

APPENDIX E

**CULTURAL RESOURCES
REPORTS**

CULTURAL RESOURCES REPORT

**INVENTORY REPORT OF THE CULTURAL
RESOURCES RECORDED WITHIN THE CAMPO
VERDE SOLAR PROJECT, IMPERIAL COUNTY,
CALIFORNIA**

Prepared for:

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LIST OF ACRONYMS

| | |
|---------|--|
| AC | Alternating Current |
| ADI | Area of Direct Impacts |
| AMS | Accelerator Mass Spectrometry |
| APE | Area of Potential Effects |
| CEQA | California Environment Quality Act |
| CCR | California Code of Regulations |
| CRHR | California Register of Historical Resources |
| DC | Direct Current |
| EPG | EPG, Inc. |
| ESA | Environmentally Sensitive Area |
| Gen-tie | Generation-tie line |
| GPS | Global Positioning Systems |
| HPMP | Historic Properties Management Plan |
| HPTP | Historic Properties Treatment Plan |
| KPE | kp environmental, LLC |
| kV | kilovolts |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NEMA | National Electric Manufacturers Association |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NRHP | National Register of Historic Places |
| O&M | Operations and Maintenance |
| PCS | Power Conversion Stations |
| PPA | Power Purchase Agreement |
| PV | Photovoltaic |
| PVCS | Photovoltaic Combining Switchgear |
| ROW | Right-of-Way |
| RPS | Renewable Portfolio Standard |
| SCADA | Supervisory Control and Data Acquisition |
| SCC | Site Communication Center |
| SDG&E | San Diego Gas & Electric |
| SHPO | State Historic Preservation Officer |
| UPS | Uninterruptible Power Supply |
| USDI | U.S. Department of the Interior |

DEFINITIONS

Area of potential effects (APE) means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR §800.16(d)).

California Register (CRHR) means the California Register of Historical Resources maintained by the State Historic Preservation Officer.

Environmentally Sensitive Areas (ESA) are locations of identified resources within a project APE that are to be protected by avoidance or restrictions on construction activities.

National Historic Preservation Act (NHPA) (Public Law 89-665; 16 USC 470 et seq.) became law in 1966 and consists of legislation creating the National Register of Historic Places (NRHP), the list of National Historic Landmarks and the posts of State Historic Preservation Officers (SHPO) with the intent of preserving historical and archaeological sites.

National Register (NRHP) means the National Register of Historic Places maintained by the Secretary of the Interior (36 CFR §800.16(q)).

Section 106 of the National Historic Preservation Act (Section 106) set forth national policy for recognizing and protecting historic properties. It established the National Register of Historic Places (NRHP), State Historic Preservation Officers (SHPO) and programs, and the Advisory Council on Historic Preservation (ACHP).

Undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval (36 CFR §800.16(y)).

NATIONAL ARCHAEOLOGICAL DATABASE (NADB) TITLE PAGE

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Report Date: December 30, 2011

Report Title: Inventory Report of the Cultural Resources Recorded within the Campo Verde Solar
Project, Imperial County, California

Submitted by: kp environmental, LLC, 2387 Montgomery Avenue, Cardiff By The Sea, CA 92007

Prepared for: First Solar, Inc.

