APPENDIX E

CULTURAL RESOURCE SURVEYS

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CULTURAL RESOURCE SURVEY FOR THE SEVILLE SOLAR FARM COMPLEX, IMPERIAL COUNTY, CALIFORNIA

Submitted to:

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October 2013
PN 20280

Type of Study: Cultural Resource Inventory
USGS 7.5-minute Quadrangle: Shell Reef, Kane Springs NW, Borrego Mt. SE, and Harpers Well SE
Acreage: 1700 acres
Keywords: Negative Archaeological Survey; Imperial County; California; Seville Solar;

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SUMMARY OF FINDINGS

A Class III intensive pedestrian cultural resource survey of approximately 1,700 acres was conducted for the Seville Solar Project located in portions of Sections 22, 23, 26 and 27, Township 12 South, Range 9 East at the intersection of the Shell Reef, Kane Springs, Borrego Mountain, and Harpers Well 7.5 minute quadrangles northwest of Brawley in Imperial County, California. The proposed Seville Solar Project is an approximately 120 MW solar power project that would entail the development of the project parcels to accommodate the construction of photovoltaic panels and associated facilities. The inventory was undertaken to ensure compliance with the California Environmental Quality Act (CEQA) for the development of the private parcels. A portion of the off-site project components will involve establishing an interconnection with the IID Anza Substation on BLM property and will be surveyed separately as the fieldwork authorization for this portion of the proposed project area is still pending. BLM lands include IID transmission line right-of-way and also a emergency road into the site on BLM land. All these areas await investigation pending a BLM fieldwork authorization. The survey on private land was conducted from January 23 to January 31, 2013 where an archaeological pot-drop site, and 14 prehistoric isolates were identified. Based on the Project components, avoidance and preservation of all significant cultural and historical resources within the Project area, while strongly recommended, is not feasible. Therefore, it is recommended that the pot drop be evaluated for eligibility to be listed in the California Register of Historical Resources (CRHR) if it cannot be avoided while the isolates are evaluated as not eligible resources.

1. INTRODUCTION

A Class III intensive pedestrian cultural resource survey of approximately 1,700 acres was conducted for the Seville Solar Complex Project (Project) in west-central Imperial County, California. Regenerate Power, LLC (Regenerate) is proposing to develop the Seville Solar Farm Complex (Project), a group of solar photovoltaic (PV) energy generation facilities that would entail the development of the proposed project parcels to accommodate the construction of photovoltaic panels. The currently proposed project area of potential effect (APE) partially encompasses portions of the Allegretti Farms land holdings located approximately eight miles west of the junction of State Highway 78 and State Highway 86, and approximately three miles east of the San Diego County line in portions of Sections 22, 23, 26 and 27, Township 12 South, Range 9 East at the intersection of the Shell Reef, Kane Springs, Borrego Mountain, and Harpers wells 7.5 minute quadrangles northwest of Brawley (Figures 1-2). The inventory was undertaken to ensure compliance with the California Environmental Quality Act (CEQA).

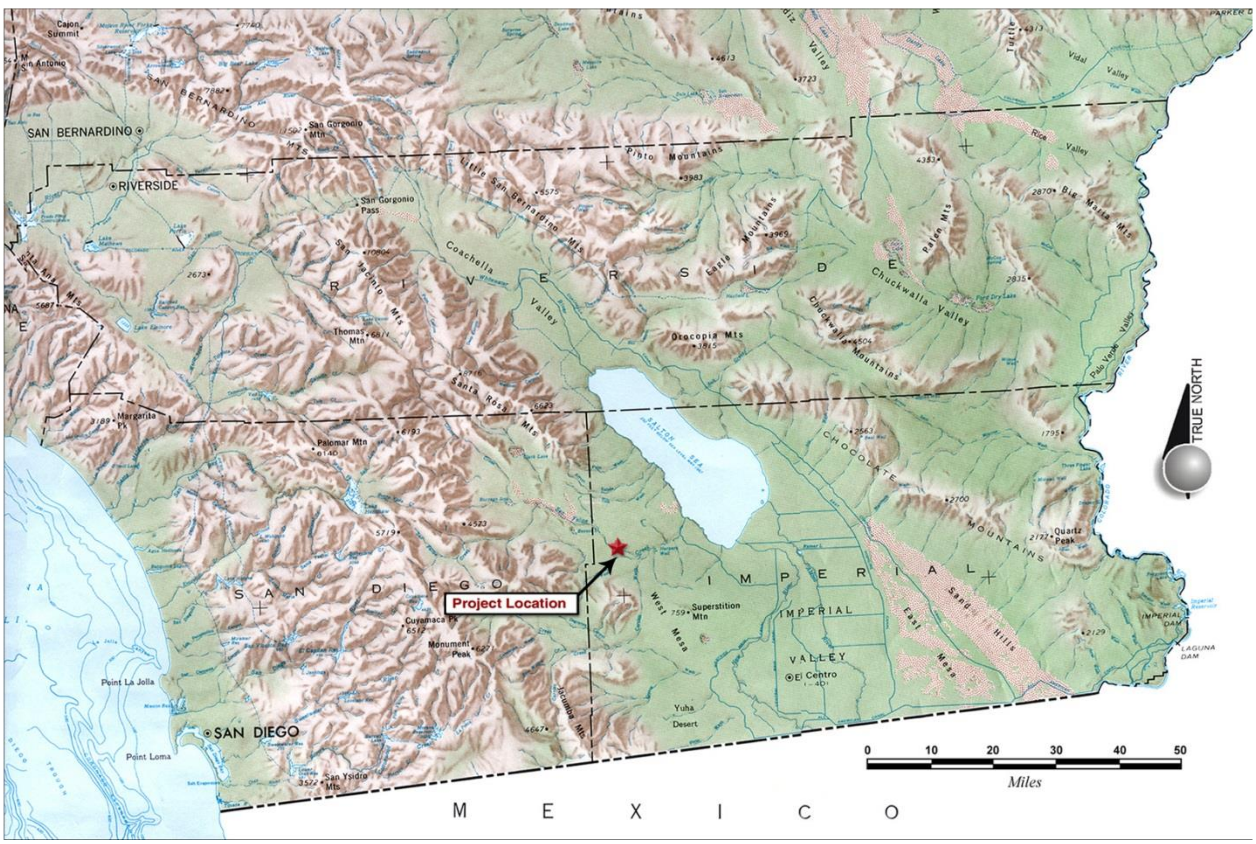

Figure 1. Regional Project Location Map.

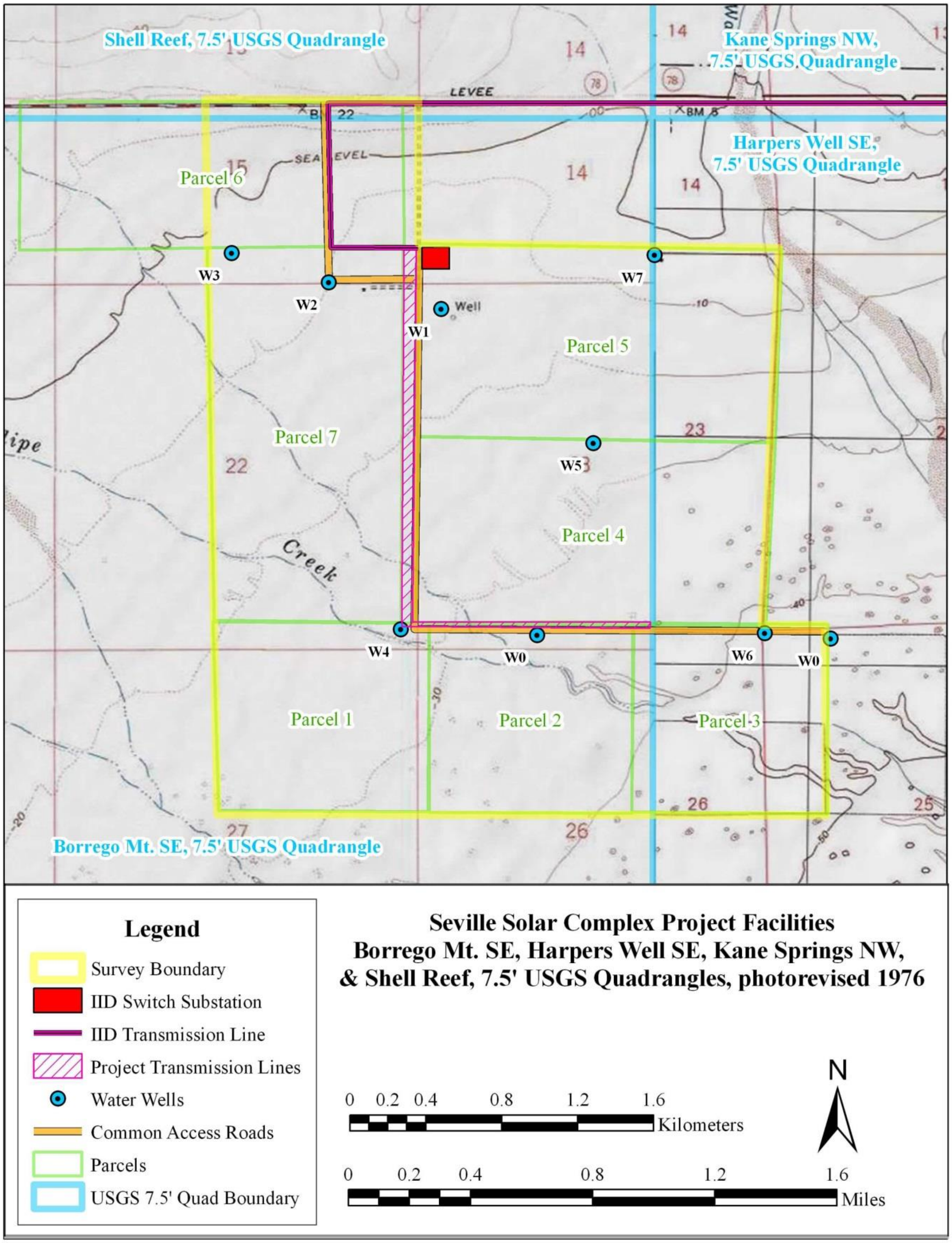

Figure 2. Proposed Project Facilities Map and Survey Boundary.

The survey was conducted from January 23 to January 31, 2013 and was systematically surveyed in 15-20 meter intervals. Access permissions for the private parcels were granted upon notification and consultation with the current property owner. Project personnel included Jerry Schaefer as Principal Investigator, Tony Quach as Field Survey Director, and Nicholas Smith, and Christine Lambert as field survey crew with Native American monitoring provided by Ronald Cuero Jr. (January 23-27) and Frank Salazar (January 28-31) who were working under the auspices of the Environmental/Cultural Office of the Campo Kumeyaay Nation. A summary of ASM crew qualifications is provided below:

Jerry Schaefer Ph.D., Anthropology, University of Arizona (1979). Thirty years of experience in southern California.

Tony Quach B.A., Anthropology, California State University Long Beach (2006). Five years of experience in southern California.

Nicholas Smith M.S., Anthropology, Central Washington University (2003). Fourteen years of combined experience in the Pacific Northwest and California.

Christine Lambert B.A., Anthropology, University of California, Santa Cruz (2011). Three years of experience in southern California.

2. PROJECT DESCRIPTION

Regenerate Power, LLC (Regenerate) is proposing to develop the Seville Solar Farm Complex (Project), a group of solar photovoltaic (PV) energy generation facilities in Imperial County, California. The Project would be located on portions of the approximately 2,440-acre Allegretti Farms property in west-central Imperial County, California, approximately eight miles west of the junction of State Highway 78 and State Highway 86, and approximately three miles east of the San Diego County line (see Figure 1). The Project would consist of the construction, operation and reclamation of up to five solar energy projects on portions of the property, including a new access road from Highway 78 and internal access roads, an Imperial Irrigation District (IID) electrical switch station, electrical substations for each of the five projects, and internal solar development transmission lines to the substations and switch station. The Project would also include the construction for, and operation by, the IID of approximately 0.75 miles of new 92 kV transmission line on the Allegretti Farms property and 2.25 miles of new 92 kV transmission "off-property" for interconnection to the existing IID Anza Substation (see Figure 2).

PROPERTY DESCRIPTION AND PROPOSED SUBDIVISION

All of the existing Allegretti Farms property parcels are zoned A-2 (general agriculture). The proposed major subdivision (discussed below) and solar Project would not change the existing zoning for any of the property lands.

Approximately 1,700 acres of the property have, to varying degrees, been under agricultural production for several decades or more, although the acreage under active agricultural production has declined to less than 100 acres since the peak in the late 1970's. Seven ground water wells are located on the property (see Figure 2), although only the domestic water well (#7) and one commercial water well (#4) are currently operational. The IID currently provides electrical power to the property for use by the water wells and the existing farm buildings.

The proposed major subdivision/tract map would reconfigure the existing parcels into eight individual parcels and four common development interest parcels (see Figure 2). Of these 12 proposed parcels, eight would be specifically developed as the Seville Solar Farm Complex (Project). Five of these eight parcels (Parcels 1-5) would be developed as individual solar farm projects (respectively, Seville Solar Farm Project #1-#5), each with either one of the existing property water wells or a proposed new water well within its boundaries. Parcels 1-3 would each be approximately 184 acres; Parcel 4 about 329 acres; and Parcel 5 approximately 309 acres.

Three of the four common development interest parcels, totaling approximately 30 acres, would be developed specifically for the benefit of all five solar farm projects. These three common development interest parcels include land for the IID electrical switch station, land for the solar development substations and land for the solar development transmission lines to the solar development substations.

