easland, 1976; Hector et al., 2006
CA-SDI-7060	Prehistoric	Habitation	635 x 396 m	Townsend, 1979; Donovan, 1981; Hector et al. 2006; SWCA, 2008; Garcia-Herbst, et al. 2009; Berryman and Whitaker 2010
CA-SDI-7079/7080/7081	Multi-component	Artifact scatter and Refuse scatter		Cottreau, 1979; Moore, 1979; Townsend, 1979; Berryman and Whitaker 2010
CA-SDI-20169	Historic	Refuse scatter	70 x 85	Cook et al., 2010
CA-SDI-20279	Multi-component	Refuse scatter and Artifact scatter	45 x 40 m	Williams, 2011
CA-SDI-20280	Prehistoric	Lithic scatter	10 x 15 m	Williams, 2011
CA-SDI-20282	Prehistoric	Lithic scatter	30 x 20 m	Williams, 2011
CA-SDI-20283	Prehistoric	Artifact scatter	25 x 25 m	Williams, 2011
CA-SDI-20284	Prehistoric	Artifact scatter	10 x 20 m	Williams, 2011
CA-SDI-20285	Prehistoric	Artifact scatter	20 x 25 m	Williams, 2011
CA-SDI-20286	Prehistoric	Artifact scatter	40 x 35 m	Williams, 2011
CA-SDI-20287	Prehistoric	Lithic scatter	12 x 8 m	Williams, 2011
CA-SDI-20300	Prehistoric	Temporary Camp	175 x 35 m	Williams, 2011
CA-SDI-21495	Prehistoric	Human remains	2 x 2 m	This report
CA-SDI-21498	Prehistoric	Lithic Scatter/Roasting Pit	60 x 104	This report
CA-SDI-21499	Prehistoric	Artifact Scatter	32 x 59	This report
CA-SDI-21500	Historic	Refuse Scatter	40 x 32	This report

Site descriptions are provided in this section for those sites that were treated primarily during the pedestrian survey. Descriptions of archaeological sites treated primarily during the distributional evaluation program (CA-SDI-7074/6119/19627, CA-SDI-18675, CA-SDI-21492, CA-SDI-21493, CA-SDI-21494, CA-SDI-21496, CA-SDI-21497) are provided in Section 4.2.2.



DUDEK

8477

SOURCE: BING 2014

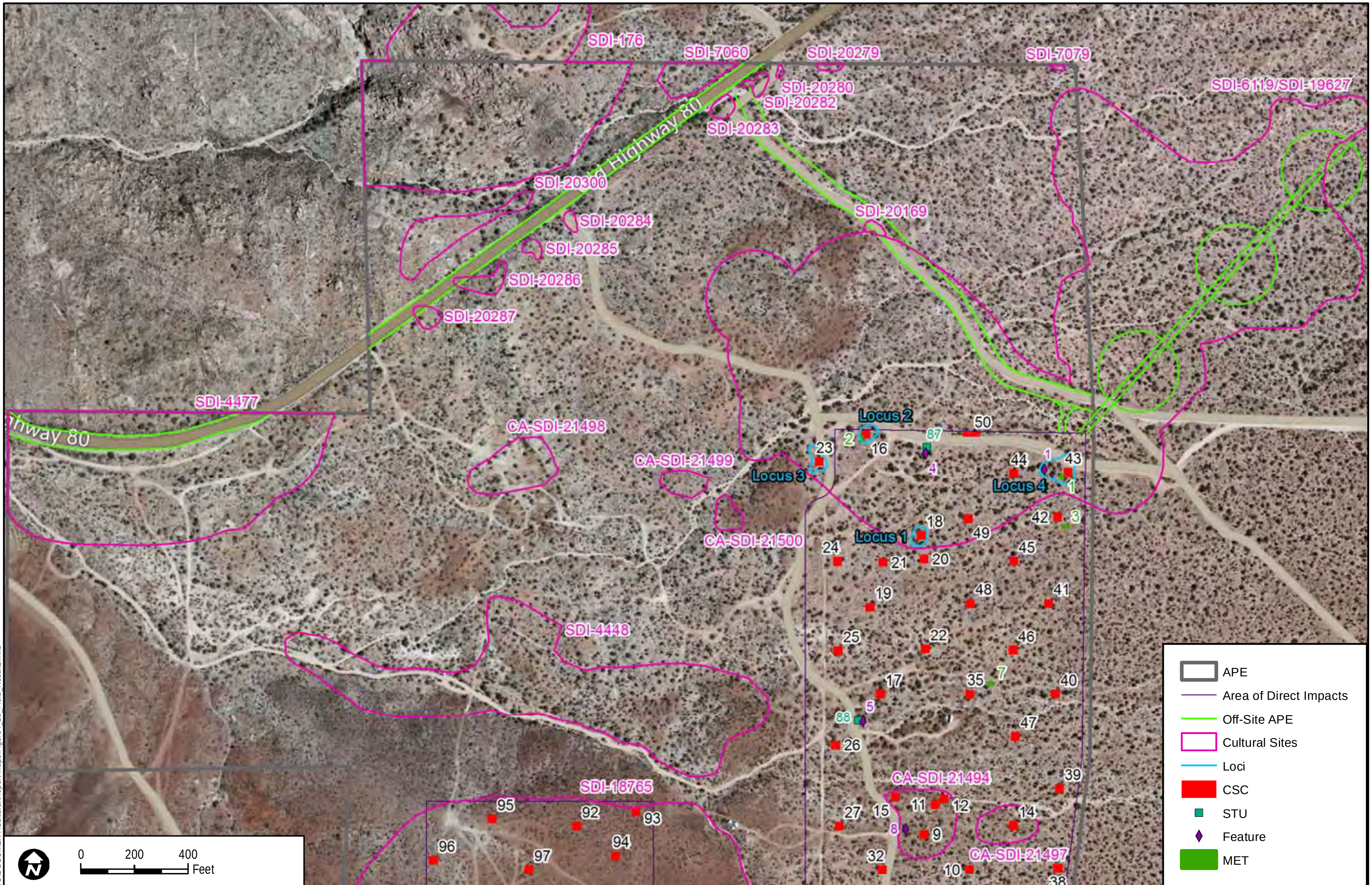
FIGURE 4-2a

Field Results Map

Jacumba Solar Energy Project

Path: Z:\Projects\j847701\MAPDOC\DOCUMENT\Cultural\Report Maps\Figure4_2a_Field_Results.mxd

INTENTIONALLY LEFT BLANK



DUDEK

8477

SOURCE: BING 2014

FIGURE 4-2b

Field Results Map

Jacumba Solar Energy Project

Path: Z:\Projects\j847701\MAPDOC\DOCUMENT\Cultural\Report Maps\Figure4_2b_Field_Results.mxd

INTENTIONALLY LEFT BLANK

CA-SDI-176

SDI-176 is a prehistoric habitation site measuring 230 x 120 m. The site was originally recorded by Treganza in the 1930s and 1940s as consisting of bedrock mortars, metates, pottery, rock shelters, midden soil, roasting pits, pictographs, cupules, a "fertility rock," profuse lithic debitage, and human cremations, but the site record lacked additional details such as quantification of cultural materials or site boundaries. The site was revisited and updated by ASM Affiliates in 2006 (ASM) to its current boundaries, and was noted to be in poor condition due to vehicle impacts and past collection. ASM found the site to contain a moderate flaked stone lithic artifact scatter and milling features, but the human cremations were not relocated. The site was again revisited in 2009 by HDR/e^{2}M (Berryman and Whitaker 2010), where ASM's findings were confirmed. During the current effort, Dudek archaeologists identified the extensive midden deposit, although it was found to be heavily disturbed by the road cut and rodent burrows. The pictographs, rock shelter, and cupules were also observed; the cupules appear to still be in use by modern people based upon the presence of quartz crystals in the cupules. The extensive artifact scatter observed at this site extends south, east, and west beyond the previously mapped boundary by upwards of 100 meters, up to an east-west trending drainage that separates the site from CA-SDI-20300 and CA-SDI-7060 (see Figure 4-2b and site specific records search map in Appendix C). A second midden deposit was identified southeast of the original site boundary. Numerous previously unidentified milling features are also present in the newly recorded area around the midden.

Two STPs were excavated at the site during the Extended Phase I shovel probing; STP 2 was located in the newly recorded midden area and STP 1 was located on the eastern side of the site on a small terrace. STP 2 produced 99 pieces of debitage, two handstones, one polished bone fragment, one ceramic sherd, and two small mammal bones before terminating on bedrock at 30 cm. STP 1 produced 13 pieces of debitage and seven ceramic sherds before terminating on bedrock at 7 cm. All artifacts were redeposited in the STPs after excavation was completed.

Based on the results of the shovel probing, and the observations by Treganza that human remains were present at the site, this site has a high potential to contain significant buried deposits and culturally sensitive materials.

CA-SDI-4448

SDI-4448 was originally recorded as a prehistoric roasting pit and light lithic artifact scatter containing approximately 35 felsite flakes, a felsite core, and a retouched felsite core (Waldron 1976). Dudek revisited the site during the current effort and substantially extended the site boundary to include a basalt quarry, and a temporary camp located between the original boundary and the quarry. The site's updated boundary now measures approximately 550 m E/W x 230 m N/S. The quarry consists of a basalt cobble desert pavement embedded in orange-brown, friable, silty sand. Artifacts at the quarry portion of the site consist of hundreds of pieces of basalt debitage, cores, and tested cobbles. The central portion of the site contains a variety of millingstones, handstones, flake stone tools, bedrock milling stations, quarried quartz outcrops, and lesser amounts of quartz debitage. The originally recorded western portion of the site is in the same general condition as previously reported.

Limited subsurface probing included excavation of two STPS. A sterile STP was excavated near a cluster of approximately 20+ pieces of debitage in the quarry, and a second STP, excavated near the site's southern boundary at a concentration of groundstone tools and lithic debitage, yielded just two pieces of debitage, which were redeposited in the STP. Neither midden soils nor habitation debris were observed at the site. Based on the limited subsurface probing and surface survey, this site appears to have a low potential to contain culturally sensitive materials or significant deposits.