USGS Quadrangles: Mt. Signal, Seeley, Plaster City

Field Survey: approximately 1,990 acres

Project Type: Intensive Pedestrian Field Survey and Cultural Resource Inventory

Key Words: Pedestrian survey, cultural resource inventory, 1,990 acres, Mt Signal quad, Seeley quad, Plaster City quad, Section 3, Section 19, Section 20, Section 21, Section 22, Section 26, Section 27, Section 28, Section 29, Section 33, Section 34, Section 35, Section 41, Section 46, Section 47, Section 51, Section 54, Section 81, Section 82, Section 83, Section 107, Section 295, Township 16 South, Range 12 East, Township 16 1/2 South, Range 12 East, Township 17 South, Range 12 East, Cahuilla, Cocopah, Kamia/Kumeyaay, Quechan, prehistoric, historic, isolates, pottery, buffware, kaolinite pipe stem, Westside Main Canal (CA-IMP-7834), Foxglove Canal (CA-IMP-8821), Wormwood Canal (P-13-008983), Dixie Drains 2, 3, & 4, Dixie Lateral 1 (P-13-012688), Fern Canal and Fern Drain (P-13-012689), Forget-Me-Not Canal, (P-13-012690), Fig Canal (P-13-012693), Diehl Drain (P-13-013747), Fig Drain (P-13-013748), Westside Drain (P-13-013760), Wixom Drain (P-13-013761), CA-IMP-1403, CA-IMP-3176, CA-IMP-5297, CA-IMP-5298, P-13-013749, P-13-013750, P-13-013751, P-13-013752, P-13-013753, P-13-013754/CA-IMP-11758, P-13-013755, P-13-013756, P-13-013757, P-13-013759, modern memorial.

MANAGEMENT SUMMARY

The Campo Verde Solar Project is a proposed solar photovoltaic energy-generating facility located in Imperial County approximately 7 miles southwest of the community of El Centro, California. The Project Site is south of I-8 and west of Drew Road and northeast of the Westside Main Canal. The Campo Verde Solar Project site includes parcels that total approximately 1,990 acres of private lands that have been used for agriculture.

The PV modules will produce the electricity generated by the Project by converting sunlight directly into electricity. The major equipment in the solar field includes the following:

- First Solar PV modules
- Arrays
- Single-axis trackers or fixed-tilt supports
- Power Conversion Stations (PCS)
- 1000V DC collection system comprised of underground cabling and combiner boxes
- Medium voltage (12 kV and/or 34.5 kV) collection system
- Photovoltaic Combining Switchgear (PVCS)
- A Project Substation with 34.5 kV to 230kV/220kV step-up transformer(s) and switchyard
- Meteorological stations
- O&M buildings with parking and other associated facilities
- Telecommunications equipment

The Project will be interconnected to the regional transmission system via a new line constructed to the Imperial Valley Substation. This interconnection will be accomplished via one of three potential options – two requiring rights-of-way across public lands managed by the Bureau of Land Management and one located totally on private lands. The Non-BLM option being considered is to develop a single-circuit 230 kV line originating from the western side of the Project site. It would cross approximately 1.75 miles of private lands to the west and would utilize available capacity on a line that has an approved right-of-way to the Imperial Valley Substation is analyzed in this CEQA document.

The survey area encompasses approximately 1,015 acres, and included an intensive 100 percent pedestrian survey and inventory of cultural resources on private lands. Existing record search, literature review and previous Class III inventory data already generated for the Campo Verde Solar Project was relied upon to the extent applicable. All work was consistent with BLM policy as per BLM Manual Section 8100 for identifying and recording cultural resources.

Based on the inventory results, 12 sites and 9 isolates are recorded within the Proposed Project Area or project components. Nine isolates and nine irrigation sites are recommended not eligible for the NRHP/CRHR. Even though the nine irrigation sites are recommended not eligible no

impacts to drains or canals are expected. Some may be spanned by transmission lines, but are not expected to be affected, and they would continue to operate.

The Westside Main Canal (CA-IMP-7834) and Westside Drain (P-13-013760) are recommended eligible for the NRHP/CRHR under Criteria A/1 (Davis et al. 2011); however, no impacts to drains or canals are expected. Some may be spanned by transmission lines, but are not expected to be affected, and they would continue to operate.

CA- IMP-7834 and P-13-013760 are recorded within the Proposed Project, and both are also recorded within the Non-BLM Gen-Tie alternative.

If P-13-013754 cannot be avoided through project design, the historic trash scatter site requires additional analysis to determine CRHR eligibility. P-13-013754 is located within the Project APE.