Parcels 6-8 of the eight individual parcels, totaling approximately 1,211 acres, would not be proposed for any specific development at this time. However, authorization from the County of Imperial for the use of an existing property water well, or for the drilling and completion of a new water well, within the boundary of each of these three parcels would be requested.

The twelfth parcel would be a common development interest parcel of about 9 acres for the internal property road system supporting all of the other 11 parcels.

PROPERTY ACCESS

The property is currently accessed using a gated, private road from State Highway 78 which crosses approximately one-half mile of public land managed by the Bureau of Land Management (BLM). This road would continue to be used for agricultural operations on the property, and for secondary, emergency access to the solar development projects. The principal access to the property would be via a new, private access road from the north off of State Highway 78 constructed on the property approximately one-quarter mile west of the existing access road. The new primary access road would be provided with a minimum of 30-foot double swing gates with coded gate and a “Knox Box” for keyed entry. Internal to the property, a network of private roads would provide operations and maintenance access to all property parcels and Project components (see Figure 2).

PROJECT CHARACTERISTICS

The Project would consist of the construction, operation and reclamation of up to five solar energy projects, including a new access road from Highway 78 and internal access roads, an IID electrical switch station, electrical substations for each of the five projects, and internal solar development transmission lines to the substations and switch station. The Project would also include the construction for, and operation by, the IID of new 92 kV transmission line for interconnection to the existing IID Anza Substation.

A detailed description of the proposed Project facilities and components are as follows:

Solar Technology

The Project proposes to utilize crystalline solar photovoltaic (PV) technology modules mounted either on fixed frames or horizontal single-axis tracker (HSAT) systems. The PV module arrays would be mounted on racks that would be supported by driven piles, drilled and grouted piles, or ballasted piles. The foundation design would be based on soil conditions, and the depth of the piles would be dependent on the geotechnical recommendations for the Project. The fixed-frame racks would be secured at a fixed tilt of 20° to 25° from horizontal facing a southerly direction. If HSAT technology is used, the PV modules would rotate around the HSAT axis so that the PV modules would continue to face the sun as the sun moves across the sky throughout the day. The PV modules would reach their maximum height (up to nine feet above the ground, depending on the final design) at both sunrise and sunset, when the HSAT is rotated to point the modules at the rising or setting sun. At noon, or when stowed during high winds, when the HSAT system is rotated so that the PV modules are horizontal, the nominal height would be about six feet above the ground, depending on the final design. The individual PV systems would be arranged in large arrays by placing them in columns spaced approximately ten feet apart to maximize operational performance and to allow access for panel cleaning.

Electrical Power System

Strings of PV modules would be fused and electrically combined together, then electrically connected through underground wiring to an inverter. Inverters would take the DC electricity produced by the PV modules and convert it to AC electricity. A transformer would then increase the voltage of the AC electricity to 13.8 kV or 34.5 kV so that the power could be economically and efficiently conducted over above-ground transmission lines within each project and to the project substation. Each project would deliver its produced power over a separate, above-ground 13.8kV or 34.5 kV transmission line constructed in the transmission common interest development parcel from the project area to the project substation.

Substations

Up to five substations (one for each project) would be constructed in the northwest corner of Section 23 within the Project area. Each substation would take delivery of the 13.8 kV or 34.5 kV power from its respective project and increase the voltage of the electricity to 92 kV for metering and delivery to the IID switch station and connection with the IID electric grid at the IID Anza Substation. The substations would each include transformers, circuit breakers, meters, disconnect switches and a non-habitable electrical control house.

Transmission Lines

Electrical interconnection with the IID electrical transmission system would require construction of a new 92 kV transmission line from the IID switch station on the property to the existing Anza Substation on Highway 78. Approximately 0.75 miles of new 92 kV transmission line would be constructed on the Allegretti Farms property. An additional 2.25 miles of new 92 kV transmission line would be “overbuilt” on top of the IID’s existing 12.5 kV distribution line located immediately south of State Highway 78 from the property to the existing IID Anza Substation.

Operations and Maintenance (O&M) Buildings

The Project could include construction of an O&M building and parking area within each of the five solar project development parcels. Each O&M building could include a small office, material and equipment storage, an electrical/array control room and restrooms. Electrical power for each O&M building would be provided by the IID by extending, as may be necessary, the existing 12.5 kV electrical distribution system on the property to each building. Each O&M building could also include its own emergency power, fire suppression equipment, potable water system and septic system. Additional auxiliary facilities located on each solar development parcel could include a garage, security lighting, backup uninterruptable power supply systems and diesel power generators, fire and hazardous materials safety systems, chemical safety systems and emergency response facilities.

Security

Eight-foot high security fencing would be installed around the perimeter of each development parcel at the commencement of construction. Site access would be limited to authorized site construction workers and operations personnel. In addition, a motion detection system and closed circuit camera system may also be installed. The site would be monitored 24 hours per day, 7 days per week.

"Off-Project" Access

The principal access to the solar projects would be via a new, private access road off of State Highway 78 constructed on the property approximately one-quarter mile west of the existing property access road (see Figure 2). The new primary access road would be provided with a minimum of 30-foot double swing gates with a coded gate and a "Knox Box" for keyed entry. Internal to the property, a network of private roads would provide operations and maintenance access to all property parcels and Project components. The existing gated, private road from State Highway 78 would be used only for secondary, emergency access to the solar development projects.

PROJECT CONSTRUCTION

Construction Activities

All of the parcels to be developed as part of the solar development projects have previously been graded and used for agriculture. Construction of each of the solar development parcels would likely commence with the construction of the perimeter security fence and any required demolition of existing structures. A temporary, portable construction management office would be located at each solar development parcel site at the beginning of construction and removed at the end of construction. Fine grading would be required to establish internal access roads and pads for electrical equipment (inverters and step–up transformers). Additional grading would be required for constructing the onsite storm water retention basin(s) and directing onsite storm water to drainage to these basins. This would likely be followed by trenching for installation of the underground electrical collection lines; installation of the support piles, solar frames, PV panels and invertors; and construction of the aboveground transmission lines within the solar development parcels. Construction of any O&M building, parking area and additional auxiliary facilities (including the construction of any required new well, or any maintenance required to restore the existing onsite water well to service) would also follow the completion of required grading for each project.

Off-site construction activities (those outside of each solar development parcel) would include improvement or construction of the required access road(s); construction of the aboveground transmission line and electrical substation for each project; construction of the IID switch station and transmission line; and maintenance of the offsite (though on property) storm water diversion berms and channels on the west and north sides of the property.

Depending on the size of each project, an estimated 100 to 150 acre-feet of water could be used for dust control over the construction period of each project. This water would be obtained from each project's onsite water well.

Assuming that all of the land within each of the five solar development parcels would be entirely disturbed during construction, and similar conservative assumptions for the surface disturbance associated with construction of the transmission lines and access roads, Table 1 estimates the total surface disturbance (or re-disturbance) associated with the Project.

Table 1. Conservatively Calculated Project Disturbed Acres

Property/Project Component	Disturbed Acres
Solar Development Parcels[1]	1,188.4
IID Switch Station/Project Substations[2]	10.0
Project Transmission Lines[3]	26.4
IID Transmission Line[4]	2.3
Common Access Roads[5]	8.8
Total Project Disturbance	**1,235.9**

[1] Conservatively assumes all lands within each solar development parcel are disturbed.
[2] Conservatively assumes a combined site of 10.0 acres.
[3] Assumes a 200-foot wide, 1-mile long corridor running north-south, and a 25-foot wide, 0.7-mile long corridor running east-west, would be entirely disturbed.
[4] Assumes a 10-foot wide by 0.75-foot long corridor on property, plus a 5-foot wide by 2.25-mile long corridor "off property," would be entirely disturbed. [We should bump this one up a bit]
[5] Assumes that approximately 2.9 miles of 25-foot wide road would be constructed and/or improved.

Construction of each of the solar development projects is expected to be completed in approximately three to four months (for each of the three smaller parcels) or five to six months (for each of the two larger parcels). Each of the proposed five solar development projects would be constructed independently, and construction of any one project is not expected to overlap the construction of another.

The number of on–site construction workers is not expected to exceed 150 workers at any one time. Onsite parking would be provided for all construction workers.

Traffic

Approximately six truck trips would arrive at the Project site at staggered times throughout the day during the construction of each of the solar development projects. To provide a worst-case scenario, all construction workers are assumed to arrive during the AM peak hour and depart during the PM peak hour, and all workers are assumed to drive separate vehicles to and from the Project site. Table 2 provides the assumed project construction vehicle trip generation for each project.

Table 2. Anticipated Project Construction Traffic

Use	Daily Trips	AM Peak Inbound Trips	AM Peak Outbound Trips	PM Peak Inbound Trips	PM Peak Outbound Trips
Construction Truck Traffic	12	0	0	0	0
Construction Worker Traffic	300	150	0	0	150
Total	**312**	**150**	**0**	**0**	**150**

As shown in Table 2, construction of each project would be expected to generate approximately 312 total daily trips, including 150 vehicle trips during the AM peak hour and 150 vehicle trips during the PM peak hour.

The Project area would be accessed directly off State Highway 78. It is assumed that about one third of the construction worker traffic would travel to and from the west (i.e., San Diego and other local residential or RV park developments) while the remaining two-thirds would originate from and return to various Imperial Valley cities to the east.

SITE OPERATIONS

Operation Activities

Once construction is completed, each project is expected to have a small, regular, on-site staff consisting of security and maintenance personnel. Additional workers may occasionally be required to access each project area to maintain the common access roads and storm water diversions, clean the solar panels and/or perform specific maintenance (like weed abatement) on the property. The public would not have access to the property, and access to the property would be limited to authorized personnel.

Periodic washing of the PV modules could be needed to remove dust in order to maintain power generation efficiency. The amount of water needed for this purpose for each project is conservatively estimated at six to ten acre-feet per washing (depending on the project size and water required for dust control during panel washing), with up to five washings per year, or a total of from up to 30 to 50 acre-fee per year. This water would be obtained from each project's onsite water well. Each washing is expected to take one to two weeks to complete.

Traffic

Each project is expected to have a small, regular, on-site staff consisting of two security and one maintenance personnel. Additional workers could occasionally be required to access the site to clean the solar panels as well as to perform specific maintenance activities, like weed abatement, around each site. Deliveries would occur irregularly. As a conservative scenario, it was assumed that panel cleaning and landscaping activities would be performed on one site on the same day, that all workers would drive separate vehicles to and from each project, and that all workers would arrive during the AM peak hour and depart during the PM peak hour. Table 3 presents this conservative Project operation vehicle trip generation information.

Table 3. Anticipated Project Operation Traffic

Use	Daily Round Trips	AM Peak Inbound Trips	AM Peak Outbound Trips	PM Peak Inbound Trips	PM Peak Outbound Trips
Security Traffic	20	10	10	10	10
Maintenance Traffic	10	10	0	0	10
Panel Cleaning Traffic	2	2	0	0	2
Landscaping Traffic	2	2	0	0	2
Delivery Traffic	1	0	0	0	0
Total	**35**	**24**	**10**	**10**	**24**

SITE RECLAMATION

At the end of the economic life of each solar development project, all solar equipment and other onsite facilities would be removed, and salvaged if economically feasible. The onsite ground water well would not be removed unless so requested by the then current landowner. The materials used for surfacing the internal “all weather” access roads would be plowed under, if surfacing used onsite materials, or taken offsite for re-use or disposal if surfacing used offsite materials. The onsite retention basins would be backfilled and compacted. The onsite soils would be ripped to approximately 40 inches in depth to condition the soil and remove all miscellaneous buried objects. Finally, the site would be cleaned and balanced with onsite soils.

3. RECORD SEARCH

On December 16, 2013, a record search was requested from the South Coastal Information Center (SCIC) at San Diego State University (SDSU) for information concerning previously recorded cultural resources within 1 mi. of the project area and previous investigations. On the same date, a letter was sent to the California Native American Heritage Commission (NAHC) to inquire about known areas of cultural concern, such as traditional cultural places, or cultural landscapes that may exist within a 0.5 mi. of the currently proposed project area.

The records search response at the SCIC identified 18 reports on file whose study areas included locations within a 1 mi. radius of the project area. Ten of those reports address areas that either encompass the currently proposed project area or intersect its boundary while three reports address areas that are directly adjacent to the project boundary (Table 4). The record search with the SCIC also identified 153 previously recorded cultural resources that are located within 1 mi. of the project area (Table 5). Of these previously recorded resources and residences, only a single cultural resource, P-13-009783 (a single quartzite flake), is documented as occurring within a portion of the project area. All the other previously recorded cultural resources were found to lie from 0.1 to 1.5 miles of the main project area or SR-78 corridor (see confidential Appendix A). Many of these sites are located to the north and were recorded during California Department of Parks and Recreation surveys in the Ocotillo Wells Off-Road Recreational Area. A large number of sites have also been recorded to the east in the vicinity of the prehistoric/ethnohistoric period village of San Sebastian. Many sites in the general region also have associations with receding shorelines of ancient Lake Cahuilla. Mapped site and project locations from the SCIC appear in confidential Appendix A.

The response by the NAHC also indicated that no Native American cultural resource sites are currently recorded within the current boundaries of the project area. Dave Singleton, of the NAHC staff, responded that even though no known cultural resources have been documented within the project area through the NAHC Scared Lands File search, the absence of previously reported cultural properties or landscapes directly within the currently proposed projects boundaries would still not preclude the possibility that areas of cultural concern may be identified in the course of further work. Areas to the north of SR-78 were informally identified as being of potential sensitivity. Therefore recommendations were made by the NAHC concerning the appropriate tribal authorities to contact for a follow-up inquiries and consultation. For the current project the Imperial County will be the lead agency conducting direct tribal consultation.