CA-SDI-4477

This site was originally recorded as a village in 1968 (Hedges 1968). The site was reported to include projectile points, lithic debitage, and a ceramic sherd. Multiple pot hunter pits were noted at that time. In 1976 Easland reported the site as a temporary camp. Cultural constituents reported at that time consisted of milling stations, flaked and ground stone tools, lithic debitage, ceramics, fire-affected rock (FAR), and unspecified historic artifacts. ASM revisited a small portion of the eastern edge of the site in 2006 where they noted a low-density scatter or porphyritic flakes and extensive disturbances (Hector, et al. 2006). During the current study, the site was found to have a light-to-moderate density lithic scatter including groundstone tools and multiple milling stations.

Limited subsurface probing consisting of two STPs was conducted at the site. STP 1 was excavated within a concentration of lithic debitage to a depth of 40 cm, and yielded 10 pieces of debitage and one piece of mammal bone. STP 2 was located adjacent to a bedrock outcrop in brownish grey silty sand which may be a weakly developed midden. Six pieces of debitage were recovered before reaching bedrock at 25 cm depth. All artifacts were redeposited in the STPs after excavation was completed. Based on the near-surface bedrock, substantial subsurface deposits are unlikely, but could be present if subsurface bedrock in other locations is more deeply buried. The site contains a moderate potential for subsurface deposits and culturally sensitive remains; however, no culturally sensitive materials were observed at the site at this time.

CA-SDI-7060

This site was originally recorded as a temporary camp with a widely dispersed, low density concentration of debitage, pottery, and groundstone in a 320-x-120-m area (Townsend 1979).

The site boundaries were expanded to 488-x-396-m in 1981 (Donovan). ASM revisited the site in 1996 and updated it to its current boundary of 635-x-396-m, but was unable to locate the groundstone tools recorded by Townsend. SWCA re-recorded a 242 (N/S) x 635 (E/W) meter portion of the site in 2007 and found it to include 1,204 artifacts, including debitage, flake stone tools, bifaces, groundstone fragments, an obsidian Cottonwood Triangular series projectile point, a hammerstone, a ceramic scatter consisting of 369 sherds, and two bedrock milling features (SWCA 2008). The artifacts were dispersed across the site surface and within seven concentrations. ASM again revisited a portion of the site in 2009 and found no new features (Garcia-Herbst et al. 2009). HDR/e^{2}M revisited the site in 2010 and was unable to relocate the groundstone tools originally recorded by Townsend, and noted that there was no evidence of a buried deposit at the site (Berryman and Whitaker 2010). HDR/e^{2}M also identified recent disturbances throughout the site including off-road vehicle tracks and modern garbage dumping. During the current effort, Dudek visited only the portion of the site within the project area and found the site to correspond to the previously recorded boundary, with no modifications necessary.

CA-SDI-7079/7080/7081

This multicomponent site was originally recorded as three separate sites but combined into one larger site by HDR/e2M in 2009 due to the uninterrupted presence of artifacts between site boundaries (Berryman and Whitaker 2010). SDI-7079, originally recorded by Moore (1979) as an artifact concentration measuring 40-x-70-m, now includes portions of the boundaries for SDI-7080 and SDI-7081. Townsend (1979) recorded SDI-7080 as a historic can dump measuring 4-x-3-ft and consisting of 50+ cans and several canning jar fragments. Crotteau (1979) recorded SDI-7081 as a large lithic scatter consisting of 100+ pieces of debitage and numerous cores of varying materials. Due to the dispersed nature of the flake scatter, HDR/e2M made a post-field decision to group the various concentrations and isolates in the area into a single site (Berryman and Whitaker 2010). SDI-7079 now measures 218-x-220-m. The site contains five concentrations of prehistoric artifacts, including 125+ pieces of debitage (fine-to-medium-grained metavolcanics, andesite, basalt, and quartz), a core, a retouched flake/scraper, and a handstone fragment. Outside of the concentrations, prehistoric materials at the site include an additional 50+ pieces of debitage (fine-grained metavolcanic, quartz, and chert), five metavolcanic cores, and two handstone fragments. Additional historic artifacts found outside of the concentration include 10+ tin can fragments and multiple pieces of modern bottle glass; two modern rock rings are also located within the site’s boundary. Only a small (5-x-15-m) portion of the site extends into the northeast corner of the current project area. Dudek revisited this location during the current effort and found it to contain a light lithic scatter, as previously recorded. The portion of the site outside the current project boundary was not revisited.

CA-SDI-20169

This historic refuse scatter, measuring 70-x-85-m, was recorded by ASM in 2010 and consists of 100+ tin cans, 100+ broken bottles and bottle fragments, 15+ porcelain and stoneware ceramic sherds, and additional assorted artifacts (Cook et al. 2010). Dudek revisited the site during the current effort and found it to be in the same general condition as previously recorded. Given the proximity to CA-SDI-7074/6119/19627, this site could be incorporated into that site, but was not at this time.

CA-SDI-20279

This multicomponent site, measuring 45-x-40-m, was recorded by ASM in 2011 as consisting primarily of historic refuse but also containing two small concentrations of debitage and other scattered prehistoric artifacts (Williams 2011). The historic component consists of 100+ tin cans, one whole bottle, 90 bottle glass fragments, and 10 whiteware ceramic plate sherds. Prehistoric Concentration 1 includes 7 pieces of debitage, while Concentration 2 contains 18 pieces of debitage, a core/tool, three cores, and a retouched flake. During the current effort, Dudek revisited the site and found its condition, boundary, and characters to be the same as originally recorded.

CA-SDI-20280

This small lithic scatter, measuring 10-x-15-m, was recorded by ASM as containing 11 pieces of volcanic debitage and four volcanic cores (Williams 2011). Dudek revisited the site as part of the current effort and found its condition unchanged since the original recording.

CA-SDI-20282

This prehistoric site, measuring 30-x-20-m, is light lithic scatter recorded by ASM in 2011 (Williams 2011). The site consists of a small concentration of two cores and three pieces of debitage, with an additional scatter of volcanic artifacts to the south including 12 pieces of debitage, a core, a retouched flake, and three core/tools. As part of the current effort, Dudek revisited the site and found its previous recording accurate.

CA-SDI-20283

This prehistoric site, recorded by ASM in 2011, consists of two distinct artifact concentrations and additional scattered artifacts within a 25-x-25-m area (Williams 2011). Concentration 1 contains four pieces of volcanic debitage, a volcanic hammerstone, a volcanic core, and two quartzite cores. Concentration 2 consists of four pieces of volcanic debitage and one piece of quartz debitage. Additional scattered artifacts at the site include three brownware rim sherds, four brownware body sherds, a volcanic core/tool, and four pieces of volcanic debitage. Dudek revisited the site during the current effort and found it to be in the same general condition as previously recorded.

CA-SDI-20284

This prehistoric site recorded by ASM in 2011 consists of a light scatter of artifacts in a 10-x-20-m area (Williams 2011). The site includes a single lithic concentration containing a volcanic retouched flake, a quartz retouched flake, and five pieces of volcanic debitage, while additional constituents include two volcanic retouched flakes, a volcanic core/tool, 11 pieces of volcanic debitage, a quartz flake with bifacial retouch, and one buffware body sherd. Williams (2011) noted that the site has been highly disturbed by dirt roads and drainages, and as such, artifacts were likely deposited here from other locations. Dudek revisited the site during the current effort and found it to be as previously recorded.

CA-SDI-20285

This prehistoric artifact scatter, measuring 20-x-25-m, was recorded by ASM in 2011 as containing 11 brownware sherds, 10 buffware sherds, 11 pieces of volcanic debitage, a retouched volcanic flake, two volcanic hammerstones, and two volcanic cores (Williams 2011). During the current effort, Dudek archaeologists revisited the site and found its conditions to be as previously recorded.

CA-SDI-20286

This prehistoric artifact scatter recorded by ASM in 2011 consists of a lithic concentration and additional artifacts within a 40-x-35-m area (Williams 2011). The lithic concentration, all of volcanic material, contains 10 pieces of debitage, a retouched flake, and a core, while the rest of the site's constituents include a granitic groundstone fragment, a brownware body sherd, nine pieces of volcanic debitage, two volcanic cores, a volcanic retouched flake, a volcanic hammerstone, two pieces of quartz debitage, and one piece of basalt debitage. Dudek revisited the site during the current effort and found it to be as previously recorded.

CA-SDI-20287

This small prehistoric lithic scatter, measuring 12-x-8-m, was recorded by ASM in 2011 as consisting of 18 pieces of volcanic debitage and two retouched volcanic flakes (Williams 2011). Dudek archaeologists revisited the site as part of the current effort and found it to be as previously recorded.

CA-SDI-20300

This site, measuring 175-x-35-m, was recorded as a large temporary camp by ASM in 2011 (Williams 2011). The site is comprised of one bedrock milling feature, multiple small concentrations of debitage, two core fragments, and two historic cans. During the extended Phase I survey performed by Dudek in 2012 (Comeau), a greater quantity of debitage was found than originally reported, but no midden soil or culturally sensitive materials were identified. Limited shovel probing was performed in the eastern end of the site where the soil appeared to have a high percentage of debitage and minimal bedrock outcrops, as well as within Concentration 2 as delineated in ASM's site record. Very limited materials were recovered during this probing, and as such there appears to be low potential for subsurface deposits and/or culturally sensitive material.

CA-SDI-21495

CA-SDI-21495 is a newly recorded prehistoric site identified by Dudek during the current effort. During the distributional testing, three pieces of calcined bone were identified on the ground surface which were thought may be human remains. No other artifacts were identified at this location. At the request of the County's Forensic Anthropologist Dr. Madeline Hinkes, and with the permission of the Native American monitor, the bone fragments were collected and transported to Dr. Hinkes' office for identification. Together with remains from CA-SDI-7074/6119/19627, all bone fragments were analyzed by Dr. Hinkes on August 15, 2014, with Dudek archaeologist Brad Comeau and Red Tail monitor, Rachael Smith in attendance. Each of the bones was identified as "likely human" and all fragments were retained in Dudek custody in a secure location. After being notified by the County Medical Examiner, the NAHC identified the Kumeyaay Cultural Repatriation Committee (KCRC) as the Most Likely Descendant (MLD), who in turn designated Mr. Clint Linton as the MLD representative. Mr. Linton met with Project personnel on September 15, 2014 and, the MLD took possession of all of the analyzed bone fragments. In agreement with the County's requirements, the Project proponent committed to avoidance in place of this location with an appropriate buffer, and no development is planned for the location; development will not encircle this site. Documents relating to the identification and disposition of human remains are included in Appendix F.