In addition, there is also one non-archaeological cultural feature present within the exterior boundaries of Proposed Campo Verde Solar Project area. The memorial for Margarito Hernandez is not a recorded archaeological or historic site; however, it is a modern cultural feature. If this feature might be impacted by the Proposed Campo Verde Solar Project, management will be coordinating with the landowner for the appropriate treatment for the memorial.

The author also wishes to acknowledge and thank Seth Mallios, Ph.D. from San Diego State University Department of Anthropology for his help with the identification of the 19th century kaolinite pipe stem fragment from site P-13-013754.

1. INTRODUCTION

This report describes the goals, methods, and results of the archaeological survey completed by kp environmental, LLC (KPE) in support of the Campo Verde Solar Project (Project) located on privately held property in an unincorporated area of Imperial County, California (Figure 1, Appendix A). This introductory section presents a description of the Project, the regulatory framework under which the archaeological surveys were conducted, and an introduction to the archaeological investigations pertinent to the Project.

1.1 Project Description

The Project is a proposed solar photovoltaic (PV) energy-generating facility located in Imperial County approximately 7 miles southwest of the community of El Centro, California. Figure 1 (Appendix A) shows the general location of the Project.

The Project is being developed to sell its electricity and all renewable and environmental attributes to an electric utility purchaser under a long-term contract to help meet California Renewable Portfolio Standard (RPS) goals. The applicant has a long-term Power Purchase Agreement (PPA) with San Diego Gas and Electric (SDG&E) to purchase output from the Project.

The Project Site is south of I-8 and west of Drew Road and northeast of the Westside Main Canal. Figure 2 (Appendix A) shows the boundary of the Project Site and the included parcels which total approximately 1,990 acres of private lands that have been used for agriculture.

The Project would use First Solar PV modules that are generally non-reflective and convert sunlight into direct current (DC) electricity. The DC output of multiple rows of PV modules is collected through one or more combiner boxes and directed to an inverter that converts the DC electricity to alternating current (AC) electricity. From the inverter, the generated energy flows to a transformer where it is stepped up to distribution level voltage (approximately 34.5 kilovolts or kV). Multiple transformers are connected in parallel via 34.5 kV lines to the Project substation, where the power will be stepped up to 230 kV. This substation will be located at the southern end of the properties adjacent to Liebert Road. At the Project substation, the Project will interconnect to the grid via a new line constructed from this location to the Imperial Valley Substation approximately 0.75 to 1.00 miles to the south. In addition, the Project may interconnect temporarily to the IID S-Line that traverses the site (Figure 3, Appendix A).

The Project will utilize First Solar's thin-film PV modules in order to produce clean, renewable energy. The PV panels will be mounted either on fixed-tilt supports or on single axis trackers. If mounted on fixed tilt structures, the panels would be arranged into east-west oriented rows throughout the site with panels mounted facing south at angle that optimizes the amount of direct

sunlight hitting the panels. Using single-axis horizontal trackers, the panels will be oriented in north-south rows with the panels moving to track the sun as it moves across the sky during the day. The trackers include low voltage electric drive motors, controller equipment, backup power supply, and anemometer towers.

The Project's overall annual availability is expected to be in the range of 99 percent of daylight hours.

A portion of the proposed Project was previously surveyed in 2008 by EPG, Inc (EPG) (Rowe 2008), and the remainder has been surveyed by KPE. This inventory report is a combined effort of both surveys. The EPG survey area encompasses 975 acres in Township 16 South, Range 12 East, Sections 22, 26, 27, 28, 33, 34, 35, 54, and 295 of the Mount Signal quadrangle; and Township 16 ½ South, Range 12 East, Section 3 of the Mount Signal quadrangle (San Bernardino Baseline and Meridian). The KPE survey area encompasses approximately 1,015 acres in Township 16 South Range 12 East, Sections 26, 27, 28, 34, of the Mount Signal quadrangle; Sections 20, 21, 28, 29, 41, 46, 47, 51, 54, 81, 82, 83, and 107 of the Seeley quadrangle; and Sections 19, 20, 19 and 107 of the Plaster City quadrangle (San Bernardino Baseline and Meridian).