Table 4. Previous Cultural Resource Reports within 1 mi. of APE

NADB No.	SHPO ID	Author(s)	Year	Title	Proximity to APE
1100206	VONWEJ112	Von Werlhof, Jay	1980	*The Archaeological Examinations of proposed Access Roads for Ranch Oasis, LTD.*	Intersects
1100354	DPR02	Department of Parks and Recreation	1986	*Ocotillo Wells East Acquisition Final Environmental Impact Report.*	Directly Adjacent
1100415	CLEWLT01	Clewlow, Theresa	1988	*Final Report on an Archaeological Reconnaissance of the 15 Mile Proposed San FelipeCorridor in Lower Borrego Valley, Imperial County, California.*	Outside
1100563	CLEWLC01	Clewlow, C. William, Jr and Theresa Clewlow	1990	*Treatment Plan for Archaeological Sites CA-IMP-5959, CA-IMP-5961,and CA-IMP-5963, Imperial County, California.*	Outside
1100584	JOHNBO01	Johnson, Boma	1976	*San Felipe Race Corridor.*	Outside
1100658	SCHAEJ30	Schaefer, Jerry, Drew Pallette, and Collin O'Neill	1998	*Archaeological Survey for a Shoulder Widening and Pavement Rehabilitation Project on State Route 78, Imperial County, California.*	Intersects
1100660	CRAFTK04	Crafts, Karen C.	1998	*Historic Property Survey Report - Negative Findings for the Pavement Rehabilitation and Shoulder Widening of a Thirteen Mile Section of State Route 78.*	Intersects
1100714	SCHAEJ35	Schaefer, Jerry and Ken Moslak	2000	*An Inventory and Evaluation of Lake Cahuilla Cultural Resources Along Imperial Irrigation District's SA-Line, San Diego and Imperial Counties, California.*	Intersects
1100726	ROSENM16	Rosen, Martin	1984	*First Supplemental Historic Property Survey Material Sites for Imperial 86 Expressway.*	Intersects
1100727	ROSENM17	Rosen, Martin	1984	*Third Addendum Archaeological Survey Report Highway 86 Expressway Material Sites (Diversion Dikes, Six One-Half Mile, and Hazard Fish Springs).*	Adjacent to Corner
1100752	CALTRA15	Caltrans	2001	*Historic Property Survey Report for Biological Mitigation Parcels Associated with State Route 86 Projects Imperial County, California.*	Outside
1100789	SAPPHO01	Sapphos Environmental, Inc.	2002	*SA-Line Transmission System Maintenance Repair/Replacement Project - Environmental Assessment.*	Intersects
1100790	SAPPHO02	Sapphos Environmental, Inc.	2002	*SA-Line Transmission System Maintenance Repair/Replacement Project - Environmental Assessment.*	Intersects
1100979	UNDERJ13	Underwood, Jackson	2003	*Archaeological Survey of Four Rio-Tel Cellular Tower Locations: Tamarisk, Hawk 2E,Holtville and Blu-In-Park Imperial County, California.*	Intersects
1101115	HINESP01	Hines, Phillip	1999	*Proposed Survey Design for Lands to be Transferred from the Bureau of Land Management, El Centro District to the State of California, Department of Parks and Recreation.*	Adjacent to Corner
1101208	SWCA01	SWCA Environmental Consultants	2008	*Cultural Resources Inventory for the Bureau of Land Management California Desert District in Imperial, Riverside, and San Bernardino Counties, California.*	Intersects

NADB No.	SHPO ID	Author(s)	Year	Title	Proximity to APE
1101348	SCHAEJ71	Schaefer, Jerry	2006	*A Class I Cultural Resources Inventory of the Truckhaven Geothermal Leasing Area,Imperial County, California.*	Outside
1101350	GALLED20	Noah, Anna and Dennis Gallegos	2008	*Final Class III Archaeological Inventory for the SDG&E Sunrise Powerlink Project, San Diego and Imperial Counties, California.*	Intersects

Table 5. Previously Recorded Cultural Resources within 1 mi. of the APE

Primary No.P-13-	Trinomial CA-IMP-	Principal Recorder(s) (Month/Year)	Description	Proximity to APE
009783	NA	Piek et al. (11/07)	AP2. Lithic isolate	Intersects
007914	NA	Pallette (4/98)	AP2. Lithic isolate	Outside
008332	NA	Moslak (8/00)	AP16. Other (Milling implement/groundstone fragment)	Outside
009130	NA	Thomson et al. (9/06)	AP3. Ceramic isolate	Outside
009131	NA	Thomson et al. (9/06)	AP2. Lithic isolate	Outside
009227	NA	Thomson et al. (10/06); Gallegos and Associates (ca. 2008)	AP2. Lithic isolate; AP3. Ceramic scatter	Outside
009228	NA	Thomson et al. (10/06)	AP2. Lithic isolate (2 pieces of debitage)	Outside
009229	NA	Thomson et al. (10/06)	AP3. Ceramic isolate	Outside
009230	NA	Thomson et al. (10/06)	AP3. Ceramic isolate (2 sherds)	Outside
009231	NA	Thomson et al. (10/06)	AP2. Lithic isolate	Outside
009519	NA	Thomson et al. (10/06)	AP2. Lithic isolate	Outside
009723	NA	Thomson et al. (11/06)	AP2. Lithic isolate (2 pieces of debitage)	Outside
009782	NA	Piek et al. (11/07)	AP16. Other (Stone tool/modified cobble isolate)	Outside
011996	NA	Mealey et al. (3/08)	AP3. Ceramic isolate (2 sherds)	Outside
011999	NA	Mealey et al. (3/08)	AP2. Lithic isolate; AP3. Ceramic scatter	Outside
012001	NA	Mealey et al. (3/08)	AH16. Other: (rock feature)	Outside
012002	NA	Mealey et al. (3/08)	AH4. Trash scatter	Outside
012004	NA	Mealey et al. (3/08)	AP16. Other (core isolate)	Outside
012235	NA	Piek (6/08)	AP2. Lithic isolate	Outside
013146	NA	Deoliveira et al. (2/11)	AP2. Lithic isolate	Outside
013147	NA	Mealey et al. (2/11)	HP39. Other (circular cement base)	Outside
013148	NA	Mealey et al. (2/11)	AP2. Lithic isolate	Outside
013149	NA	Mealey et al. (2/11)	AP2. Lithic isolate	Outside
013155	NA	Mealey et al. (2/11)	AP2. Lithic isolate	Outside
013158	NA	Deoliveira et al. (2/11)	AP2. Lithic isolate	Outside
013316	NA	Mealey and Brown (4/10)	AP16. Other (tested cobble isolate)	Outside
013358	NA	Mealey and Brown (4/10)	AP2. Lithic isolate; AP16. Other (core/tool)	Outside
013360	NA	Mealey and Brown (4/10)	AP2. Lithic isolate; AP16. Other (core)	Outside
013363	NA	Mealey and Brown (4/10)	AP2. Lithic isolate	Outside
013377	NA	Mealey and Brown (4/10)	AP16. Other (multi-directional core)	Outside
013395	NA	Mealey and Brown (4/10)	AP2. Lithic isolate (possible modified cobble)	Outside
013396	NA	Mealey and Brown (4/10)	AP2. Lithic isolate	Outside

Primary No.P-13-	Trinomial CA-IMP-	Principal Recorder(s) (Month/Year)	Description	Proximity to APE
013397	NA	Mealey and Brown (4/10)	AP16. Other (core isolate)	Outside
013428	NA	Mealey and Brown (4/10)	AP2. Lithic isolate (flaked stone tool)	Outside
013432	NA	Mealey and Brown (4/10)	AP16. Other (single possible unifacial mano)	Outside
000003	3	Treganza (1/50); Wilcox (8/96)	AP3. Ceramic scatter	Outside
000899	899	No recorder name (based on Matthewson [1855] USGLO Survey notes); Noah and Gallegos (ca. 2006)	AP2. Lithic scatter; AP3. Ceramic isolate; AP16. Other (groundstone); AP16. Other (Native American trail from 1855 USGLO Survey notes)	Outside
001216	1216	Long et al. (8/11)	AP2. Lithic scatter; AP11. Hearth	Outside
001217	1217	Ritter and Townsend (1/77); Deoliveira et al. (2/11)	AP2. Lithic scatter; AP3. Ceramic Scatter; AP11 Hearth	Outside
001223	1223	Ritter and Townsend (1/77)	AP16. Other (rock concentration with some FAR)	Outside
001266	1266	Postolla (1/77); Gallegos and Associates (ca. 2006)	AP2. Lithic scatter (with formed tools and cores); AP3. Ceramic scatter; AP16. Other (groundstone); AP16. Other (FAR)	Outside
005134	5134	Rosen et al. (5/84); Mealey et al. (4/08)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
005134	5134	Rosen et al. (5/84); Mealey et al. (3/08)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
005135	5135	Rosen et al. (5/84)	AP2. Lithic scatter; AP3. Ceramic scatter; AP11. Hearth	Outside
005136	5136	Rosen et al. (5/84)	AP2. Lithic scatter; AP3. Ceramic scatter; AP16. Other (groundstone)	Outside
005137	5137	Rosen et al. (5/84)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
005176	5176	Wheeler and McAleer (2/84); Hines (2/04); Werlhof and Lucas (2/09)	AP2. Lithic Scatter; AP3. Ceramic Scatter; AP11. Hearths; AP16. Other (groundstone)	Outside
005177	5177	Wheeler et al. (6/84); Deoliveira et al. (2/11)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
005178	5178	Wheeler et al. (2/84); Deoliveira et al. (2/11)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
005179	5179	Dallas et al. (2/84); Hines (1/01)	AP2. Lithic scatter; AP3. Ceramic scatter; AP9. Burials (cremations); AP15. Habitation debris	Outside
005180	5180	Storm et al. (2/84); Hines 1/01	AP2. Lithic scatter; AP9. Burials (cremations); AP15. Habitation debris; AP16. Other (groundstone)	Outside
005181	5181	Hines (11/03); Mealey and Harrison (2/09)	AP2. Lithic scatter; AP3. Ceramic scatter; AP11. Hearths	Outside
005669	5669	Rosen et al. (5/84); Mealy et al. (3/08)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
005670	5670	Rosen et al. (5/84)	AP16. Other (quartzite core)	Outside
005671	5671	Rosen et al. (5/84)	AP16. Other (sandstone groundstone)	Outside
005672	5672	Rosen et al. (5/84)	AP16. Other (quartzite flake isolate)	Outside
005673	5673	Rosen et al. (5/84)	AP2. Lithic scatter (with core and tool)	Outside
005674	5674	Rosen et al. (5/84)	AP3. Ceramic isolate	Outside
005675	5675	Rosen et al. (5/84)	AP16. Other (groundstone/hammerstone)	Outside
005676	5676	Rosen et al. (5/84)	AP16. Other (quartzite flake isolate)	Outside
005677	5677	Rosen et al. (5/84)	AP3. Ceramic isolate	Outside
005678	5678	Rosen et al. (5/84)	AP16. Other (sandstone groundstone scatter)	Outside
005996	5996	Wilcox (1/89)	AP16. Other (Native American trail)	Outside
006311	6311	Arkush and Grant (9/89)	AP2. Lithic scatter (with core); AP3. Ceramic scatter	Outside

Primary No.P-13-	Trinomial CA-IMP-	Principal Recorder(s) (Month/Year)	Description	Proximity to APE
006312	6312	Arkush and Grant (9/89)	AP2. Lithic scatter (with cores); AP16. Other (groundstone isolate)	Outside
006313	6313	Arkush and Grant (9/89); Hines (10/03); Mealy et al. (2/09)	AP2. Lithic scatter (with formed artifacts including DSN point); AP3. Ceramic scatter; AP9. Cremation; AP11. FAR	Outside
006314	6314	Arkush and Corbin (2/89)	AP2. Lithic scatter (with cores); AP3. Ceramic scatter; AP16. Other (several groundstone fragments)	Outside
006315	6315	Arkush and Corbin (2/89); Hines et al. (1/02)	AP2. Lithic scatter (with formed artifacts including DSN and Elko points); AP3. Ceramic scatter; AP9. Burials (cremations); AP11. Hearths	Outside
006316	6316	Arkush and Corbin (2/89)	AP2. Lithic scatter (with cores)	Outside
006326	6326	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006328	6328	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006329	6329	Arkush et al. (9/89)	AP3. Ceramic scatter	Outside
006330	6330	Arkush et al. (9/89)	AP16. Other (groundstone fragment)	Outside
006331	6331	Arkush et al. (9/89)	AP16. Other (groundstone fragment)	Outside
006332	6332	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006333	6333	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006334	6334	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006335	6335	Arkush et al. (9/89)	AP3. Ceramic scatter	Outside
006336	6336	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006337	6337	Arkush et al. (9/89)	AP2. Lithic scatter	Outside
006338	6338	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006339	6339	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006340	6340	Arkush et al. (9/89)	AP16. Other (quartzite core isolate)	Outside
006341	6341	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006342	6342	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006343	6343	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006344	6344	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006345	6345	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006346	6346	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006347	6347	Arkush et al. (9/89)	AP16. Other (quartzite core isolate)	Outside
006348	6348	Arkush et al. (9/89)	AP3. Ceramic scatter	Outside
006349	6349	Arkush et al. (9/89)	AP16. Other (groundstone fragment isolate)	Outside
006350	6350	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006351	6351	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006352	6352	Arkush et al. (9/89)	AP3. Ceramic scatter	Outside
006353	6353	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006354	6354	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006355	6355	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006356	6356	Arkush et al. (9/89)	AP16. Other (quartz core fragments)	Outside
006357	6357	Arkush et al. (9/89)	AP3. Ceramic isolate	Outside
006363	6363	Arkush et al. (9/89); Long and Perez (8/11)	AP3. Ceramic isolate	Outside
006364	6364	Arkush et al. (9/89)	AP2. Lithic isolate	Outside