CA-SDI-21498

This prehistoric artifact scatter, measuring 60-x-104-m, was recorded by Dudek during the current effort. The site includes two light concentrations of basalt debitage separated by drainages and modern OHV activity. Each concentration contains approximately 20 pieces of debitage and a couple ceramic sherds, within a light density artifact scatter consistent with the low levels of artifacts found throughout the Project site. No flakedstone or groundstone tools were identified at the site. No evidence for buried deposits was observed within the site or surrounding area, although no subsurface testing was performed at this time.

CA-SDI-21499

This site is a newly recorded prehistoric artifact scatter measuring 32-x-59–m. The site is situated on the southern slope of a small hill and contains five basalt cores, 10+ tested basalt cobbles, and over 20 pieces of basalt debitage. Vegetation at the site consists of Juniper, ephedra, and Yucca sp. Sediments at the site consist of loose, light brown silty sand with an abundance of angular cobbles.

CA-SDI-21500

This site is a newly recorded historic refuse dump measuring 40-x-32-m. The site is situated on the slope of a wash near a granite outcrop, as is actively being eroded down the drainage. The site contains a light scatter of fragmented tin cans, bottle glass fragments (blue, aqua, and colorless), and porcelain cookware sherds. Vegetation at the site consists of juniper, buckwheat, and ephedra. The ground surface consists of decomposing granite, which precludes the possibility of a subsurface deposit.

4.2.2 Results of the Distributional Evaluation Program of the Project ADI

Despite multiple occasions of pedestrian survey, this section presents results of the distributional evaluation program since it was the primary method used to define site boundaries within the ADI, combining surface inspection, collection, and excavation methods.

Overview of Sampling Results

The distributional evaluation program targeted 70 standardized grid points and 21 subjectively identified areas within the Project ADI (Figure 4-2a and 4-2b). In all, evaluation fieldwork samples included 85 CSCs, 70 SSUs, 21 STPs, 3 STUs, 1 CU, and 11 METs, 15 individual surface collections (point plots) and two grab sample surface collections (Table 4-3; also see Appendix D—Lab Results). The vast majority of cultural material derives from CSCs; this is expected given that nearly all artifacts are located on the surface. In that same vein, SSUs target the recovery of artifacts in near-surface contexts (upper 10 cm), and mainly boost recovery of smaller items that are more easily buried; these contained the next highest density of artifacts (though still minimal compared to CSCs).

Data from the sampling program was used to characterize the Project ADI and to refine surface observations on potential artifact concentrations. First, artifact frequencies by sample unit were visually compared using a histogram (Figure 4-3). Next, these same artifact frequencies were plotted in the Surfer mapping program (Figure 4-4). Due to the general lack of subsurface deposits, artifacts recovered from excavated samples were treated as surface finds in order to gain more utility out of a map based on artifact density and to allow comparison on a two-dimensional (X,Y) Cartesian plane (see Hale and Becker 2006).

In all, the distributional evaluation confirmed surface observations of artifact concentrations, resulting in updated site boundaries for CA-SDI-7074/6119/19627 and CA-SDI-18675, and delineation of five new archaeological sites, including CA-SDI-21492, CA-SDI-21493, CA-SDI-21494, CA-SDI-21496, and CA-SDI-21497 (see Figure 4-4). Considering just prehistoric sites (excluding historic refuse deposits at CA-SDI-21496 and CA-SDI-21497), artifact densities are much higher within site contexts versus non-site general sample units (see Table 4-3). Non-site sample units have an average artifact density of 0.1 artifact/m^2, or 1 artifact in every 10 m^2. This contrasts sharply with concentrations, the least dense of which at CA-SDI-7074/6119/19627 is more than 4 times more dense (0.43 artifacts/m^2). Nearer to the lithic quarry, artifact densities are higher still, but the lithic quarry at CA-SDI-18675 is still the most dense (0.97 artifacts/m^2) (see Table 4-3). Overall, the artifact densities within sites versus non-site sample areas in the ADI generally correlate with the Surfer program simulation. The Surfer artifact density overlay visible in Figure 4-4 bleeds outside of the drawn site boundaries because of interpolation irregularities. The Surfer overlay mimics topography, with lines spaced at increasing distances from one another for lower densities, and closer to one another for higher densities. Density variation is accurately portrayed within the quarry itself (CA-SDI-18675); greater Surfer line spacing in the center of the quarry reflects a dearth of raw material observed on the surface there. Despite the utility of the Surfer program, final site boundaries were drawn based on strict surface observations completed during the distributional evaluation.

Table 4-3
Artifacts Recovered from Prehistoric Sites and Non-Site Contexts

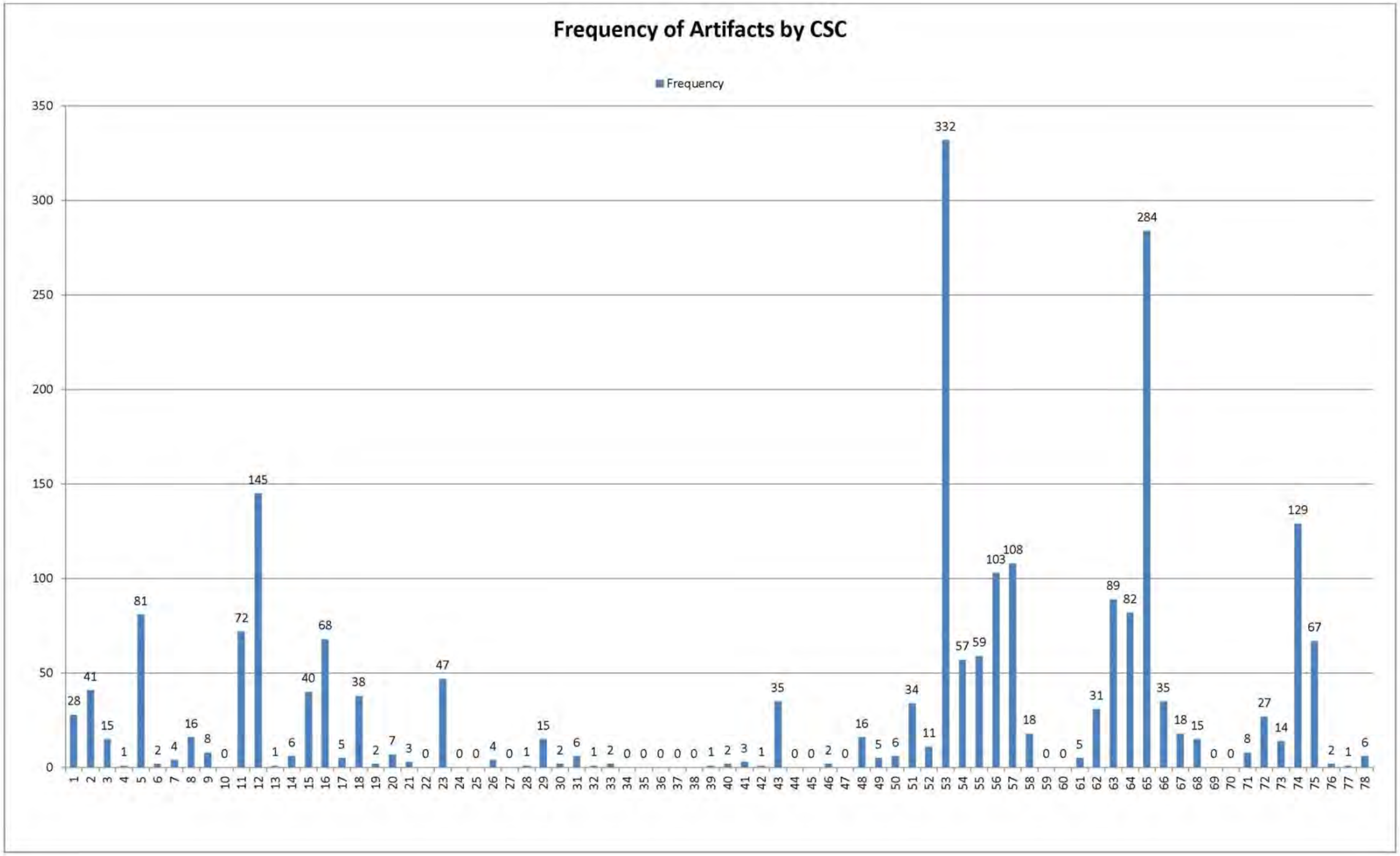
Artifact Type	CA-SDI-18765	CA-SDI-7074/6119/19627	CA-SDI-21492	CA-SDI-21493	CA-SDI-21494	Non-Site Sample	Total
Projectile Point		1					1
Biface			1		1		2
Formed Flake Tool			1		1		2
Retouched Edge Tool	29	6	1		4	10	50
Simple Flake Tool	17	2					19
Core	59	9	2		5	14	89
Debitage	1352	204	113	19	281	265	2234
Hammerstone	1	1	2		2	4	10
Misc. Battered Stone	1						1
Rim Sherd		5		5			10