1.2 Proposed Project

At full build-out, most of the Project Site will be disturbed by construction of the Project. Temporary construction lay down, construction trailers and parking areas will be provided within the Project Site. Due to the size of the Project Site, the solar field lay down areas will be relocated periodically within the solar field acreage as the solar field is built out.

In addition to the structures associated with the solar field described below, the Project would include one or more operations and maintenance (O&M) buildings. During operations, the O&M buildings would have potable water delivered to the site and a septic system. The design and construction of the buildings, solar arrays (panels, etc.) will be consistent with County building standards.

Solar Project

The PV modules will produce the electricity generated by the Project by converting sunlight directly into electricity. The major equipment in the solar field includes the following:

- First Solar PV modules
- Arrays
- Single-axis trackers or fixed-tilt supports
- Power Conversion Stations (PCS)
- 1000V DC collection system comprised of underground cabling and combiner boxes
- Medium voltage (12 kV and/or 34.5 kV) collection system

- Photovoltaic Combining Switchgear (PVCS)
- A Project Substation with 34.5 kV to 230kV/220kV step-up transformer(s) and switchyard
- Meteorological stations
- O&M buildings with parking and other associated facilities
- Telecommunications equipment

Photovoltaic Solar Modules

Photovoltaic modules will produce all of the electricity generated by the Project facilities. PV panels are non-reflective and convert sunlight directly into DC electricity, therefore consuming no fossil fuels and emitting no pollutants during operations. The Project will utilize First Solar's proprietary thin-film PV technology mounted on tracker units or fixed tilt supports. The principal materials incorporated into the PV modules include glass, steel, and various semiconductor metals. The PV modules absorb over 90 percent of the light received. First Solar is a leading manufacturer of PV modules, headquartered in Tempe, Arizona with offices in California. First Solar's industry-leading pre-funded module collection and recycling program ensures that PV materials stay in the production cycle and out of municipal landfills.

Typical Array

Arrays consist of rows of PV modules on fixed or tracker structures and one PCS. A typical array would be sectioned into quadrants by two 20-foot-wide access corridors, one running north to south, the other east to west. Each array may produce 1.0 to 2.5 MWac. Arrays are repeated to reach the full plant capacity. The PV modules would be electrically connected by wiring harnesses running along the bottom of each table to combiner boxes that collect power from several rows of modules. The combiner boxes would feed DC power from the modules to the PCS via underground cables.

Fixed-Tilt and Tracker Structures

The First Solar PV panels can be mounted on fixed-tilt or horizontal tracking support structures and the Project may utilize one or both systems. Each of these technologies is described below.

Tracker Units

Using horizontal tracker systems, the PV modules are mounted horizontally and are not tilted to the south. The tracker units are arranged in north-south oriented rows and drive motors rotate the solar panels from east to west to follow the sun (on a single axis) throughout the day. The tracker frame will be supported by driven steel posts. The highest point for a tracker is achieved during the morning and evening hours when the trackers are tilted at their maximum angle. When solar modules are roughly parallel to the ground, the overall height of the tracker is a maximum of 11 feet off ground surface. Each tracker unit is approximately 60 feet long and powered by a low voltage, approximately 0.5 horsepower electric drive motor. The motors and

actuator are mounted to one of the driven posts and do not require separate foundations for mounting. Hydraulic drive systems will not be used. The motors are only operated periodically during daylight conditions to move the panels. The sound from the tracker motors is less than 65 dB(A) at 3 feet. Within each tracker array, a 33-foot-tall weather station is centrally mounted to monitor wind speed and communicate with the tracker units. This allows for the trackers to rotate to a safe position during high wind activity. The weather station tower is made up of a steel lattice. The lattice structure of the tower reduces the visual impact. Each tower requires a small concrete foundation 3 feet by 3 feet (depending on soil conditions). Each PCS Shelter is equipped with communication equipment to wirelessly communicate with the tracker units to control operation and detect anomalous conditions. The PCS Shelter is also equipped with emergency backup power required to rotate the tracker units if there is a loss of the primary electrical connection from the transmission system. The emergency backup power system may include batteries or a backup generator.