Primary No.P-13-	Trinomial CA-IMP-	Principal Recorder(s) (Month/Year)	Description	Proximity to APE
006365	6365	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006366	6366	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006367	6367	Mealy et al. (2/11); Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006368	6368	Mealy et al. (2/11); Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006389	6389	Arkush et al. (9/89)	AP2. Lithic isolate	Outside
006560	6560	ASA/University of California, Redlands (1954)	AP2. Lithic scatter (with tools); AP3. Ceramic scatter; AP16. Other (groundstone); AP16. Other (sandstone disc ornament)	Outside
006561	6561	ASA/University of California, Redlands (1955)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
007918	7712	Storm et al. (2/84)	AP2. Lithic scatter; AP16. Other (groundstone isolate)	Outside
008372	7857	Underwood and Whitehouse (7/98); Moslak (12/00a, 12/00b); Collett et al. (11/05); Noah and Gallegos (ca. 2006)	AP2. Lithic scatter; AP3. Ceramic scatter; AP11. Hearths; AP15. Habitation debris	Outside
008373	7858	See CA-IMP-7857	CA-IMP-7858 combined with and subsumed under CA-IMP-7857	Outside
008374	7859	Schaefer and Moslak (11/00); Gallegos and Associates (ca. 2006)	AH7. Road	Outside
008586	8009	Underwood and Lilburn (7/98)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
008587	8010	Ramirez et al. (2/08)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
008588	8011	Underwood and Whitehouse (7/98)	AP2. Lithic scatter; AP3. Ceramic scatter; AH4. trash scatter	Outside
008603	8026	Underwood and Whitehouse (7/98)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
008606	8029	Underwood and Whitehouse (7/98)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
009578	8643	Thomson et al. (10/06)	AP8. Stone feature	Outside
009618	8663	Doose et al. (2/2007)	AP3. Ceramic scatter	Outside
009647	8690	Thomson et al. (9/06)	AP2. Lithic scatter; AP16. Other (milling implements)	Outside
009824	8794	Noah et al. (6/06)	AP2. Lithic scatter; AP3. Ceramic scatter; AP16. Other (fossil remains: mammoth tooth)	Outside
009941	10004	Hares et al. (2/08)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
009942	10005	Covert et al. (2/08)	AP2. Lithic scatter; AP3. Ceramic scatter	Outside
011133	10139	Wheeler et al. (10/98); Mealey et al. (3/08)	AP2. Lithic scatter (with cores); AP3. Ceramic scatter; AP16. Other (several groundstone fragments)	Outside
011153	10159	Lindahl and Buxton (10/98); Mealey et al. (3/08)	AH4. Trash Scatters	Outside
011446	10369	Piek (5/08)	AP3. Ceramic scatter	Outside
011997	10744	Mealey et al. (3/08)	AP2. Lithic Scatter; AP3. Ceramic Scatter; AP11. Fire Feature; AP16. Other (Groundstone tools)	Outside
011998	10745	Mealey et al. (3/08)	AH6. Water Conveyance	Outside
012000	10746	Mealey et al. (3/08)	AP2. Lithic scatter; AP11. Hearth/Fire feature	Outside
012003	10747	Mealey et al. (3/08)	AP2. Lithic Scatter; AP3. Ceramic Scatter; AP16. Other (Groundstone tools)	Outside
012124	10833	Piek (3/08)	AP2. Lithic Scatter; AP3. Ceramic Scatter; AP16. Other (Milling implements, FAR, bone fragment)	Outside

Primary No.P-13-	Trinomial CA-IMP-	Principal Recorder(s) (Month/Year)	Description	Proximity to APE
012611	11107	Mealey et al. (2/09)	AP2. Lithic scatter (with cores); AP3. Ceramic isolate; AP16. Other (core and hammerstone)	Outside
012643	11122	Hines et al. (11/01); Hines et al. (10/03); Mealey et al. (11/09)	AP2. Lithic Scatter; AP8. Rock Features; AP3. Ceramic Scatter; AP16. Other(stone tools); AP11. FAR/possible hearth	Outside
012645	11124	Wehrlhof et al. (10/03); Mealey et al. (2/09)	AP2. Lithic scatter; AP3. Ceramic scatter; AP8. Rock Features; AP9. Burials (cremations);	Outside
013142	11453	Deoliveira et al. (2/11)	AP2. Lithic scatter	Outside
013144	11455	Mealey et al. (2/11)	AP11. FAR concentrations	Outside
013150	11456	Mealey et al. (2/11)	AP2. Lithic Scatter; AP3. Ceramic Scatter; AP11. Hearth	Outside
013152	11458	Mealey et al. (2/11)	AP2. Lithic Scatter	Outside
013154	11459	Mealey et al. (2/11)	AP2. Lithic Scatter; AP3. Ceramic Scatter	Outside
013337	11513	Mealey and Brown (4/10)	AP2. Lithic scatter	Outside
013361	11520	Mealey and Brown (4/10)	AP2. Lithic scatter (with cores)	Outside
013368	11523	Mealey and Brown (4/10)	AP2. Lithic isolate; AP11. Hearths (FAR features)	Outside
013370	11524	Mealey and Brown (4/10)	AP2. Lithic scatter; AP11. Hearths	Outside
013373	11527	Mealey and Brown (4/10)	AP2. Lithic isolate; AP11. Hearths (FAR features); AP16 Other (modified cobble)	Outside
013374	11528	Mealey and Brown (4/10)	AP11. Hearth	Outside
013378	11530	Mealey and Brown (4/10)	AP2. Lithic scatter; AP11. Hearths (FAR features); AP16 Other (groundstone)	Outside
013381	11532	Mealey and Brown (4/10)	AP2. Lithic scatter; AP16. Other (tested cobbles)	Outside
013424	11548	Mealey and Brown (4/10)	AP2. Lithic scatter; AP3. Ceramic isolate; AP16. Other (various tools including a hammerstone/mano and cores)	Outside
013430	11549	Mealey and Brown (4/10)	AP11. Hearths (FAR features)	Outside
013446	11556	Mealey and Brown (4/10)	AP2. Lithic Scatter; AP11. Hearths; AH16. Other (rock arrow)	Outside
013460	11564	Mealey and Brown (4/10)	AP2. Lithic Scatter; AP3. Ceramic isolate; AP11. Hearths (FAR features); AH16. Other (faunal remains)	Outside
013465	11567	Mealey and Brown (4/10)	AP2. Lithic Scatter; AP11. Hearth (FAR feature)	Outside

4. BACKGROUND

This section describes the natural, cultural, and historical context of the currently proposed project area and vicinity which encompasses portions of the upper tributaries of San Felipe and Fish Creek as well as a small segment of Tarantula wash just north of the Fish Creek Mountains and Split Mountain and due southeast the Ocotillo Wells ORV Area. Though the geography and geomorphology of the project area itself appears typical of the northwestern upper desert basin (San Felipe Creek Basin), the general vicinity is nonetheless unique as the San Sebastian Marsh environmental area lies just approximately 4 miles east of the current project area. This generalized area has been known to host a wider abundance of flora and fauna then is typically known to other areas of the basin far from the Salton Sea shoreline (Lebo et al 1982). The high water table below the surface of this otherwise inhospitable alkaline lake bed had in the past not only produced fresh water for aboriginal peoples, but also supported large stands of mesquite, a major staple food source. Dune fields emerged as blowing sand accumulated against the mesquite trees which then continued to grow out from the tops of the ever increasing sand hills. The sand hills thus became home for another important food source, desert cottontail rabbits. A complex cultural landscape thus emerged based on the distribution of water and mesquite.

CLIMATE AND HYDROLOGY

The current Project Area lies within the southwest corner of the Colorado Desert, the northwest extension of the Sonoran Desert, and at an elevation of 0-50 ft. below sea level. Distinctive markers of the Colorado Desert region are low elevation, extreme aridity, extremely hot summers, and mild winters. Summer temperatures often exceed 115^0 F and average annual precipitation is only 6.4 cm because of the rainshadow effect of the Peninsular Ranges. The only substantial water sources in the region are the Colorado River, the New and Alamo Rivers, and Lake Cahuilla when it was in existence. Permanent springs and creeks can be in the canyons that come out of the Peninsular Ranges but vast lowland areas are dry except during mild winter storms or occasional localized summer monsoon thunderstorms. San Felipe Creek that once ran through the project area was one of the major drainages, originated in the eastern slopes of the Peninsular Ranges near Julian, and which was part of a sufficiently large catchment area to sustained surface water throughout the year (Lebo et al 1982). Seasonal surface water also can then be found for a short time in washes and ephemeral pans. San Sebastian Marsh is one of the largest of the low elevation spring sources at the confluence of San Felipe Creek and Fish Creek, located at 120 ft. below sea level and on the desiccated bed of Lake Cahuilla. The area was under 180 ft. of water during Lake Cahuilla high stands but during recessional phases, the creeks cut through upper layers of clays, silts, and sand to expose the aquifer where a marshy habitat developed. Its groundwater base flow reaches 0.2-0.3 cubic feet per second during the spring runoff. San Felipe Creek is actually one of the few perennial streams in the region, although water flow is most robust in the spring and diminishes during the summer-fall months.

CULTURAL CONTEXT

By most accounts the prehistory of the Colorado Desert can be traced back at least 9,000 years, and almost certainly extends beyond 12,000 years before the present (Schaefer 1994). Multiple frameworks currently exist pertaining to the cultural chronology the Southern California arid desert physiographic province (Love and Dahdul 2002:69). In the current study in order to facilitate discussion, this enormous stretch of time is arbitrarily divided into five cultural-temporal periods. These are, from oldest to youngest: (1) the Paleoindian or San Dieguito; (2) Archaic; (3) the Late Prehistoric; (4) the Ethnohistoric; and (5) the Historic. No definitive traces of Paleoindian occupation remains have been found within this region so it will not be discussed in depth. The Late Prehistoric, Ethnohistoric, and Historic Euro-American periods will be discussed in greatest detail as they relate most specifically to the dearth of commonly occurring cultural materials within this region. Some potential exists for some of the dispersed aceramic sites to date to the Archaic period as well so the following review will also touch upon that interval.

Prehistoric Past

The Paleoindian Period

The evidence for Paleoindian occupation of the Colorado desert region is generally sparse. Occupational traces commonly attributed to this time period include typological driven temporal markers such as crescentics, choppers, and domed scrapers as well as the presence of cleared rock circles bolstered by contextual associations regarding the placement of these traces along terraces overlooking the shores of extinct Pleistocene lakes (Apple et al. 1997). These generalized chronological attributes are derived primarily from the work of Malcolm Rogers who in many cases inferred chronological placement (albeit tentatively) from the degree of surficial artifact patination (Rogers 1939:19; 1966:35) though it has also been suggested that surficial erosion of artifact surfaces may also be indicative of greater age (Borden 1971). A more intensive retrospective look at the current evidence (Schaefer and Laylander 2007:247) however seems to indicate the lack of indisputable empirical chronological confirmation for an occupation for this region during this time period, as no archaeological materials with reliably definitive radiocarbon dates have been recovered from this time period.

The Archaic Period

Approximately 7,000 years ago a new cultural complex developed in the desert, replacing the earlier Paleoindian assemblages (9,000-7,000 B.P.). It is part of the emergence of the Archaic Tradition that extends across North America and is sometimes referred to as the “Desert Archaic” in the Southwest and Great Basin (Jones and Beck 2012). There is a shift in the subsistence base from one that was more diversified in the range of plants and animals being exploited and the technological means of acquiring and processing these foods. The atlatl or dart-thrower is adopted which allowed hunters to throw a stone-tipped projectile much further and with greater force than a simple spear (Raymond 1986) with the general morphological delineation of dart points made through inferences concerning point attributes and size that allows for hafting onto the wooden projectile shaft (Thomas 1978; Lyman, VanPool, and O’Brien 2008). The early Archaic is marked by the production of more leaf-shaped, Lake Mojave, and Pinto points (Jenkins 1987, and 1991; Jenkins and Warren 1984). This period has been poorly represented in the Colorado Desert but new finds, discussed below, may change that view. Sites from the later part of the Archaic can be recognized by the presence of corner and side-notched Elko Points (Thomas 1981; Beck 1995).

In the Colorado Desert, animal bones indicate that deer, bighorn sheep, and rabbits were the primary fast-moving targets (Sutton 1996). Desert tortoise and any number of other reptiles were more easily caught (Schneider and Everson 1989). Presumably nets, snares, traps, (Echlin, Wilke, and Dawson 1981) and throwing sticks (Gifford 1931) were also used but rarely preserve in the low desert. We also see more labor-intensive methods of plant exploitation and processing in this period (Rosenthal and Fitzgerald 2012; Jones and Beck 2012). Milling equipment is more regularly used to grind seeds and nuts. Mortars, pestles, manos, metates, and bedrock milling features become characteristic elements of Archaic period sites (Basgall and True 1985). The oldest burials in the desert also date to this period, often flexed or extended in rockshelters or under rock cairns in the Colorado Desert.

These hunters and gatherers established temporary seasonal camps at rockshelters, along stream channels and springs, and in sand dunes where the all-important mesquite trees flourish. In rockshelters such as Indian Hill in Anza-Borrego Desert State Park and at Tahquitz Canyon in Palm Springs, we find stone-lined pits where they stored food and tools that they could come back to during their seasonal rounds.