Table 4-3
Artifacts Recovered from Prehistoric Sites and Non-Site Contexts

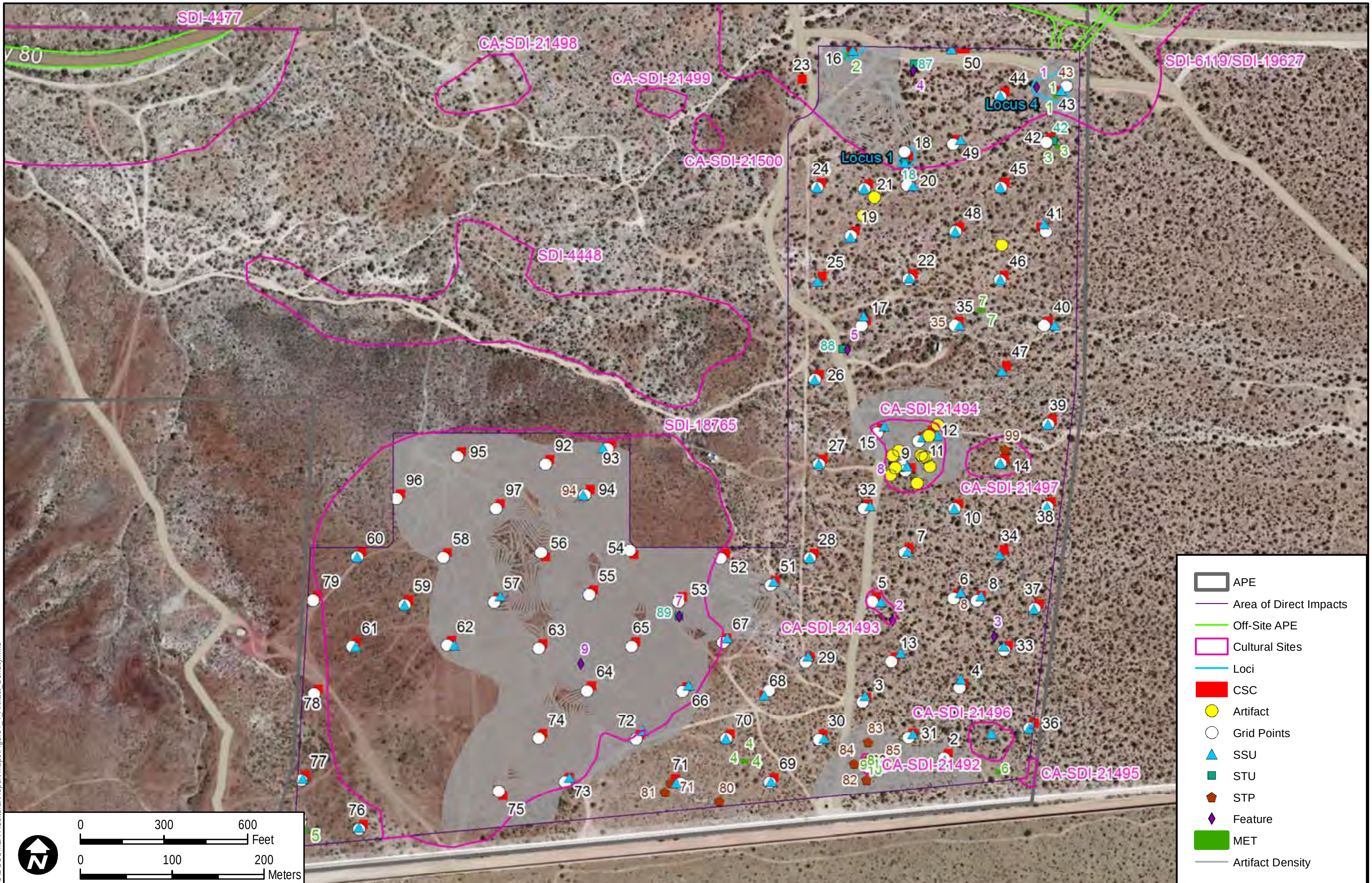
Artifact Type	CA-SDI-18765	CA-SDI-7074/6119/19627	CA-SDI-21492	CA-SDI-21493	CA-SDI-21494	Non-Site Sample	Total
Body Sherd		33		55		14	102
Handstone	1	4	4		3		12
Millingstone		2	1	2	3		8
Indet. Groundstone			1			2	3
Total	**1460**	**267**	**126**	**81**	**300**	**309**	**2543**
Density (/m^2 of sample area)	**0.97**	**0.43**	**.94**	**0.81**	**0.71**	**0.1**	**-**

INTENTIONALLY LEFT BLANK

Figure 4-3 Histogram of Artifact Frequency by CSC Sample



INTENTIONALLY LEFT BLANK



Path: Z:\Projects\j847701\MAPDOC\DOCUMENT\Cultural\Report Maps\Figure4_4_Artifact_Density.mxd

DUDEK

8477

SOURCE: BING 2014

FIGURE 4-4

Artifact Density - Site Delineation Map

Jacumba Solar Energy Project

INTENTIONALLY LEFT BLANK

Despite extensive subsurface sampling, the vast majority of artifacts were recovered from the surface, including within the limits of the basalt quarry (CA-SDI-18765) and in non-quarry sandy matrix. Table 4-4 shows the distribution of all artifacts from all sites and non-site contexts combined by depth.

Table 4-4
Total Artifact Recovery by Depth

Artifact Type	Surface	0-10 cm	10-20 cm	20-30 cm	30-40 cm	Total
Projectile Point	1					1
Biface	2					2
Formed Flake Tool	1		1			2
Retouched Edge Tool	44	5	1			50
Simple Flake Tool	17	1	1			19
Core	88	1				89
Debitage	2038	118	32	13	33	2234
Hammerstone	9		1			10
Other Battered Implement	1					1
Rim Sherd	7	3				10
Body Sherd	94	8				102
Handstone	5	4	2	1		12
Millingstone	7	1				8
Indeterminate Groundstone	2		1			3
Total	**2316**	**141**	**29**	**14**	**33**	**2543**
%	**91.1%**	**5.5%**	**1.5%**	**0.6%**	**1.3%**	**100.0%**

More than 90% of all artifacts were recovered from the surface. Considering that artifacts from the top 10 cm are in near-surface contexts, just 3.4% of all artifacts were recovered to depths of 40 cm. Together, the distribution of artifact classes by depth demonstrates that archaeological deposits in the study area tend to be restricted to the surface. The trace amounts of artifacts recovered below the surface could have easily been transported to those depths through taphonomic processes and are too small to be considered statistically significant. Although, some lithic artifacts were recovered from buried roasting pits investigated at CA-SDI-21492 and were probably buried in place.

Overall, the distributional evaluation program was able to simultaneously characterize site boundaries and the low density of artifacts scattered across the surface in non-site contexts. The low artifact density identified in non-site sample units (0.1 artifacts/m^2) equates to an average of 2.5 artifacts within a 25 m^2 area; a level below the regional BLM standard of 3 or more artifacts in a 25 m^2 area. Regardless of those standards, the current evaluation program evaluated the entire ADI, regardless of site boundaries by sampling regular intervals, and it also identified areas with buried deposits, such as the roasting pit cluster of CA-SDI-21492 (discussed below).

Site-specific results are discussed below, starting with the lithic quarry (CA-SDI-18675) since this landform seems to have been targeted by local prehistoric inhabitants and the possible source of artifacts identified at other Project sites.

4.2.2.1 Site Specific Results

Lithic Quarry: CA-SDI-18765

The prehistoric stone quarry, SDI-18765, was initially recorded and evaluated according to property boundary restrictions by Rosenberg and Smith (2008). That report identified extensive flaking debris remaining from prehistoric quarrying of locally outcropping basalt, and admitted that the site boundary was arbitrarily drawn. At that time, the site was recommended as not eligible for listing in the NRHP (Rosenberg and Smith 2008). The intensive pedestrian survey conducted for this project resulted in the determination that much of the low knoll, on the south side of which SDI-18765 sits, consists of outcropping basalt cobbles that were quarried for stone tool manufacture. It is this formation that likely served as the parent source for much of the basalt tools found in immediately adjacent areas. However, this low knoll is one of many basalt outcrops in the general vicinity and thus it cannot be concluded that it was the source of all or even most of the basalt tools and debitage found in the local area. The Table Mountain District and Jacumba Valley Archaeological District are recorded along the northern edges of the current Project parcel and also identify extensive basalt quarry areas within their boundaries.

The majority of the basalt quarry falls within the Project ADI and was covered by the distributional sample grid. Evaluation of CA-SDI-18765 included surface collection of 24 CSCs and one grab sample, and the excavation of 10 SSUs, one STP, and one STU (Figure 4-5; Confidential Appendix C). Grid points which fell within the previously recorded site boundary were not evaluated, as that location was previously evaluated by Rosenberg and Smith (2008). Grid points immediately east of that boundary were also not evaluated as that area was completely disturbed by a staging area used during construction of the Border Fence in 2008-2009. In total, five grid points were omitted.

Figure 4-5 CA-SDI-18765 (Confidential Appendix C)

INTENTIONALLY LEFT BLANK

In addition to quarrying materials, two potential features were identified on the surface. Features 7 and 9 consist of dense clusters of FAR and charcoal on the desert pavement surface; trowel probing revealed no subsurface deposits within these features. Feature 7 is a 1.76-x-1.70-m circle of cobbles slightly raised above the ground surface and was initially thought to be a possible aboriginal roasting pit. The feature was bisected (STU 89) to examine its structure and to identify its origin. Excavation of the feature revealed approximately 40 lightly burned FAR and an abundance of large pieces of charcoal. Twenty-two caliber bullet casings and a few small pieces of unidentifiable metal were recovered. No prehistoric artifacts were recovered, and no burned soils were present. All sediment consisted of the same light brown compacted silt which underlies the surrounding desert pavement. Excavation of the feature terminated at 10 cm. Based on the profile of the feature, it appears that a fire was simply built on top of the natural cobble surface. Given the lack of prehistoric materials and absence of burned sediments, which are typically present at prehistoric thermal features, the feature was presumed to be of modern or sub-modern origin and unrelated to quarrying activities.

The lithic quarry is characterized by Grid samples 53-66, 72-75, and 92-97, along with a general surface observation of the overall quarry boundary based on the outcropping of raw material on the surface and a low density of lithic flaking debris (i.e., tested cobbles and debitage). The quarry area is clearly identifiable by the natural landform, consisting of a basalt knoll that varies from slightly to extensively deflated (Figure 4-6), compared to the non-quarry area that consists primarily of loosely consolidated fluvial and alluvial granitic sands. Raw materials that were exploited for the manufacture of lithic tools consist primarily of basalt that varies in character from fine to coarse grained, and with and without gas-generated inclusions. Visibly, they include grayish brown fine grained material, brownish or bluish gray coarse grained material with white inclusions and green coarse grained material with white inclusions. Quartz also naturally outcrops with the basalt formation, and, although much less common, it was also occasionally used to produce stone tools.