Fixed-Tilt Units

Fixed-tilt arrays are constructed in east-west oriented rows. The modules are positioned at a fixed angle to receive optimal solar energy. The approximate angle would be 25 degrees, which could change slightly during final design. The fixed tilt frame is supported by driven steel posts. The highest point of fixed tilt modules could be as high as approximately 7 feet off the ground surface. PCS and PVCS: The PV modules are electrically connected by wire harnesses and combiner boxes that collect power from several rows of modules via underground DC cables. These DC cables are then feed to a PCS, comprised of DC to AC inverters and a medium voltage transformer. Two to four inverters and other electrical and communication equipment will be located in a pre-fabricated protective electrical equipment enclosure with adjacent transformer to step up to 34.5 kV. Each enclosure will be approximately 12 feet wide and 10 to 12 feet in height. Each PCS will be connected to one or two transformers to support each array. The enclosure may be air-conditioned. The enclosure and transformer will be shipped to site on skid that will be installed on precast concrete foundation. The inverter and transformer sizes will be selected based on the cost and market availability of these units. The enclosure will have exterior light with motion sensor and fire alarm. It may also include data acquisition and communication equipment, step-down transformers to 120V/480V for tracker motor, laptop or other equipment, and uninterruptible power supply (UPS) batteries. Equipment may be outside, within exterior rated cabinets, or within a structure.

Electrical Collection System

The DC output of multiple rows of PV modules is collected through one or more combiner boxes, and associated electrical wiring which would deliver 1000 V DC power along an underground trench (approximately 3 feet deep and 3 feet wide) to a PCS. Each PCS will be connected by overhead and/or underground lines to PVCS. Each PVCS will collect and combine the medium voltage power from multiple PCSs for transmission to the Project substation. he

medium-voltage collection system (34.5 kV) transmitting power and communication from each PCS to the PCVS may be buried underground and/or connected on overhead lines, The PVCS enclosures will be supported by precast concrete vault and would be located in pre-fabricated protective electrical equipment enclosures, each approximately 12 feet in height, dispersed among the arrays. Medium voltage collection system lines connect the power output and communication from the PVCS to the Project substation via overhead and/or underground circuits. Preliminary locations of the electrical collection system are shown on the site plan. This system would include crossing of Imperial County roads and IID facilities which will require encroachment permits.

Substation and Switchyard

An onsite substation with 34.5kV to 230/220 kV step-up transformer(s), breakers, buswork, protective relaying, SCADA (supervisory control and data acquisition) and associated substation equipment will be constructed on the south side of the site. The communication system may include above or below ground fiber optic cable or microwave tower. The Project will be interconnected to the regional transmission system from this on-site substation/switchyard via the gen-tie interconnections described later.

Operations and Maintenance Building

An O&M building may contain administrative offices, parts storage, a maintenance shop, plant security systems, and plant monitoring equipment. The O&M building will likely consist of one or more single story prefabricated building set on a concrete slab-on-grade. The building maximum height will be approximately 18 feet. A specific design for the O&M building has not yet been selected. The building will have exterior lighting on motion sensors and will have fire and security alarms. The building would be located on a graded area with adjacent worker parking. A septic system and leach field adjacent to the building will serve the Project's sanitary wastewater treatment needs. An above-ground water storage tank may be installed.