The Tahquitz Canyon rockshelter contained some milling equipment, lithic debitage and diagnostic beads, but all in very low quantities and densities that suggested strategic storage but not sustained occupation. No charcoal or organics were preserved with which to obtain a radiocarbon date (Schaefer 1995:6.104-117). Indian Hill Rockshelter is the only rockshelter site from this period with substantial artifact density and diversity to suggest a more intensified use of a single location as either a residential base or temporary camp (McDonald 1992; Wilke et al. 1986; Wilke and McDonald 1989). A radiocarbon date of 4,070±100 years B.P. (2 sigma cal B.C. 2889-2336, 2319-2311) is associated with one of two flexed inhumations excavated at the base of the stratigraphic sequence. Substantial numbers of Elko Eared dart points derive from these lower levels.

Archaic period cairn burials found in the open desert include the Yuha Man, dated at 1,650-3,850 B.P. and the Truckhaven burial whose radiocarbon date can only be established at over 500 years B.P. (Taylor et al. 1985).

A radiocarbon sample with a date of 4980±100 (2 sigma cal BC 3977-3632, 3558-3539) was obtained from buried Archaic period stratum containing a quartzite point of unknown type (Fergusson and Libby 1962; M. Weide 1976:85). It was exposed by San Felipe Creek near the junction of Grapevine Canyon.

The paradigm of Lake Cahuilla as an exclusively Late Prehistoric cultural phenomenon is beginning to change. Increasing evidence is being found of Archaic period infillings of Lake Cahuilla and shoreline occupations. The first hint came when McCowan (1955) briefly reported a buried midden deposit under a sand dune in what is referred to as the "Split Mountain sand-dune site off the mouth of Fish Creek Canyon." Testing by the Archaeological Survey

Association yielded a cache of points described as resembling Playa Points, now called Pinto points. No ceramics were found in association but one radiocarbon date published in 1976 placed the site at A.D. 1230 (M. Weide 1976). Additional scrutiny of this site and finds is necessary to resolve its chronology. McCowan (1957:3) reported other Pinto points from the elevation of the maximum Lake Cahuilla shoreline and also from lower elevations, speculating that Archaic peoples also occupied the shoreline and followed its recession. M. Weide commented on this report: “The available literature has not established the presence of a lake in the basin during this time period, but it is not impossible that the basin was filled once or several times during the Pinto-Amargosa period (M. Weide 1976:85)”.

At least nine early diagnostic points has now been recorded at very low elevations between 20 and 200 ft. below sea level at the Salton Sea Test Base (Apple et al. 1997). These include types described as Lake Mojave, Pinto/Gatecliff contracting stem, and Elko. Numerous other leaf shaped and large, straight based bifaces may also be early, as are two eccentric crescentics. They were found dispersed over a large area that also contained recessional Lake Cahuilla shoreline sites, but do not appear to specifically co-occur with concentrations of Late Prehistoric materials. If it is accepted that these points remain from in situ Archaic period occupations, then it must also be accepted that no alluvial deposition occurred during the last 5,000 years or more of Lake Cahuilla infillings, perhaps even longer given the early date of Lake Mojave points. This issue needs to be resolved before these sites are demonstrated to represent early Archaic recessional shoreline sites.

A late Archaic site has been confirmed on the north shore of Lake Cahuilla. Love (1996:131) reported a small fire pit with associated basalt flake, mammal, fish, and bird bone under 13 m of sand dune deposits, but at an elevation just a few cm below the 12 m maximum shoreline. Two radiocarbon dates were obtained of 2,610±60 years B.P. (2 sigma calib B.C. 895-546) and 2,910±90 years B.P. (2 sigma calib B.C. 1389-837).

Most recently, a possible Archaic cairn burial was found associated with the Lake Cahuilla shoreline at the northeastern end of the Fish Creek Mountains (Ed Collins 2000 personal communication). Near the current project area at San Sebastian Marsh an isolated Rose Spring point was recorded that may date to the end of the Archaic Period (Schaefer et al. 1987:113). This and other finds discussed above are extending the chronology of human occupation in this region to at least the Late Archaic period and possibly much earlier.

The Late Prehistoric Period

The Late Prehistoric period is divided into four phases, including a pre-ceramic transitional phase from 1,500 to 1,200 years B.P. Based on Malcolm Rogers (1945) construct of Yuman I, II, and III phases, the chronology has been somewhat refined but little changed, except for renaming of Yuman phases to the Patayan I-III in order to avoid assumptions of ethnic or tribal affinity to prehistoric artifact assemblages. The major innovations of this period are the introduction of pottery making by the paddle-and-anvil technique around 1,200 years B.P. and the introduction of flood plain agriculture on the Colorado and lower Gila rivers at about the same time. Other material attributes include adoption of cremation burial and bow-and-arrow technology with Cottonwood Triangle, Desert side-notched, and serrated projectile points. Principal chronological markers are changes in ceramic types and forms (McGuire and Schiffer 1982; Waters 1982). The

Patayan pattern is represented by a range of adaptive strategies and settlement patterns ranging from mixed horticulture to exclusive hunting and gathering focused on logistical foraging strategies from seasonal residential bases and more wide-ranging temporary camps.

The Patayan I phase from 1,200 to 900 years B.P. dates before the latest infillings of Lake Cahuilla until the beginning of the first major lacustral interval. Most identified sites and ceramics of this phase are in the eastern portion of the desert closest to the Colorado River and the eastern shoreline of Lake Cahuilla. The Patayan II phase is contemporary with the last four or more Lake Cahuilla intervals from 900 to 300 years B.P. The Patayan III phase post-dates the last stand of Lake Cahuilla and represents the protohistoric and ethnohistoric periods. Only Patayan II and III phase ceramics have been identified at San Sebastian Marsh, with the vast majority dating to the Patayan III phase after the final recession (Schaefer et al. 1987). A limited number of sites may actually date to interlacustral periods during the Patayan II phase, were submerged, and then re-exposed during at the final recession.

During the Patayan II phase, Lake Cahuilla attracted larger numbers of individuals to the shoreline environment during the late spring and early summers. The foothills abutting the western shorelines of Lake Cahuilla were particularly well populated by ancestors of the Kumeyaay and Cahuilla, since there were relatively well-watered routes between the lake and the nearby Peninsular Ranges that groups could follow in the summer, or when the lake became too saline (Wilke 1978; Schaefer 1994; Schaefer and Pallette 1993:14;). The same was not true of the eastern margins, which were isolated from the Colorado River Yumans (Quechan, Mohave, etc.) by wide expanses of dry desert. Differing topographic contexts resulted in strikingly different settlement patterns on either side of the lake basin and no doubt affected both the movement of groups around the lake and the intensity of their exploitation of lacustrine resources (Wilke 1978; Gallegos 1980, 1986; von Werlhof and McNitt 1980). It is explicitly assumed here, although not empirically demonstrated, that the prehistoric people living along this part of Lake Cahuilla were ancestors of the Kumeyaay.

Recent research within the area suggests that the typical band during the Patayan II phase (A.D. 1000-1500) moved through temporary camps in a seasonal round between the valleys of the Peninsular Ranges and the shores of Lake Cahuilla (Schaefer1994; Schaefer and Pallette 1993:15; M. Weide 1976). It is these larger seasonal camps that are most likely to be represented by sites with larger and deeper midden deposits. In any case, the general economic pattern during this phase was heavily oriented toward exploitation of lacustrine and riparian environments at the Colorado River, along the shores of Lake Cahuilla, and along the drainages of the Peninsular Range. Several fish and migratory waterfowl species were particularly attractive. However, it is apparent that these people could and did exploit an amazingly wide range of desert resources including mesquite, saltbush, and many other alkali-resistant plant species.

The chronology of Lake Cahuilla's lacustrine and interlacustrine phases also continues to be refined with each subsequent archaeological investigation. Stanley (1962, 1965) suggested repeated fillings with at least three major lacustral intervals in the last two millennia. Wilke (1978) used 31 radiocarbon dates to more precisely define three major lacustral intervals during the last 2000 years. These periods were between 100 B.C. and A.D. 600, A.D. 900 to 1250, and

A.D. 1300 to A.D. 1500. He realized that his sample was small and that he did not have the precision to discriminate closely dated successive infillings within the lacustral intervals.

Michael Waters (1983) reconstructed a revised 1,300-year chronology based on 14 additional radiocarbon dates from natural and cultural deposits found in stratigraphic succession at three localities on the north shore. He used both *Anodonta* shell and hearth charcoal. Waters then critically assessed potential sampling errors in his radiocarbon dates, applied assumed sedimentation rates to the stratigraphy, and incorporated Thompson's (1968) mudflat accretion dates from the Colorado River Delta to arrive at four lacustral intervals. He identified major infillings between A.D. 700 and 900, A.D. 940 and 1210, A.D. 1250 and 1400 with a partial recession to sea level at A.D. 1300, and following what may have been a partial but more substantial recession, an infilling between A.D. 1430 to 1530. Waters also accepted Wilke's conclusion that the final recession was over by the time of the first Spanish navigation of the Colorado River by the Alarcón expedition.

Laylander (1994) conducted a recent appraisal of 85 radiocarbon dates from archaeological investigations over the past 35 years. He organized the dates into those from maximum elevation shoreline sites and those from recessional sites, discerning a minimum of six clusters. T-tests of statistical contemporaneity indicate the probability that the clusters represent three infilling periods and three recessional periods over the last 1000 years, at least two of which were to the 12 m shoreline. His conservative analytical approach provides a weighted mean estimate of each phase but not the duration of each phase or of fluctuations within each phase. Four of the phases correspond roughly to both Wilke's and Water's reconstructions, but without the interpreted date ranges made by them. In summary, Laylander's dates indicate a full flooding in the thirteenth century, a recession in the late fourteenth or early fifteenth century, another infilling in the fifteenth century, a recession in the late fifteenth or early sixteenth century, a final filling in the seventeenth century, and a final recession at the end of the seventeenth century.

The seventeenth century infilling and recession is one not previously acknowledged but which has been clearly demonstrated by recent archeological investigations. In fact, almost half of Wilke's dates were less than 400 years B.P. for which he provided thoughtful alternative explanations (Wilke 1978). The dates had to be reconciled with historical accounts, beginning in 1540 with Hernando de Alarcón's navigation of the lower Colorado River. He could not have accomplished that feat if the Colorado River flowed into the Salton Basin instead of through the delta to the Gulf of California. From that time on, the longest gap between historical accounts of Colorado River navigations or overland visits was 95 years. Don Juan de Oñate's A.D. 1604-5 overland expedition descended the Bill Williams River and followed the Colorado River down to the delta, observing no diversion to the Salton Basin. Kino was next to reach the confluence of the Colorado and Gila rivers in 1700 and wrote of no great lake to the west. In fact, through a telescope perched on a mountaintop he observed the river flowing south to the Gulf of California. Wilke cited this information and inconclusive bead and ceramic assemblage data to discount a protohistoric phase of Lake Cahuilla.

Several recessional fish camps and other habitation sites with abundant lacustrine resource remains have now been excavated. They demonstratively prove Lake Cahuilla existed in the seventeenth century, between the visits of Oñate and Kino (see Schaefer 1986, 1994, 2000;

Apple et al. 1997; Laylander 1994). The Cahuilla stories of fishing at Lake Cahuilla may therefore have been passed down through fewer generations than previously thought. Questions remain, however, as to whether this infilling was partial or extended to the maximum shoreline. Given the number of late dates from sites in 12 m elevation contexts, it probably was a complete infilling.

During the Patayan III phase, there was an adjustment to the final of recession of Lake Cahuilla as a series of temporary camps were established along recessional shorelines. The subsistence orientation was more specialized and appeared to focus on a primary resource such a fish or waterfowl, supplemented by small and large mammal and vegetal foods (Schaefer 1986; Laylander 1994; Apple et al. 1997). These late phase sites suggest that the Lake Cahuilla shore line habitats were much less stable during recessional phases as water levels receded at an estimated rate of 5 ft. per year (Wilke 1976). While the temporary camps that could be established along the 12 m shoreline could probably be occupied for a longer period of time and be oriented to the exploitation of a variety of wetland and desert resources, the recessional shoreline camps were shore-lived, specialized, and opportunistic. Once the fish or other resources were processed, then the people returned to temporary camps or residential bases in more optimal habitats with reliable fresh water and vegetal staple foods. The low-elevation occupations are represented by surficial artifact scatters and rock features that are easily visible on desert surfaces. Some sites with fish bone in the San Sebastian Marsh area may well represent recessional shoreline camps. The loss of lacustrine resources did not appear to result in a major disruption in the lives of the residents of the Salton Rift, but instead required them to rely exclusively on the desert and mountain resources they had traditionally exploited for much of the year. One apparent result of this economic trend was a regional shift and expansion of the seasonal rounds, taking groups across the desert margins and back into the Peninsular Ranges or Colorado River drainages, over the cycle of their year.

As San Felipe, Carrizo, and Fish creeks etched the newly exposed surface of Lake Cahuilla, they eventually exposed the sandy aquifer and produced the springs, forming a new wetlands habitat. Economically important mesquite and chenopodiaceae would have quickly colonized the area after the final recession, as indicated by studies of the receding Salton Sea after 1906 (MacDougal 1914). Blowing sands from the beach line and exposed bed piled against the mesquite to form the dune fields. It is difficult to establish when the marshes formed but the recent archaeological data on the final recession suggests that most of the Patayan III sites at San Sebastian marsh probably date to no older than A.D. 1700. In less than 70 years after the initial resettlement the Anza Expedition passed through the area and the effects of Spanish colonization began to be felt. Some of the more deflated and dispersed sites may conceivably have Patayan II phase components during earlier interlacustral periods.