Figure 4-6 CA-SDI-18765, Overview photograph at CSC 74, facing north

Grid samples within the lithic quarry have the highest density of lithic chipping debris accounting for 64.1% of the overall artifact assemblage generated from the survey and evaluation program. The vast majority of artifacts identified in the entire project area consist of lithic debitage (89% of the overall artifact total) (see Table 4-4). Considering just the quarry assemblage, 98.9% of all artifacts were recovered from the surface (CSC and General Surface), with insignificant amounts removed during shovel scrape (SSU) excavations (1.1%) (Table 4-5). These results simply reinforce the notion that the lithic quarry is characterized by deflated sediments exposing the basalt cobbles on the surface that were exploited. The lack of sediments in general inhibited post-depositional burial of lithic reduction debris. Instead, with progressive deflation overtime, artifacts have become interlocked on the surface in some areas forming desert pavement. Additionally, no prospect pits were identified that could be interpreted as aboriginal quarry pits; all lithic quarrying appears to have been limited to scavenging of basalt raw material readily available on the surface. Indeed, ample untested basalt cobbles remain on the surface indicating that the quarry was not exhausted of its visible or available raw material.

Table 4-5
Artifacts by Recovery Type at CA-SDI-18675, Lithic Quarry

	CSC	SSU	General Surface	Total
Core	54		5	59
Debitage	1320	15	17	1352
Hammerstone	1			1
Handstone	1			1
Misc. Battered Stone			1	1
Retouched Edge Tool	24	1	4	29
Simple Flake Tool	13		4	17
Total	**1413**	**16**	**31**	**1460**
% Total	**96.8**	**1.1**	**2.1**	**100**

Overall, grid samples 53, 65, and 95 have the highest density of artifacts (Table 4-6). These grid samples are located in the part of the quarry with the highest density of exposed basalt cobbles. Surface observations of the quarry surface located outside of the project development area did not result in the identification of lithic reduction debris in densities as high as those found in grid samples 52-55.

Table 4-6
CA-SDI-18675 Artifacts by Recovery Type

Unit	Retouched Flake	Simple Flake Tool	Core	Debitage	Hammer-stone	Handstone	Total
CSC	*24*	*13*	*54*	*1320*	*1*	*1*	*1413*
26				8			8
53	6	6	2	318			332
54	2		3	52			57
55	1		2	55		1	59
56	2		6	94	1		103
57			5	103			108
58	1		1	16			18
61			1	4			5
62		1	2	20			23
64	1	1	3	77			82
63	2		2	85			89
65	4		19	261			284
66			2	33			35
73				14			14
74	3	4	4	118			129
75	2	1	2	62			67

Table 4-6
CA-SDI-18675 Artifacts by Recovery Type

Unit	Retouched Flake	Simple Flake Tool	Core	Debitage	Hammer-stone	Handstone	Total
SSU	*1*			*15*			*16*
57	1			8			9
59				1			1
66				5			5
67				1			1
Grab Sample	*4*	*4*	*5*	*17*	*1*		*31*
Total	**29**	**17**	**59**	**1352**	**2**	**1**	**1460**

CA-SDI-7074/6119/19627

CA-SDI-6119 was originally recorded in 1976 to consist of a roasting pit and lithic scatter containing an unquantified number of flakes, cores and retouched flakes covering a 200-x-100-m area. The site was revisited and portions were evaluated by Jordan (2010) for the ESJ project, resulting in an expansion of the site to the south and east to incorporate additional materials found on the surface (Jordan 2010). Jordan's (2010) evaluation consisted of detailed surface inspection and the excavation of 18 STPS along transects and one 1-x-1-m excavation unit completed to a depth of 50 cm. Artifact recovery was low, totaling 40 pieces of debitage, 3 pieces of aboriginal ceramics, and trace amounts of organic remains of questionable origin (Jordan 2010:44). That study concluded that no significant deposits existed at the site and recommended it as not eligible for listing in the CRHR or local register. CA-SDI-19627 was originally recorded by Berryman and Whitaker (2010) as a large multi-component site. The prehistoric component consists of a low density artifact scatter with two possible habitation concentrations; the historic component included two refuse deposits, a dispersed refuse scatter, and concrete foundations. ASM later combined sites CA-SDI-6119 and CA-SDI-19627 during a pedestrian survey, then evaluated project-related impact areas of the original boundary of CA-SDI-19627 (Williams and Whitley 2011). That evaluation found no significant deposits and recommended the area within their limits as not significant, and not eligible. Williams and Whitley (2011) did note the two prehistoric concentrations outside of their ADI that were avoided by project design associated with the ECO substation development. These areas are currently outside of the Project ADI for Jacumba Solar and were not evaluated. The artifact scatter in the remainder or the site which overlaps the gen-tie ADI contains an artfact density of as low as 1 per 10 m (Berryman and Whitaker 2010), and is therefore equivalent to the general background scatter as delineated during the distributional sampling.

CA-SDI-7074 was originally recorded by Dominici in 1979 and has been updated numerous times since then to incorporate seven other sites; most recently ASM performed evaluation and data recovery excavations and construction monitoring at the site for the ECO Substation project. This multi-component site contains historic refuse scatters, prehistoric artifact scatters, and numerous thermal features (e.g, hearths, roasting pits). The evaluation excavation focused upon the portion of the site in the ECO Substation ADI; the remainder of the site was presumed eligible for listing in the NRHP and placed into an ESA (Williams and Whitley 2011). The evaluated portion of the site, which lies outside the current ADI, was determined eligible for listing in the NRHP under Criterion D. Following data recovery efforts in this portion of the site, construction monitoring efforts identified additional features and artifacts (Williams et al. 2014b) which resulted in the expansion of CA-SDI-7074 to the west and the unification of CA-SDI-7074 with CA-SDI-6119/19627.

The current evaluation focused on the newly identified artifact concentrations observed on the surface within the ADI. Based on the distributional grid and selectively placed units, CA-SDI-7074/6119/19627 was expanded to the south and is defined by units 16, 18, 23, 43, 44, 49, and 50. The site now covers 590-x-300 m overall, with only a small portion of this falling within the ADI (see Figure 4-7; Confidential Appendix C). A low density scatter of artifacts covers the portion of the site within the ADI. However, the primary concentrations are located at units 16, 18, 23, and 43. As a result, these locations were identified as loci of the site (see Figure 4-7; also Figures 4-8 and 4-9).

INTENTIONALLY LEFT BLANK

Figure 4-7 CA-SDI-7074/6119/19627 Site Sketch Map (Confidential Appendix C)

INTENTIONALLY LEFT BLANK

Figure 4-8 Overview Photograph of CA-SDI-7074/6119/19627, Locus 2, facing north

INTENTIONALLY LEFT BLANK

Figure 4-9 Overview Photograph of CA-SDI-7074/6119/19627, Locus 3, facing east

CSC and SSU 18, and their immediate vicinity comprise Locus 1 and are located at the southern end of the site. This location was selectively chosen as it contained a clear concentration of surface artifacts, while the grid sample point to the north was located in a wash which contained significant surface disturbance (i.e. modern trash and vehicle tracks). CSC 18 produced 29 pieces of debitage, six cores, one hammerstone, two retouched flakes, one piece of faunal remains, and one FAR (Table 4-7). Volcanic/basalt materials dominate the assemblage, with only seven quartz flakes and a quartzite hammerstone also present. No artifacts were recovered from SSU 18 or STP 18, which were excavated to 10 and 40 cm, respectively. Sediments consisted of brown (7.5YR 3/4), moderately compacted sandy silt, with increasing compaction and concentration of decomposing granite with depth.

Table 4-7
CA-SDI-7074/6119/19627 Artifacts by Recovery Type

Unit	Projectile Point	Retouched Flake	Simple Flake Tool	Debitage	Core	Hammer-stone	Hand-stone	Milling-stone	Ceramic	Total
CSC		*3*		*157*	*9*	*1*		*2*	*27*	*199*
16		1		49				1	17	68
18		2		29	6	1				38
23				34	2			1	10	47
43				35						35
49				4	1					5
50				6						6
MET		*1*	*-*	*6*						*7*
2		1	-	6						7
SSU		3	1	35			3		11	53
16		1		13						14
23		2		11			3		11	27
43			1	11						12
STP				*5*						*5*
23				2						2
43				3						3
STU				1						1
87				1						1
Surface - General	*1*						*1*			*2*
Total	**1**	**7**	**1**	**204**	**9**	**1**	**4**	**2**	**38**	**267**

CSC 16, SSU 16, STP 16 and MET 2 comprise Locus 2. This area consisted of a moderately dense surface scatter sitting on top of a dark grey sandy matrix. CSC 16 was shifted slightly off-grid in order to place it in the densest concentration of observed surface artifacts, with SSU and STP 16 placed at the densest concentration within the CSC. Artifacts recovered from CSC 18 included 49 debitage, 17 ceramic sherds, one retouched flake, and one millingstone. Excavation of SSU 16 recovered a further 13 pieces of debitage and a retouched flake (Table 4-7). No artifacts were recovered from STP 16, which was excavated to a depth of 40 cm, although four pieces of shell were collected and a small amount of FAR was noted. Sediments in the SSU and STP were primarily very dark grey (7.5YR 3/1) sandy silt, underlain by very compact grey sandy silty gravel. Small pockets of compacted light reddish brown sandy silty gravel were observed in the unit, as well as a pocket of ashy soil, indicating the remnant of a thermal feature.

MET 2 was excavated immediately adjacent to STP 16 in order to determine if an intact feature was present and the potential for more deeply buried features. MET 2 identified 40 cm of dark grey sandy silt which overlays reddish brown alluvium to a depth of 5 feet. No further evidence of an intact thermal feature was identified, as no oxidized or burned soil was observed and only a small amount of FAR was present in the spoils pile. One piece of debitage and one retouched flake were recovered during trenching. This location is located immediately adjacent to a graded dirt road, within which FAR and burned sediments are currently visible. Given these observations, it appears that the sediments and FAR may be the redeposited remains of a one or more thermal features which have be disturbed by construction and maintenance of the road. A column sample for floatation was collected from the north wall of the MET from the ground surface to 40 cm. The floatation sample recovered a small amount of lithic debitage as well as two charcoal samples and one piece of faunal remains. One charcoal sample sent to Beta Analytic for AMS dating returned a date of 285 BP to the present (AD 1685-present).