Grading and Drainage

The Project is located on property previously used for irrigated agricultural production. Little new grading would be done on the Project Site because the current topography is suitable for the placement of PV panels with little site preparation. The soil surface will be smoothed and compacted to prepare the Site for installation of the solar panels. The site will be disked with conventional farming equipment with limited use of scrapers to perform micrograding where needed. Existing agricultural drains may be removed. The solar field may be coated with a permeable dust suppressant and the roadways within and around the solar field will be compacted native soil. Gravel may be installed at construction entrance and construction areas where needed.

Most of the Project Site will be drained by sheet flow to on- and off-site drainages as it is currently configured. Local containment will be provided around the high-voltage transformers within the Project substation to prevent any associated hazardous materials from leaving the site.

Site Access / Traffic and Circulation

Access to the Project Site will be via I-8 to Drew Road as well as other roads in the area. Access to components of the solar field will be controlled through security gates at the main entrances. Access points would be used during construction and operation. Secondary access would be provided if needed. There is currently little traffic on any of the roads bordering or in the immediate vicinity of the project. The use on these roads is associated with the surrounding agriculture and to provide access to the small number of residences in the area. Because of the relatively small amounts of traffic, there are no traffic signals in the area.

Construction of the Project is expected to take up to 24 months. Daily trip generation during construction of the project would be generated by delivery of equipment and supplies and the commuting of the construction workforce. The number of workers expected on the site during construction of the Project would vary over the construction period and is expected to average up to approximately 250 each day, generating about 100 daily round trips. Deliveries of equipment and supplies to the site would also vary over the construction period but are expected to average about 5 to 40 daily trips. All project related parking will be onsite during construction, moving within the solar field as it is developed or as needed on public roads between Project parcels. Based on the expected trips generated, traffic on the local roads would increase during construction but impacts to current traffic patterns would be minimal. No impact to current traffic patterns would result during operation of the Project. Operation of the site would be expected to generate only 2 to 4 trips per day from maintenance and security personnel. Trips for water trucks to deliver water to the site to clean the panels could also occur but would be relatively infrequent as the panels could be cleaned only once or twice a year. There could also be other deliveries of supplies or equipment that could occur to support operations and maintenance. This would result in a daily trip maximum of up to 10 (during washing events) and more commonly 5 or less during the operational phase of the project. This small number of trips generated during operations would result in less than significant impacts to local traffic patterns.

Project Support Systems

The following project systems control, protect, and support the Project and its operation. These include distributed control system, communications, lighting and a cathodic protection system as described in the following paragraphs.

Security

The Project site will be fenced with a chain-link security fence approximately 8 feet high with 3 strands of smooth wire or barbed-wire (where required by code) on the top. Site security may be

provided with small guard stations provided at the gated access points. Security cameras may be deployed throughout the site and monitored at the guard station and remotely by a security service at night. Lights, triggered by motion sensors and powered by station power with backup battery power, will also be installed at each entry gate and at each PCS enclosure.

Perimeter signage will also be provided and installed at intervals along the perimeter fence stating, in both English and Spanish, the following: “Danger, Keep Out!” and “Hazardous Voltage Inside.”

Control System

A microprocessor-based site communication center (SCC) will provide control, monitoring, alarm, and data storage functions for plant systems as well as communication with the solar field SCADA system. Redundant capability will be provided for critical components so that no single component failure will cause a facility outage. All field instruments and controls will be hardwired to local electrical panels. Local panels will be hardwired to the system. Wireless technology will be reviewed as a potential alternative during final Project design.

Electric Service

Permanent electric service may be obtained for the O&M building and for substation backfeed power. Service would be provided by IID. Temporary electric service will be obtained for main construction logistics area. Generator power may be utilized for temporary portable construction trailer(s) and for commissioning.

Lighting System

The Project’s lighting system will provide operation and maintenance personnel with illumination for both normal and emergency conditions near the main entrance and the Project substation. Lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives and will be downward facing and shielded to focus illumination on the desired areas only. Permanent lighting will be provided at the O&M buildings, substation, and entrances.

The PCS enclosures will have exterior lights on motion sensors. Therefore, light trespass on surrounding properties will be minimal. If lighting at individual solar panels or other equipment is needed for night construction or maintenance, portable lighting will be used.