Ethnohistoric Past

Early ethnohistoric information of the general area is primarily derived from the accounts of the Juan Bautista de Anza expeditions in 1774-1775 and 1775-1776 (Lawton 1976; Schaefer et al. 1987) concerning the ethnohistoric village of San Sebastian which lies approximately 4 miles east of the current project area. These accounts of the Indian village at San Sebastian constitute the first detailed descriptions of native life in the desert area. Providing information on population size, social structure, relations with other tribes, and subsistence practices, these are invaluable narratives of ethnohistoric lifeways at San Sebastian before there was any appreciable impact from European colonization. Though the current project area lies approximately 4 miles west of this ethnohistoric village, the project area still nonetheless lies within the general transportation and travel corridor utilized by those crossing to and from this village during ethnohistoric times and is therefore relevant towards understanding of any prehistoric cultural elements that may be encountered within the current project area.

Various accounts from these initial expeditions provided several important observations. The people were alarmed when the Spanish were first encountered, suggesting that they had little familiarity with the Spanish. A population of 400 was also reported for San Sebastian village constituting a substantial population size for this region with accounts that also substantiates the presence of a chief or “Captain.” This individual was probably a clan chief or *kwaipai*. His presence suggests that San Sebastian served as the residential base of a clan or *cimŭl* but with such a large population, the village was probably occupied by members of other clans, as appears to have been the rule. The early accounts also described the local language encountered as being related somewhat to the Yuma tongue. Although speaking a dialect similar to the Colorado River Yumans, a condition of enmity was observed to have existed between the two groups.

Fr. Francisco Garcés’ account of his travels in this region provides some important details concerning the tribal affiliation of the people he encountered. He recognized some of the people of this large village site from an earlier visit several years before at a fishing camp on the Gulf of California or its estuaries and at another occupation site in the Peninsular Ranges. This observation suggests that some people of San Sebastian were tied to other desert Kumeyaay residential sites to the south in Baja California. The diary of Fr. Juan Díaz includes additional observations stating that the people of San Sebastian “live on mesquite beans, together with the mescal which they bring from the sierra, and the rabbits which they hunt, which for them is very easy (Bolton 1930, II:280).” This accounts suggests that San Sebastian was part of a seasonal round of occupation sites and that the period from early spring to summer were the optimal periods of occupation when the mesquite pods began to ripen and the Chenopodiaceae set seed. At that time larger numbers congregated at San Sebastian, breaking up into smaller groups when resources became sparse. When the population was sparce, the occupants may represent individuals who could not travel for some reason or the core social and residential unit who claimed San Sebastian. The uprising at Mission San Diego may have also forced them to avoid areas more accessible to Spanish soldiers.

San Sebastian continued to be visited by Spanish colonists over the next five years. From ethnohistoric accounts over 300 people used the Anza trail in this period. The inhabitants of San Sebastian had opportunity for exposure not only to European material culture and ideas, but also European diseases. Members of the last Spanish immigrant groups to use the trail arrived at Mission San Gabriel in August 1781 with smallpox (Bancroft 1886, I:343). It was just before this group crossed the Colorado River that the Quechan rose up against the two newly established missions near Yuma. On July 17 and 18, 1781, they destroyed both sites and killed many of the inhabitants, among them Fr. Díaz and Garcés of the earlier Anza expeditions. This event effectively closed the Anza trail until the American period.

San Sebastian is next noted in the diary of Cayetano Limon who led that last group of Spanish colonists. Reaching the Colorado River in August, 1781, they noted the presence of destroyed missions as well the abandonment of San Sebastian. This caused Governor Felipe de Neve of California to suspect they had joined the Quechan in their uprising against the Spaniards (Bancroft 1886, I:365; Lawton 1976:53). More likely they were either occupying other areas or deliberately avoiding contact in those tenuous times since previous accounts suggest the people of San Sebastian and the Quechan were not on good terms, unless conditions had changed.

Additional details about San Sebastian emerge from the accounts of the Spanish punative expedition against the Quechan in 1781-1782. Lead by Lieutenant-Colonel Pedro Fages, the expeditionary force left the presidio of Pitic in central Sonora on September 16, 1781. Having fulfilled some of their objectives after two separate operations, and before retreating in the face of superior numbers, they proceeded west to San Diego, stopping at San Sebastian Marsh on March 15, 1782. What is notable about Fages' route is the decision to choose a new route to San Diego via Carrizo Creek, Agua Caliente (in Anza Borrego State Park), San Felipe (Vallecito), Mason Valley, and over the Cuyamaca Mountains to San Diego (Lawton 1976:55). This route would be among a number of attempted new passages between the Colorado River and the coast, all of which bypassed San Sebastian and none of which were successful. San Sebastian appears to have regained its isolation from Europeans for the next 60 years. A new overland route was eventually established in the 1820s that partially followed Fages' detour and came within 10 km of San Sebastian. The residents probably followed patterns of other desert groups, avoiding contact but raiding settlements for cattle and goods, as suggested by historical accounts related to nearby Native settlements such as San Felipe (see Schaefer et al. 1987:46-52; Lawton 1976). It is likely that mortality rates rose from exposure to European deceases and population sizes dwindled, particularly after the smallpox epidemic of 1862 and the severe drought of 1863-1871. San Sebastian, however, would have remained as a place to practice traditional lifeways with little interference from the quickly changing world around them for perhaps 50 more years.

Historical evidence of Native occupation at San Sebastian is scant. Among them is the 1854-1856 U.S. Government Land Survey map that was drawn when the township and section lines were established for the area. An "Indian Rancheria" is shown in Section 27 close to the marsh where the largest of the archaeological sites has been recorded. There is no certainty that the rancheria was occupied at that time, but contemporary maps from other townships routinely show Indian settlements where they are known to have been occupied at that time from other sources. Unfortunately the surveyors notes, on file at the Bureau of Land Management, Riverside, do not make any reference to any cultural features. Another feature of interest is the "Mormon Trail" that runs north-south through Section 27 and less than a mile from the rancheria. This route continued to be a secondary road through the nineteenth century and was apparently used in 1849 by Mexican General Flores during his retreat from California (Warren and Roske 1981:10-11). The "Indian Village" appears once again on a 1869 U.S. military map of southern California roads and trails (Pourade 1964:38-39). This map suggests it continued to support a population for at least a decade longer than previously assumed by Schaefer et al. (1987:52). Soon thereafter, it can be presumed the dwindling native population fused with other communities like Vallecito, Agua Caliente, or along the New and Alamo Rivers. Physical evidence of mid-ninteenth century occupation comes from several sites at San Sebastian which contain a mix of European and traditional Indian remains, as well as domestic animal bone (Schaefer et al. 1987).

By the time Spier (1923:300-302) could document any facts about the area, all he could determine was that lower San Felipe Creek had once been occupied by the *Litc* lineage of Kumeyaay and that they had recently gone extinct as a social group. Their territory once continued west up San Felipe Creek into the mountains. Spier (1923:299) also provides the only place name for San Sebastian. His consultant, Jim McCarty, who was active in Kumeyaay events of the 1850s, referred to Harpers Well as *tamuʼk watcuKaʼRt* (“red willow).

The Kumeyaay/Kamia

Fray Pedro Font on the 1775-1776 Anza Expedition identified the occupants of San Sebastian, located 4 miles east of the project area at the confluence of San Felipe and Fish creeks, as *Jecuiches* (Bolton 1930:130), while Fr. Francisco Garcés used the term *Cajuenches* (Coues 1900:42). The former term is used when the Spaniards were clearly in Cahuilla territory while the latter was used in reference to Yuman speakers such as the Kumeyaay. There appears to be some confusion on their part, and subsequent interpreters of their writings, as to whether they were describing Cahuilla or Kumeyaay at San Sebastian (Luomala 1978:607). The Anza expedition accounts best identify the occupants as Yuman speaking people who nevertheless had a hostile relationship with the Quechan at that time. This situation appears to have changed over time, as chronicled by White (1974). The Cahuilla appear to have intermingled with the Kumeyaay to some extent. Anza and Font both report on December 16, 1775 that several Indians from the Santa Rosa Mountains in the core of Cahuilla territory came to visit San Sebastian the previous day and stole three horses when they left. The Spaniards chased them down to two villages about four leagues (9.6-18.5 miles) away from San Sebastian on what appears to have been the slopes of the Santa Rosa Mountains (Lawton 1976:52). They found the horses tied to a mesquite tree in a wash where the few remaining inhabitants denied stealing them.

Ethnographic information by Spier (1923:304) indicates that this area was in the territory of the Kumeyaay *litc* clan in the nineteenth century. According to Shipek (1982) the southern boundaries of the Desert Cahuilla extended to San Felipe Creek, apparently favoring Font. In our opinion, descriptions of the people and their associations with groups to the south in Baja and gathering territories to the west, strongly indicate Kumeyaay occupation at the time of Spanish contact (Schaefer et al. 1987). There would appear to be little doubt, however, that San Felipe Creek would have been in Kumeyaay territory, with the Cahuilla to the north in protohistoric and ethnohistoric times.. It is indicated as such by Bean (in Schaefer et al. 1987), Bean (1978), Spier (1923), Strong (1929), and Lulomala (1978).

Major ethnographies for the Kumeyaay and the desert branch of the group, the Kamia, were researched and written in the 1920s and 1930s (Spier 1923; Gifford 1918, 1931), about 150 years after the establishment of the mission system. By this time many traditions were known only by memory or were practiced in modified form on the small mountain reservations (Cline 1984). The Kamia had been largely integrated into the Quechan tribe on the Colorado River. Kumeyaay social organization appears to have been loosely structured at the band level. Patrilineal, minimally territorial, exogamous lineages called “*cimuL*,” or gentes, have been described as the highest level of Kumeyaay social organization (Spier 1923). Luomala (1963:285-286, 1978) suggested that residence was not strictly patrilocal, but bilocal, in that newly married couples resided with the woman's family as often as not. This type of flexibility may be a cultural response to environmental stresses such as drought (Shipek 1981:297), or a result of reduced population and territory after historic contact.

The Kumeyaay are depicted primarily as hunters and gatherers in ethnographic and ethnohistoric documents, but some groups practiced agriculture in areas of the Imperial Valley (Gifford 1931:21-22). Shipek (1989) has hypothesized that horticultural practices among the Kumeyaay were widespread and intensive, involving transplantation and cultivation of several native plant species. There is still some controversy regarding the degree of dependence these groups placed on "cultivated" crops versus "natural" crops. Review of the ethnographic and ethnohistoric record indicates that most groups moved to different areas on a seasonal basis to capitalize on particular crops such as acorns or agave, and were not wholly dependent on any one crop.

Animal resources for the Kumeyaay consisted mostly of small game such as rabbits (*Sylvilagus* spp.), hares (*Lepus californicus*), woodrats (*Neotoma* spp.), lizards, some snakes, and grasshoppers (Spier 1923:335-336; Gifford 1931:14; Shipek 1991:32). Many birds probably were not eaten (Drucker 1937:8), although this restriction seems to apply mostly to shorebirds. Eagles and buzzards were avoided; hawks, owls, doves, crows, roadrunners, and mockingbirds were sometimes avoided and sometimes not (Drucker 1937:8, 1941:100). Fish (in some springs and streams) were not ignored, although these probably contributed to the diet in much smaller proportion (Orcutt 1888a:2, 1888b:4). Larger game, mostly mule deer (*Odocoileus hemionus*) and possibly pronghorn (*Antilocapra americana*, now locally extinct) were also hunted.

Different Kumeyaay lineage groups followed varying seasonal routines, probably relying upon staple foods that were common to the lineage home area. Hicks (1963:214) assumed that the majority of aboriginal Kumeyaay lineage locations would have been in the mountains near oak groves, rather than in the desert or desert foothills where agave is more plentiful, but cited only Spier (1923) and not Gifford (1931). Archaeological surveys have helped illustrate that villages were commonly located near reliable water sources and at contact areas between biotic zones (May 1975; Shackley 1980).

Historic Past

Euro-American use of this region was always marginal, at best. Mention has already been made of the 1846 and 1856 US GLO survey party led by H.S. Washburn. Cattle rustlers using the old Anza trail throughout the early American period may have camped here (Beattie 1925; Warren and Roske 1981:10-11). More legitimate cattle camps were established from the 1880s to the early 1900s as what became the Julian-Kane Springs road saw cattle drives between the Peninsular Ranges and Imperial Valley (Reed 1986; Sherman 1982:231). In 1901, Harpers Well was drilled in a mistaken effort to find oil. This was one of several oil exploration projects at the time (Bowers 1901). The well did expose a new potable water source that supported several homesteads and a roadhouse along Julian-Kane Springs Road near Harpers Well. Improvements to the road around 1910 facilitated other ventures.

About 3.5 miles west of Harpers Well, the small hamlet of San Felipe was created around 1910. In 1918 it included a derrick, house, shed, and a couple of homesteaders (Lindsay and Lindsay 1998:147). By 1920 it was abandoned (Brown 1920:33).

Further west, the town of Little Borrego was developed at the intersection of Julian-Kane Springs Road and Split Mountain Road. It was developed by Tom Hawn, an Alhambra realtor. The Borrego Hotel was built in 1924. Soon to follow were a general store, service station and garage, barber shop/pool hall, and combined school and realty office building. The venture failed in the Great Depression (Lindsay and Lindsay 1998:146-148).

The Borrego Hotel was bought in the 1930s by a quack medical practitioner, Eugene P. Woillard. Renamed the Miracle Hotel, Woillard offered treatment of medical conditions with "radium water"and electricity. He used to make house calls in his Model T Sedan, the "Princess Radium Health Car," until he drove it off a cliff on Yaqui Pass Road in the late 1930s, ending his life and business for the Miracle Hotel. Little remains of Little Borrego except for some cement slabs and trash scatters.