Locus 3 was defined by CSC 23 and SSU 23, as well as two individual surface collections and one grab sample surface collection. CSC 23 was shifted 15 m west of the grid point, as it originally fell within a graded dirt road. Artifacts recovered from CSC 23 included 34 debitage, two cores, 10 ceramic sherds, and one millingstone fragment. This sample was supplemented by 11 debitage, 11 ceramic sherds, two retouched flakes, and three handstones recovered from SSU 23, two debitage recovered from STP 23, and two individually collected surface artifacts: an obsidian Desert Side-notched projectile point, and a small sandstone handstone fragment (Table 4-7). Sediments in this location consisted of brown (7.5 YR 3/4), very loose sandy decomposing granite.

During excavation, three small calcined bone fragments were observed on the ground surface, south of SSU 23. Following seasonal rains, additional calcined bone fragments were exposed on the surface in a concentrated area around the originally identified specimens. At the request of the County's forensic anthropologist, Dr. Madeleine Hinkes, and with the permission of the Native American monitor, all visible pieces of cremated bone (and the arrow point) were collected and transported to Dr. Hinke's office for examination. Together with remains from CA-SDI-21495, all bone fragments were analyzed by Dr. Hinkes on August 15, 2014, with Dudek archaeologist Brad Comeau and Red Tail monitor, Rachael Smith in attendance. Several pieces of bone were identified as "likely human" or "possibly human", and all fragments were retained in Dudek custody in a secure location. After being notified by the County Medical Examiner, the NAHC identified the Kumeyaay Cultural Repatriation Committee (KCRC) as the Most Likely Descendant (MLD), who in turn designated Mr. Clint Linton as the MLD representative. Mr. Linton met with Project personnel on September 15, 2014 and, the MLD took possession of all analyzed bone fragments along with the arrow point and handstone which were considered in close enough spatial association to be grave goods. In agreement with the County's requirements, the Project proponent committed to avoidance in place of this location with an appropriate buffer, and no development is planned for the location; development will not encircle this locus of CA-SDI-7074/6119/19627. Documents relating to the identification and disposition of human remains are included in Appendix F.

Locus 4 is delineated by CSC 43, SSU 43, and STP 43, as well as MET 1. As with Locus 2, this locus consists of a moderately dense surface scatter including lithic debitage (n=38), one core, and one simple flake tool.

Two additional potential thermal features were identified off-grid within the site. Features 1 and 4 are small clusters of FAR situated at the edge of a small, ephemeral wash. Based on the disturbed condition of the ground surface, it was not possible to discern whether the FAR had accumulated in these location as a result of transport down the wash, or if they had been exposed by erosion of the ground in the wash. Feature 4 was thought to be most likely to be the result of exposure through erosion and was bisected (STU 87). Excavated to a depth of 20 cm, no burned sediments or charcoal was identified in the 1-x-0.5-m unit. Forty-one pieces of FAR and two pieces of burned wood were collected from the STU, however no shape or pattern could be discerned. A single piece of quartz debitage was collected from 0-10 cm. Sediments consisted of loose light brown silty sand with granitic pebbles and angular quartz cobbles; no burned sediments were observed. Based on the results of the excavation, Feature 4 was determined to be of non-cultural origin (wash deposition), rather than exposure through erosion, and it was presumed that Feature 1 is of the same origin, as it is located in the same wash. Feature 1 was not excavated.

A total of 267 artifacts were recovered from the site, including 204 pieces of debitage, 38 ceramic sherds, nine cores/core tools, seven retouched flakes, one simple flake tool, one hammerstone, four handstones, two milling stones, and one projectile point.

Overall, the evaluated portion of CA-SDI-7074/6119/19627 is a standard sample of archaeological deposits located in the general region, but primarily north of the ADI. This area consists of a few small pockets of moderately concentrated artifactual remains and remnants of thermal features, with a very light background scatter of artifacts dispersed between the concentrations.

CA-SDI-21492

Site CA-SDI-21492 is defined by the presence of Feature 6 and a moderately dense artifact scatter around the feature, in all covering a 21-x-18-m area. Feature 6 was identified through the excavation of SSU 1 and STP 1, and further explored to define its size and character through the excavation of 4 METs, six STPs and one CU (Figure 4-10; Confidential Appendix C). CSC 1 was placed approximately 15 m north of its grid point, as no surface artifacts were observed at the grid point. CSC 1 and SSU 1 identified a moderately dense near surface scatter of debitage, flaked stone tools, and groundstone on and within a very loose, light brown silty coarse sand matrix. STP 1, excavated in the southwest corner of SSU 1, immediately exposed black silty sand with an abundance of FAR, and a small amount of charcoal and lithic debitage to a depth of 40 cm.

Four STPs were excavated at 20 m intervals from STP 1 in cardinal directions to determine if the soils and material in the STP represented a midden deposit or individual feature. None of the four STPs (82-85) exposed midden or burned sediment, and only produced a minor amount of artifacts, indicating that instead of a midden, STP 1 had exposed a feature. Three more STPs (86, 90, and 91) and CU 1 were then excavated to more thoroughly define the size and character of the feature.

CU 1 exposed an abundance of randomly distributed FAR (10.259 kg) and small flecks of charcoal throughout the unit, from 10-40 cm below the surface. Sediments in the unit were consistent with those exposed in STP 1, however, from 20-40 cm all of the sediment contained a very strong smoky odor, as if the feature were recently used.

Four METs (8-11) measured 0.50 m in width and were excavated radiating along cardinal directions from CU 1/SSU 1 to varying lengths through the bottom of the feature, and 40-50 cm into the underlying substratum (see Figure 4-11; Confidential Appendix C, and Figure 4-12). The profiles of the METs exposed three distinct areas of oxidized soil at the interface between the underlying substratum and the heavily burned feature soil, indicating a minimum of three distinct thermal features; two of these are located in the south wall of MET 11 (Figure 4-13), and one in the west wall of MET 8 (Figures 4-14 and 4-15).

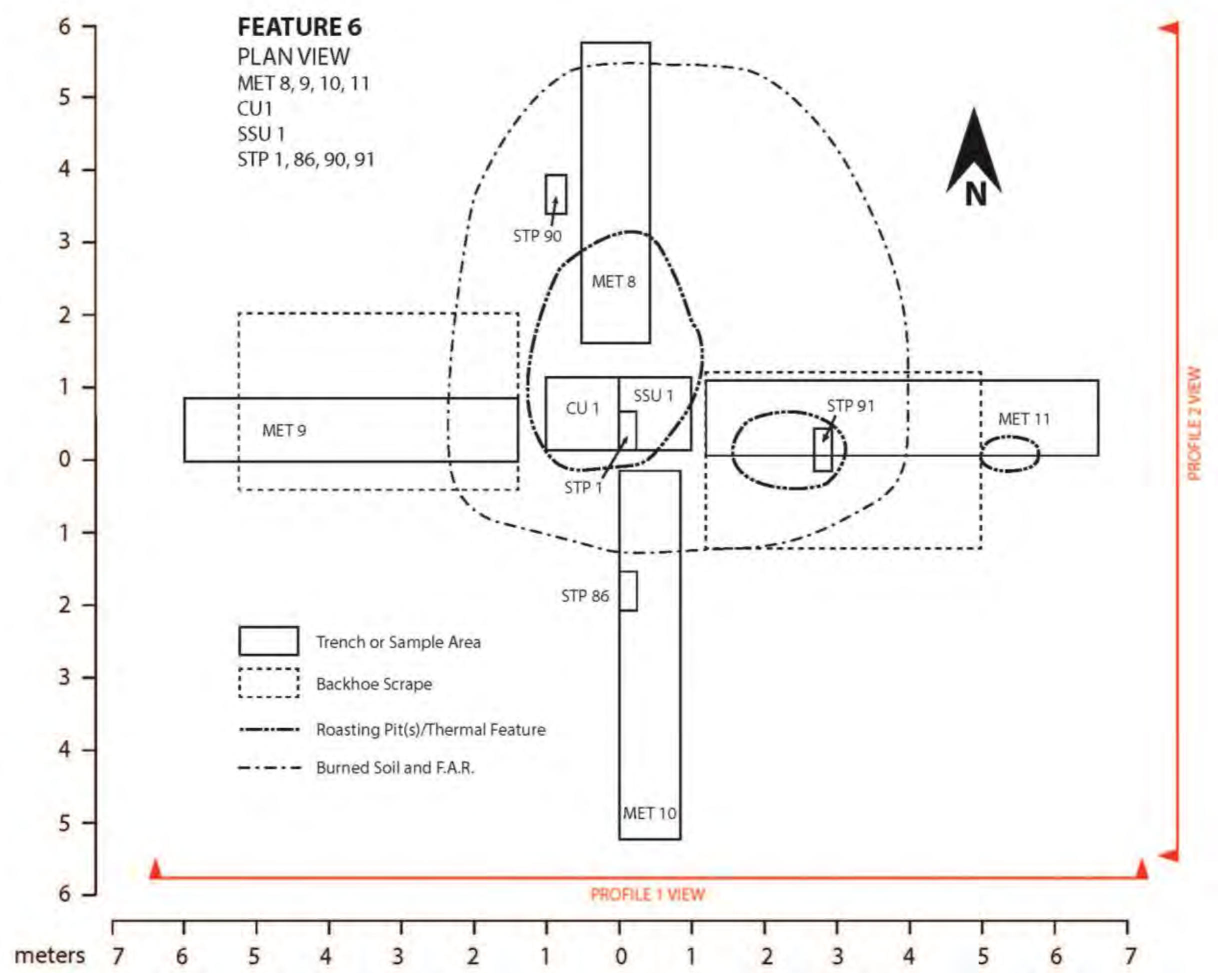
Both column and selective soil samples were collected from MET profiles and from within CU 1 for floatation. These samples produced varying amounts of charcoal, a few pieces of debitage, and only one potential seed. Five charcoal samples from different parts of the feature were sent for AMS radiocarbon dating at Beta Analytic. Three of the samples returned calibrated dates ranging between 5315 to 5050 BP, with two others dating slightly older (5300-5600 BP) (Table 4-8; Appendix E).

INTENTIONALLY LEFT BLANK

Figure 4-10 Site CA-SDI-21492 Site Sketch Map (Confidential Appendix C)

INTENTIONALLY LEFT BLANK

Figure 4-11 CA-SDI-21492, Feature 6, Plan view sketch

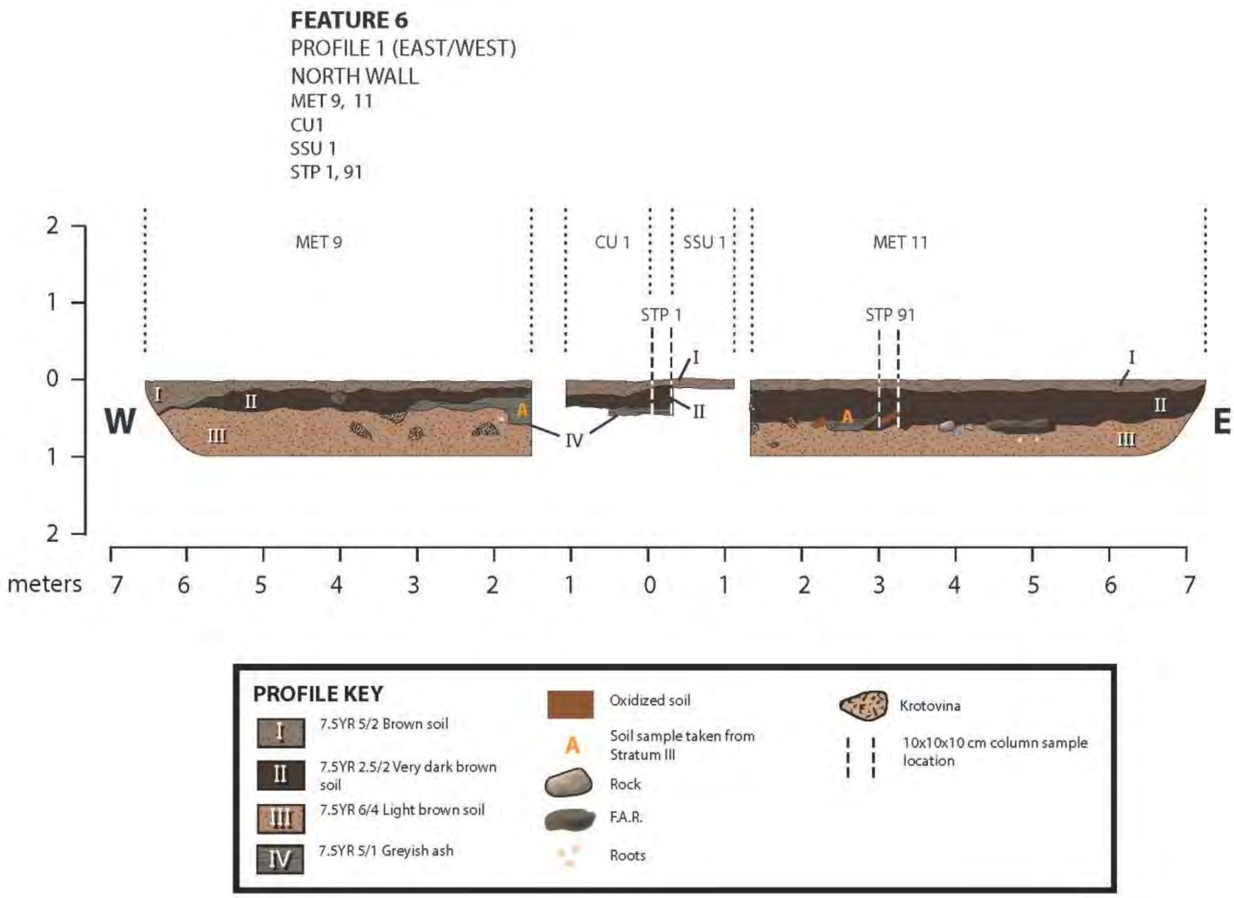


INTENTIONALLY LEFT BLANK

Figure 4-12 CA-SDI-21492, Overview Photograph, facing south

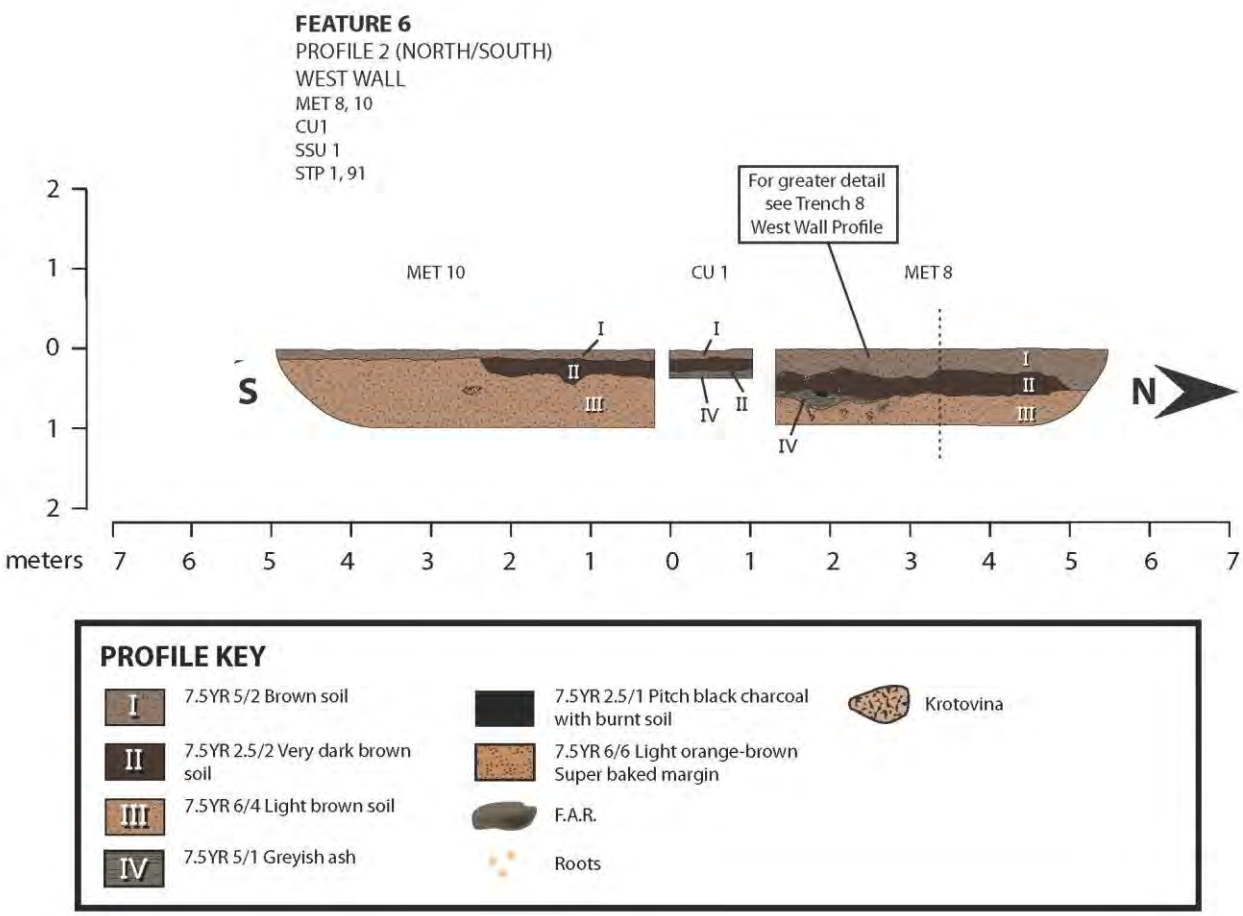
INTENTIONALLY LEFT BLANK

Figure 4-13 CA-SDI-21492, MET 11, Photograph of south wall profile, showing distinct thermal feature (oxidized soil)