Back at Harper's Well, an angora goat ranch was operating in the 1930s, and from which portions of the corral still stand. The Seventh Cavalry also camped there in 1937 or 1938. With the emerging agricultural development of Imperial Valley and speculative developments to the west, the Julian-Kane Springs Road must have been an important local transportation route until 1932. In the winter of that year, a rare snowstorm ruined the road and it was soon bypassed by Highway 78 (Sherman 1982).

Project Area Agricultural History

The following history of agricultural development is taken from a document prepared by Environmental Management Associates (EMA) (2013). Much of the information comes from unpublished reports, as cited, but also recent interviews by EMA with Joe Allegretti, Jr. and Mike Morgan (the tenant of Allegretti). Ted Jacobs began development of the property in the 1950's which was then locally known as the "Ranch Oasis" or "Jacobs Ranch". During the initial development two wells were dug in 1953, known as then as "San Felipe Well" and "Jacobs Domestic Well" with initial farming of the Jacobs Ranch beginning in 1954 (Borrego Water District 2012). A 1995 investigation (Krieger 1995) states, "For the period from 1954 to 1973, about 320 acres of ground had been cleared and leveled for farming." During the 1960's three additional water wells were drilled on the Property and "San Felipe Well" was converted to a USGS monitoring well. It is unclear but sometime during this time period or the later the "Jacobs Domestic Well" fell into disuse as a 1995 hydrogeologic study (Krieger 1995) reported that the "Jacobs Domestic Well" had by then been "long abandoned". A 1970 Water Supply Analysis (Koebig & Koebig 1970) reports that crops such as alfalfa, barley, oats, citrus, date palms, grapes and tomatoes have been farmed on the property, though the 1995 hydrogeologic study (Krieger 1995) also noted high yields of Sudan Grass until the late 1970's.

From the EMA 2013 report it is clear from aerial photographs that the farm underwent relatively continuous expansion up until 1978 when the farmed area of the property reached its current boundaries. A 1978 aerial of the property shows clear subdivision of the fields along with the establishment of an irrigation system. The aerials between 1973 and 1978 also show the construction of a north-south running berm to the western edge of the property to stop flooding and overflow from the upper tributaries of San Felipe Creek. This in effect diverted any overflow southward into the lower tributaries of the Fish Creek drainage.

The ownership and management of the farm was passed to Allegretti & Company (current property owners) who then renamed the property Allegretti Farm in 1981. During this time period aerial photographs from 1984, 1987 and 1992 show continuous farming of this property during this time period with the agricultural focus on the far southern fields as well as the southern portions of the northwestern fields (EMA 2013). From the aerial photographs it is also clear that use of the northeastern fields declined over this time period. In 1993 the use of the property was leased to Morgan Ranches/Kelomar Inc., who grew melons, onions, alfalfa, wheat, safflower, arugula, asparagus, milo, and carrots. Initially flood irrigation was utilized by Morgan Ranches/Kelomar Inc., but was gradually changed to drip and sprinkler systems with associated structural infrastructure such as bordering ditches to collect and re-use agricultural tail water. Agricultural focus during this time period mirrored the land use history previously undertaken by Allegretti & Company with the far southern fields with richer soils more intensively utilized then northeastern fields with gravelly soils which accordingly were kept fallow. The farm was certified as an organic farm in 2001 by the California Certified Organic Farmers.

Sometime in the early 2000's an ongoing dispute over water rights came to a climax between Allegretti & Company (as well as their tenant Morgan Ranches/Kelomar Inc.) and the County of Imperial over the conditional use permitting limiting the amount of aquifer ground water that can be extracted from the activation of a well on the property. The argument by Allegretti & Company is the limitations on the amount of ground water extracted from wells on their own property would have the effect of conditionally limiting the potential agricultural output and usefulness of the land on Allegretti Farm thereby constituting an act of taking. The ongoing dispute was finally brought before the California 4th District Court of Appeals who ruled that the imposed limitations did not constitute an act of categorical *physical* taking and that arguments for the imposed limitations as a form of categorical *regulatory* taking is also specious as it did not have an effect of completely annulling *all* economically viable use of the property (O'Rourke 2006). This ruling would prove to be of some degree of historic import to legal scholars as this case still intensively analyzed as an example of the growing intersection between property and water rights as well as environmental regulation (Frank 2007). The farm was then leased by Oasis Organics in 2010 who grew onions, wheat, safflower and milo.

5. FIELD METHODS

PEDESTRIAN SURVEY METHODS

In the current survey the disposition of the terrain within the delineated project area is predominantly agricultural and generally characterized by high ground visibility when the field is unplanted and high accessibility in terms of traversable terrain (Figure 3). In these generally disturbed portions of the project area the landscape was subject to full-coverage survey conducted in 20-meter transect intervals while undisturbed portions of the study area were subjected to a full-coverage survey conducted at 15 m transect intervals. Full-coverage survey, as it relates to this survey, is best defined as a 100 percent coverage involving systematic examination of blocks of terrain at a uniform level of intensity. In the current study the survey blocks were subdivided by their respective field boundaries to facilitate a more systematic coverage of the project area (Figure 4). Hand-held GPS and field compass were used to maintain transects and ensure full coverage to the corners and edges of each section and generally traced the existing linear alignments of the ploughed furrows.

Figure 3. Southern Portion of Field 2 showing the representative general terrain that covers much of the property.

Survey efforts were to concentrate on searching for previously undocumented cultural resources. The archaeologists were to record non-collected artifacts in the field to facilitate interpretations of site character. ASM was to record any newly identified prehistoric and historic sites associated with the project. A site was to be defined as any concentration of three or more artifacts in a 25 m^2 area. Site boundaries were to be defined when over 50 m of open space separated artifact scatters. Isolated artifacts are defined as fewer than three artifacts in a 25 m^2 area. ASM was to assign all cultural resources that meet the definition of archaeological sites with temporary site numbers.

Site recording was to include the definition of site boundaries and documentation of features and formed artifacts. Detailed sketch maps would demonstrate the relationship of the sites' locations to topographic features and other landmarks. Site forms would contain detailed information on environmental context, artifact content and density, cultural affiliation, and function. ASM would then complete California State Department of Parks and Recreation (DPR) 523 site forms for submittal to the SCIC for assignment of primary numbers and site trinomials to newly discovered sites. Recordation efforts would include the plotting of each site on USGS 7.5-minute quad map. Site forms would be included in the draft and final reports as an appendix. Digital photographs would be taken to document the environmental associations and the specific features of all sites, as well as the general character of each survey area.

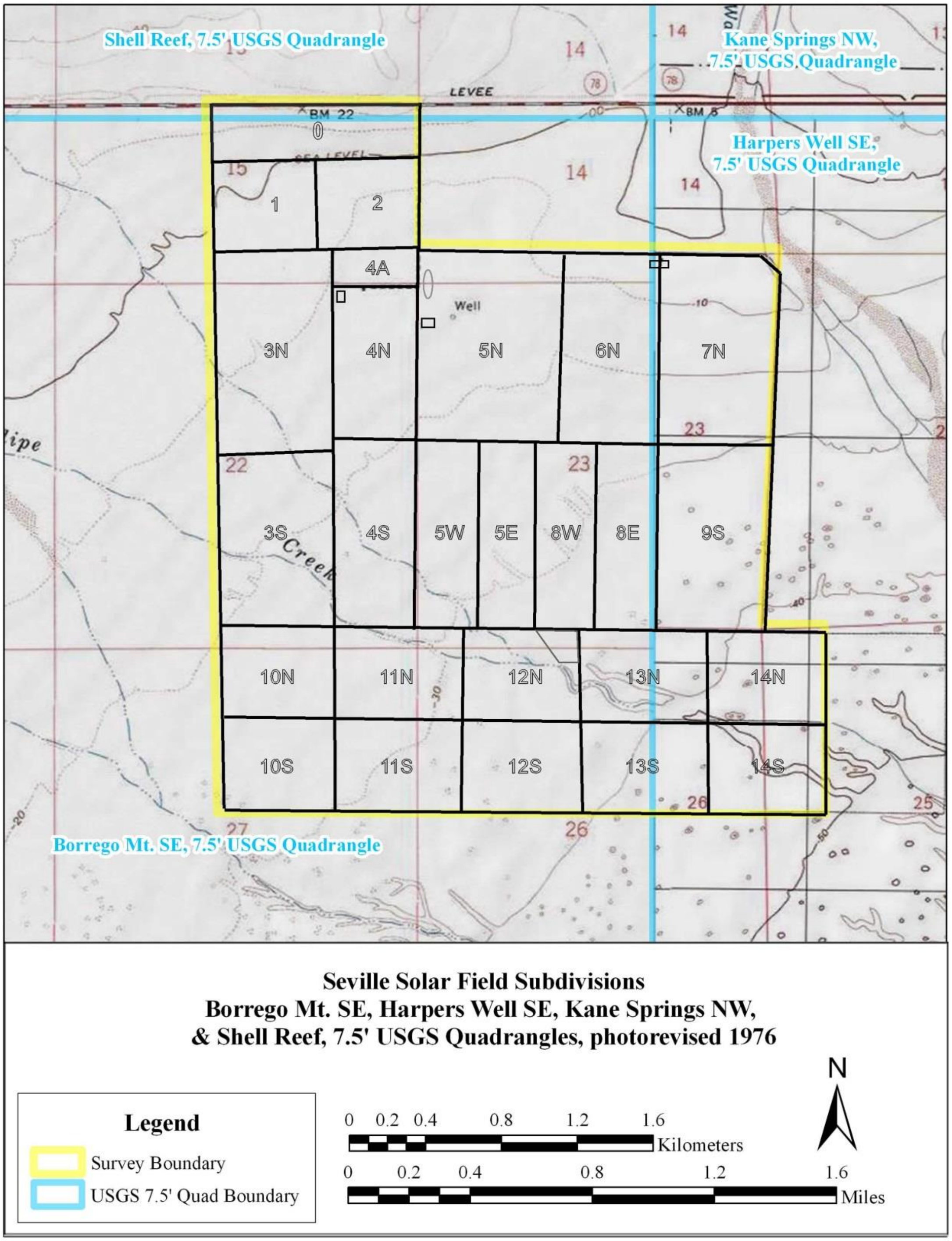

Figure 4. Surveyed Field Subdivisions (derived from the numbering used in the EMA 2013 Report).

6. RESULTS

A Phase III intensive pedestrian survey of the project was conducted from January 23 to January 31, 2013. For the purposes of the survey the Project Area was subdivided into smaller subsections corresponding to the existing agricultural field boundaries (see Figure 4). The entirety of each field or sub-section was examined. Field survey proceeded under direction of Principal Investigator Jerry Schaefer, Ph.D. with Associate Archeologist Tony Quach serving as Field Supervisor with Nicholas Smith, and Christine Lambert comprising the remainder of the crew. Native monitoring was also provided by Ronald Cuero Jr. (January 23-27) and Frank Salazar (January 28-31) who were both approved and authorized to conduct Native American oversight and monitoring under the auspices of the Environmental/Cultural Office of the Campo Kumeyaay Nation.

FIELD CONDITIONS AND TERRAIN

Field conditions were excellent throughout the duration of the survey with clear skies, cool mornings and mild afternoons, when temperatures would typically reach into the upper 70s to lower 80s. Though it rained for two of the survey days the rainfall was generally moderate to light with blocks of time in between the bouts of intermittent rainfall to continue surveying. Ground surface visibility was also excellent with most areas well over 90 percent visible (Figure 5) with only several areas of moderate to low visibility.

Figure 5. Field 1 facing west showing optimal visibility conditions.

The project area terrain is generally characterized by flat agricultural fields in varying degrees of use. Generally the fields along the southern part of the project area have been more recently ploughed with deeper more well-defined furrows (Figure 6). The soils noted for the southern fields are also noted to be finer and generally more suitable for agricultural use. In the current survey the most freshly ploughed fields are noted to be 12, 13, 14, 4A, and 2. In the southern project area encompassing fields 10, 11, 12, 13, and 14 it was noted that modern rabbit (lagomorph) bones are a ubiquitous component, oftentimes occurring in densities as high as two to three instances per 5-meter square. No bone that might even remotely be suspiciously human was observed. The fields surveyed to the far southeast of the project boundary were noted to be still in use with corn growing in those fields limiting the overall ground visibility dramatically in that portion of the project area (Figure 7).

Figure 6. Field 13N view south showing evidence of more recent ploughing.

Figure 7. Field 14N view east showing current active cultivation and low visibility.

In general the fields along the northeastern portion of the project area were minimally used. In field 7 and the northern portion of field 9 the soils are noted to be much more gravelly with larger water-worn pebbles distributed throughout that area. From the known agricultural history it is clear that this area is generally poor in terms of agricultural output and from previous aerials it is also clear that this portion of the project area was not as intensively utilized. In the northeast corner of field 7 there is also a discrete area where a moderate density of modern construction and agricultural debris is distributed in the form of concrete irrigation, rusted appliance parts, wires, and modern cultivar potting (Figure 8). The central fields of the project area are noted to occur closer to the main farming buildings and facilities. Overall fields 5, 6, and 8 within the central portion of the project area are noted to be generally disturbed with higher occurrences of modern agricultural debris in the form of plastic/rubber tubing and rusted metal fragments of tools and machinery. The central fields are also noted to be not as recently ploughed. The furrows are noted to be generally deflated and near level to the ground surface with stands of bushes dotted throughout. The fields surveyed in the northwestern portion of the project area were observed to have been extensively modified by natural and anthropogenic processes. Recent fluvial overflow has significantly affected field 3 where the breaches in the far western berm has deposited a fan of silt effectively washing away the traces of any recently ploughed furrows (Figure 9). In the current survey it was noted that this portion of the project area is gradually reverting back to a more natural land form with stands of mesquite and tamarisks taking hold. A multitude of off-road vehicular traffic has also left visibly discernible tracking across this area and during the survey a small group of such vehicles did pass through the property.