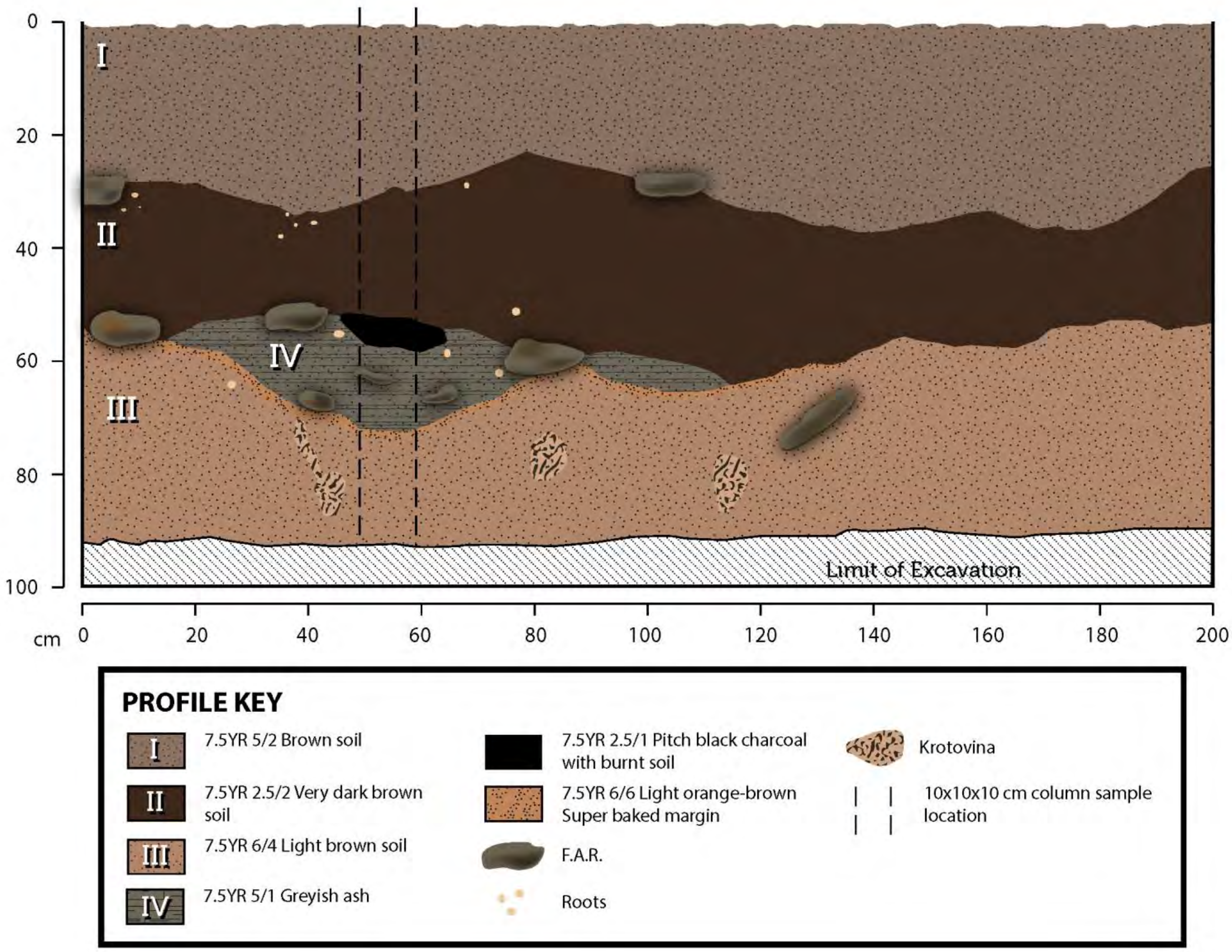
INTENTIONALLY LEFT BLANK

Figure 4-14 CA-SDI-21492, Feature 6, Profile sketch (East/West)



INTENTIONALLY LEFT BLANK

Figure 4-15 CA-SDI-21492, Feature 6, Profile sketch (north/south)



INTENTIONALLY LEFT BLANK

Table 4-8
Radiocarbon Dating Results for CA-SDI-21492, Feature 6

Sample	Recovery Type	Unit	Depth	Recovery Method	Date (Cal BP, 2-Sigma)	Maximum Date Range (BP; 95% confidence)	Date (Cal BC/AD)
CAT 615	CU	1	30-40	Bulk Sample	5310-5210 and 5195-5050	5310 - 5050	3360 - 3260 BC and 3245 – 3100 BC
CAT 618	MET	9	35-50	Bulk Sample, North Wall	5445-5380 and 5325-5300	5445 - 5300	3495 – 3425 BC and 3375 – 3350 BC
CAT 622	MET	8	52-72	Column Sample	5310-5210 and 5195-5050	5310 - 5050	3360 – 3260 BC and 3245 – 3100 BC
CAT 623	MET	11	40-50	Bulk Sample, South Wall	5600 to 5580 and 5530-5480	5600 - 5480	3650 – 3630 BC and 3580 – 3530 BC
CAT 626	MET	11	30-40	Column Sample, West Wall	5315-5215 and 5190-5055	5315 - 5055	3365 – 3265 BC and 3240 – 3105 BC

The overlapping dates from different parts of the feature indicate that this location was utilized repeatedly over several centuries for what appears to be the same purpose. As mentioned above, no organization and/or pattern of FAR could be identified in the hand excavated units, which could help identify the purpose of the features and potentially differentiate variable construction methods and associated uses. The absence of form indicates that the features were abandoned after final use and their contents mixed together.

In all, 126 artifacts were recovered from CA-SDI-21492, including: 113 pieces of debitage, one biface (drill), two cores, one formed flake tool, one retouched flake tool, two hammerstones, four handstones, one millingstone, one indeterminate groundstone fragment.

CA-SDI-21493

CA-SDI-21493 was distinguished based on the presence of a moderately dense artifact scatter, particularly ceramic sherds, and the presence of one potential thermal feature in a 41-x-18-m area (Figure 4-16; Confidential Appendix C). All artifacts were recovered from CSC 5; SSU 5 was excavated but did not produce any additional materials. The site is bisected by a lightly used abandoned dirt road; ceramic concentrations are present on both the north and south sides of the track (Figure 4-17). The CSC and SSU were both placed immediately north of the track as an STP was excavated on the south side during the Extended Phase I shovel probing.

INTENTIONALLY LEFT BLANK

Figure 4-16 CA-SDI-21493 Site Sketch Map (Confidential Appendix C)

INTENTIONALLY LEFT BLANK

Figure 4-17 CA-SDI-21493, SSU 5, facing east

A total of 81 artifacts were recovered from the CSC, including 60 brownware ceramic sherds, 19 pieces of debitage, and two millingstones (Table 4-9). The vast majority of artifacts were recovered from quadrants B (n=37) and C (n=35). No artifacts were recovered from quadrant D of the CSC.

Table 4-9
Artifacts Recovered from CA-SDI-21493

Artifact Type	CSC	STU	Total
Debitage	19		19
Millingstone	2		2
Ceramics	60		60
Total	**81**		**81**

The potential thermal feature (Feature 2) consists of 10-15 pieces of FAR in a 0.5-x-2-m area. The FAR is not organized into any particular pattern, and, if it is in fact a thermal feature, it appears heavily disturbed. Insufficient structure to the feature was identified to warrant excavation.

CA-SDI-21494

Site CA-SDI-021494 consists of a moderately dense scatter of lithic debitage and other tools along the southern edge of a shallow, east-west trending wash. Artifacts are concentrated along the northern edge of the site, some of which are actively eroding into the wash, with artifact densities decreasing towards the south and east (Figure 4-18). The site is defined by one grid point (9), and three selective sample units (11, 12, and 15), each of which contained a CSC and SSU, and 13 individually collected artifacts (Figure 4-19; Confidential Appendix C). Overall, the site covers a 78-x-77-m area. A total of 300 artifacts were recovered from the site, the vast majority of which were recovered from the CSCs (Table 4-10).

Figure 4-18 Overview photograph of Site CA-SDI-21494, facing west, with CSC 12 in foreground

Figure 4-19 CA-SDI-21494 Site Sketch Map (Confidential Appendix C)

INTENTIONALLY LEFT BLANK

Table 4-10
CA-SDI-21494 Artifacts by Recovery Type

Unit	Biface	Formed Flake Tool	Retouched Flake	Debitage	Core	Hammer-stone	Hand-stone	Milling-stone	Total
CSC			*1*	*260*	*4*				*265*
11				72					72
12			1	140	4				145
15				40					40
9				8					8
SSU			*1*	*20*	*1*				*22*
11				10					10
12			1	10	1				12
Piece Plots	*1*	*1*	*2*	*1*		*2*	*3*	*3*	*13*
Total	**1**	**1**	**4**	**281**	**5**	**2**	**3**	**3**	**300**

CSCs 11 and 12 were placed in the highest concentrations of surface artifacts, and therefore produced the majority of cultural material. Volcanic/basalt materials dominate the assemblage with minimal amounts of quartz, quartzite, and CCS materials also present.

CSC 12 produced approximately half of the total assemblage, including 4 cores, one retouched flake tool, and 140 pieces of debitage. Within CSC 12, a moderate amount of FAR was observed on the surface in quadrant C. SSU 12 (1-x-2-m) was excavated in this location in order to examine the potential of a thermal feature at this location. The upper 5 cm of the SSU exposed the typical loose, light brown silty sand. Underlying the overburden from 5-8 cm, a dark grey-brown lens of sandy silty loam is present, primarily in the southern half of the SSU. This layer contained nine FAR, and a few very small pieces of charcoal which were not collected. As with potential thermal features identified throughout the project area, no shape or pattern could be discerned with the FAR. No charcoal was identified, although a small sample of ash was collected from the southeast corner of the unit. Given the thin lens of darkened sediment, it appears that whatever feature may have been here has been dispersed through erosion of other means and no longer retains any integrity. One retouched flake, one core, and nine pieces of debitage were recovered from SSU 12.

CSC 11 and SSU 11 were placed in the second densest concentration of surface artifacts, approximately 15 m west of CSC 12. Seventy-two pieces of debitage were recovered from CSC 11, and a further 10 were recovered from SSU 11. The entire assemblage from CSC and SSU 11 is volcanic/basalt with the exception of one CCS and one quartz flake and a single small piece of bone.

CSCs 15 and 9 contain comparatively few artifacts, all of which was debitage, volcanic/basalt materials again dominating these units (37 of 40, and 5 of 8, respectively). SSUs excavated at each location failed to identify any additional cultural materials.

The majority of tools recovered at the site were collected as piece plots (n=12), as they were dispersed throughout the central and southern portion of the site. While dozens of additional pieces of debitage were observed on the surface beyond the CSC locations, none were targeted for individual collection, as the CSCs had collected a large sample. Individual surface collections included six groundstone tools, two retouched edge tools, two hammerstones, one formed flake tool, one biface fragment, and one piece of debitage.

The total assemblage recovered from CA-SDI-21494 includes 281 pieces of debitage, one biface, five cores, one formed flake tool, two hammerstones, three handstones, three millingstones, and four retouched flake tools.

Site Specific Evaluation of Historic Period Sites

Two newly recorded historic period archaeological sites (CA-SDI-21496 and CA-SDI-21497) were identified during fieldwork within the ADI and were evaluated independent from the distributional testing program applied to prehistoric archaeological deposits.

CA-SDI-21496

This site consists of a dispersed historic refuse scatter and the remnants of a barbed-wire fence (Figure 4-20; Confidential Appendix C). The site, which covers a 39-x-48-m area, is situated adjacent to a dirt road, which is present on the earliest USGS topographic map in the area (1944). However, no structures are present on any maps at this location between 1944 and the present and no land patent claims were identified that could link the site to a particular individual.

Figure 4-20 CA-SDI-21496 Site Sketch Map (Confidential Appendix C)

INTENTIONALLY LEFT BLANK