Figure 8. Modern debris field/dump abutting the northeast corner of field 7N.

Figure 9. Fluvially modified portion of Field 3S that is reverting back to natural landform.

The only portion of the project area that appears relatively undisturbed by agricultural or modern activity is Area 0 to the northern periphery of the project area directly adjacent to Highway 78. Though this area is relatively undisturbed by agricultural activities, modern and roadside debris within this area is ubiquitous. In this area several hundred cans (modern aluminum, bi-metal, and church keyed beer cans) from recent time periods are evenly dispersed throughout this entire area as a low-density debris field directly adjacent to Highway 78. As this portion of the survey area is considered private property there did not appear to be any evidence of recent raking or roadside cleanup.

IDENTIFIED RESOURCES

During the survey one site and 14 prehistoric isolates were identified. Isolates are defined as five or less artifacts in a 25^2 m area. Sites contain more than five artifacts. DPR forms were completed and submitted to the SCIC for assignment of formal numeric identifiers. In the current survey a single site was identified (SDI-12,151) in area/field 0 which consisted of a ceramic scatter or single pot drop of 10 buffware sherds (Figure 10). Additionally 14 prehistoric resources distributed as isolates (primary numbers P-13-14431 through P-13-14444) were also identified as occurring within the current project boundaries consisting of two sandstone metate fragments, one core, one modified cobble, three retouched flakes, five pieces of debitage, and two wind and/or water worn pot sherds (Figure 11, Table 6-7). An examination of the various cans within the debris field adjacent to State Route-78 also indicates that in general the cans are predominately recent with bi-metal and aluminum cans and occasional church keyed beer cans forming a loose distribution throughout the area directly adjacent to the highway. These were not recorded.

Figure 10. Close-Up Overview of SDI-12, 151.

Figure 11. Clockwise from top left: ISO-02 quartz denticulated modified cobble, ISO-01 volcanic core, ISO-09 sandstone metate fragment, and ISO-03 metasedimentarry retouched flake.

From the record search a single isolate P-13-009783 (a single quartzite flake) was also reported to have been identified in the central area of field 1. During the current survey the quartzite flake was not relocated likely due to modern disturbances and ORV through traffic.

A table summarizing the results of the field survey are as follows:

Table 6. Summary of the Prehistoric Isolates Identified by General Subsection Location

Artifact Type	0	2	10N	4N	5W	7N	8W	9S	Total
Pottery	2	--	--	--	--	--	--	--	2
Debitage	2	--	--	--	--	3	--	--	5
Retouched Flake	--	1	--	--	--	1	--	1	3
Modified Cobble	--	--	--	1	--	--	--	--	1
Core	--	--	1	--	--	--	--	--	1
Metate	--	--	--	--	1	--	1	--	2
Total	**4**	**1**	**1**	**1**	**1**	**4**	**1**	**1**	**14**

Table 7. All Newly Recorded Resources from Current Survey

P-No. or Trinomial	Temp No. TQ-	Type	Summary or Description
SDI-12151	SITE-01	Pot Drop	Pot Drop (10 pieces) Buffware
P-13-14431	ISO-01	Core	Multidirectional Metavolcanic Core
P-13-14432	ISO-02	Core Tool	Denticulated Quartz Modified Cobble
P-13-14433	ISO-03	Flake Tool	Denticulate Metasedimentary Retouched Flake
P-13-14434	ISO-05	Pottery	Water Worn Pot Sherd
P-13-14435	ISO-06	Pottery	Water Worn Pot Sherd
P-13-14436	ISO-07	Flake	Quartzite Shatter
P-13-14437	ISO-08	Metate	Sandstone Metate Fragment
P-13-14438	ISO-09	Metate	Sandstone Metate Fragment
P-13-14439	ISO-10	Flake Tool	Quartzite Retouched Flake
P-13-14440	ISO-11	Flake Tool	Metavolcanic Biface
P-13-14441	ISO-12	Flake	Metavolcanic Interior
P-13-14442	ISO-13	Flake	Metavolcanic Interior
P-13-14443	ISO-14	Flake	Quartz Interior
P-13-14444	ISO-15	Flake	Metavolcanic interior

7. CONCLUSIONS AND RECOMMENDATIONS

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for substantial adverse change, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA, which 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, § 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 eligibility criteria are 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 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.

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) consisting of the following:

- 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
- It is associated with the lives of persons important to local, California, or national history; or
- 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, it has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

During the course of survey one prehistoric pot-drop site, and 14 prehistoric isolates were identified. By general convention it is recognized that if identified cultural resources will be impacted by project construction or maintenance activities, formal evaluation of that resource will occur. For resources with archaeological deposits, evaluation typically includes some combination of surface collection, excavation, mapping and special analyses that are designed to understand site formation and human habitation of that resource in a regional context. In the current survey almost all the resources encountered are manifested as isolated finds. Nearly all the isolated finds found within the project area also occur within a depositional context of recent agricultural plowing and as such have lost primary contextual information that would have provided indication as to the fidelity of the spatial distribution of archaeological resources across the landscape or stratigraphic context. Thus a formal evaluation of the isolates would not yield any additional information concerning site formation or human habitation within the region. Additionally as the archaeological deposits within this general area occur in a context of deflated sediments, the potential for substantial archaeological deposits to be uncovered below the current plough zone is minimal-to-none. The isolates likely represent items from now destroyed small resource processing areas within the daily foraging radius of the main residential site at San Sebastian. The milling tools are likely indicative of processing seeds and mesquite beans on site, as it is likely the area contained mesquite bosques like those found in the immediate vicinity. They were all removed when the project area was cleared for agriculture.

The pot-drop site, however seems to retain some measure of spatial integrity as all the encountered fragments lie within close proximity and in the only section of the project area not previously disturbed by plowing. Therefore, it is recommended that only the identified pot drop in the project area be assessed to evaluate significance if it cannot be avoided. It is very likely that additional sherds exist below the surface although it is very unlikely that the entire vessel is represented. The pot drop is unlikely to be eligible for listing on the CRHR but may minimally contribute to the understanding of regional land use and travel through identification of the ceramic type and shape. The pot drop also could remain from wide-ranging foraging activities in the past or had been left during travel along the San Felipe Creek corridor.

In summary, substantial adverse changes to significant cultural resources are unlikely to occur as a result of the proposed project. Collection of the pot drop and even the isolates as part of an evaluation phase would likely expend the minimal research potential that these materials may afford. The potential for subsurface deposits below the plow zone in the project area is very low and we do not at this time recommend monitoring.

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APPENDICES

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APPENDIX A

Cultural Resource Maps

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APPENDIX B

DPR Forms

Note - Appendix B is considered confidential and has been redacted from this report submitted to Imperial County

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APPENDIX C

SCOC Record

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ASM affiliates
archaeology
history
architectural history
ethnography

December 16, 2013

Dr. Seth Mallios
Director, South Coastal Information Center
4283 El Cajon Blvd., Suite 250
San Diego, CA 92105

Re: Record search for Seville Solar Project, Project No. 20280

Dear Dr. Mallios,

Please conduct a search of your maps and files for cultural resources within a one-mile radius of the Seville Solar Project, Imperial County, area shown on the attached map. Please note the narrow strip along SR-78. The project area is located on the Borrego Mtn. SE, Harpers Well SE, Kane Springs NW, and Shell Reef USGS 7.5' quad. I do not have shape files for the project boundaries.

Please quote the project number,PN 20280, on your invoice to ASM Affiliates. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

Jerry Schaefer, Ph.D.
Senior Archaeologist

jschaefer@asmaffiliates.com

attached: Project Map

2034 Corte Del Nogal, Carlsbad, California 92011 • (760) 804-5757 • Fax: (760) 804-5755
260 S. Los Robles Ave., Suite 106, Pasadena, California 91101 • (626) 793-7395 • Fax: (626) 793-2008
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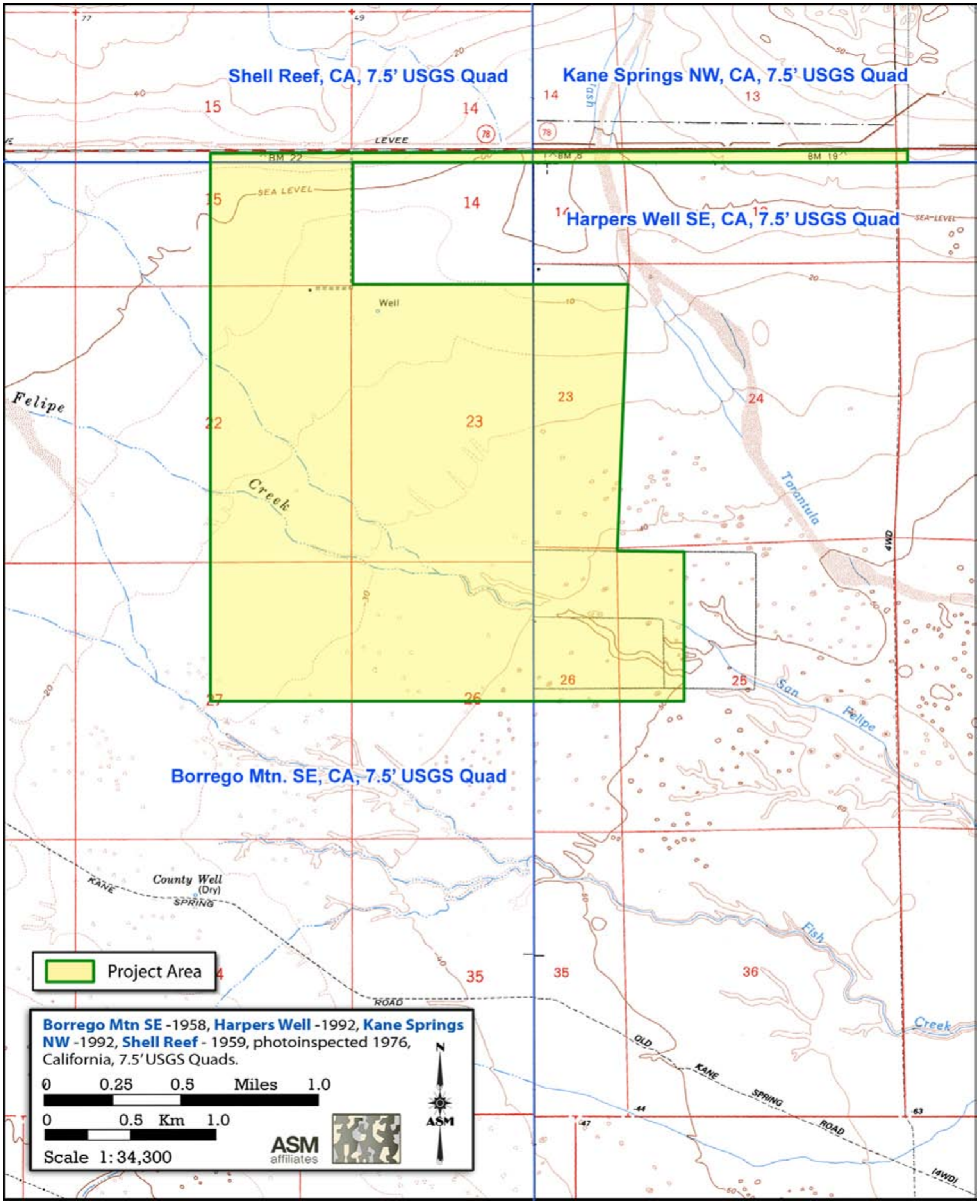
Shell Reef, CA, 7.5' USGS Quad
Kane Springs NW, CA, 7.5' USGS Quad
Harpers Well SE, CA, 7.5' USGS Quad
Borrego Mtn. SE, CA, 7.5' USGS Quad
LEVEE
SEA LEVEL
Well
Felipe
Creek
Tarantula
San Felipe
Fish Creek
County Well (Dry)
KANE SPRING ROAD
OLD KANE SPRING ROAD
4WD
Project Area
Borrego Mtn SE -1958, Harpers Well -1992, Kane Springs NW -1992, Shell Reef - 1959, photoinspected 1976, California, 7.5' USGS Quads.
0 0.25 0.5 Miles 1.0
0 0.5 Km 1.0
Scale 1: 34,300
ASM affiliates
N
ASM

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CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM RECORDS SEARCH

Company:	ASM Affiliates
Company Representative:	Jerry Schaefer
Date Processed:	1/24/2013
Project Identification:	Seville Solar #20280
Search Radius:	1 mile

Historical Resources: NJD

Trinomial and Primary site maps have been reviewed. All sites within the project boundaries and the specified radius of the project area have been plotted. Copies of the site record forms have been included for all recorded sites.

Previous Survey Report Boundaries: NJD

Project boundary maps have been reviewed. National Archaeological Database (NADB) citations for reports within the project boundaries and within the specified radius of the project area have been included.

Historic Addresses: NJD

A map and database of historic properties (formerly Geofinder) has been included.

Historic Maps: NJD

The historic maps on file at the South Coastal Information Center have been reviewed, and copies have been included.

Summary of SHRC Approved CHRIS IC Records Search Elements	
RSID:	538
RUSH:	no
Hours:	1
Spatial Features:	191
Address-Mapped Shapes:	no
Digital Database Records:	0
Quads:	4
Aerial Photos:	0
PDFs:	Yes
PDF Pages:	830

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APPENDIX D

NAHC Sacred Lands File Search

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