Proposed Sewer System

During the operational phase of the Project, the O&M buildings will include septic systems. During construction, temporary septic systems or holding tanks will be provided for the construction trailers and portable toilets will be used throughout the construction area to provide needed sanitary facilities for workers on site.

Water System

The Project will use relatively small amounts of water during construction and operation. The source of water for Project operation will be IID canals located adjacent to the Project and trucked in as needed. This water source will supply water for construction, fire protection and operational water use. One permanent, approximately 10,000 gallon, above-ground water storage tank will be installed adjacent to the O&M building. The above-ground storage tank will be sized to supply sufficient fire suppression water during operations. If needed, an on-site water treatment system (e.g., a package unit), or a water storage tank for potable water deliveries may be installed to meet the Project operational potable water needs.

Fire System

As a PV solar project, the Project will pose a very small fire risk as all vegetation will be maintained and the solar field does not incorporate any significant flammable materials. After construction, invasive / weedy species will be controlled and any vegetation that re-establishes on site will be maintained to a height of less than 18 inches within the solar field. The PCS enclosures will be either metal or concrete designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP 44 standards for electrical enclosures. A Fire Management Plan will be prepared and the final site plan would be designed in accordance with Fire Department requirements for access and would not impact the ability to provide emergency access to the site. The Project also would not hinder the ability to access nearby properties.

Communication System

The Project will utilize telephone and internet services that will be provided via overhead or underground lines or via cellular system by a local service provider.

Employees

The Project would generate employment opportunities during construction and operation. During construction, workers would be employed by the construction contractors with the number of workers on the site expected to vary over the construction period. During the 18 to 24 month construction time frame, the average number of construction workers on site would be expected to average up to approximately 250 each day with a peak of 500. Typical construction work hours may be 6:00 am to 4:00 pm. Two shifts could be utilized possibly running from 5:00 am to 3:00 pm and 9:00 pm to 5:00 am. Additional hours including weekends may be necessary to make up schedule deficiencies or to complete critical construction activities. Any night work would be conducted on focused areas of the site. Approximately 4 to 8 full-time workers would be employed during operation of the Project. These personnel would perform maintenance and security functions.

Construction Schedule

As mentioned above, the Project is expected to be built over an up to 24-month timeframe.

Temporary Construction Facilities

During construction, temporary facilities will be developed on-site to facilitate the construction process. These facilities may include construction trailers, a temporary septic system or holding tank, parking areas, material receiving / storage areas, water storage ponds, construction power service, recycling / waste handling areas, and others. These facilities will be located at the construction areas designated on the final site plans.

Decommissioning Plan

The Project would operate at a minimum for the life of its PPA. It is likely, because much of the needed electrical infrastructure will have been developed, the Project Site would continue to be upgraded and used to generate solar energy even beyond the term of the initial PPA. Therefore, it is possible that the Site would remain in solar energy production for the foreseeable future. If the Project were ever to be decommissioned, the First Solar modules would be collected and recycled under First Solar's pre-funded recycling program. The support structures, electrical equipment, and other materials / equipment would be removed from the Site and it would be returned to agriculture.

Gen-Tie

The Project will be interconnected to the regional transmission system via a 230kV double-circuit transmission line from the Project to the Imperial Valley Substation. The proposed Gen-Tie would originate at the Project substation/switchyard at the southern end of the Project site and would go across BLM land for about 0.9 miles BLM to the Imperial Valley Substation. The Gen-Tie is located entirely within a BLM-designated utility corridor.

1.3 Alternatives

The project considered several Gen-Tie alternatives to provide the needed interconnection to the Imperial Valley Substation. In addition to the proposed Gen-Tie, route alternatives were developed to minimize impacts by co-locating with existing linear facilities.

Eastern BLM Gen-Tie Alternative

The Eastern BLM Gen-Tie Alternative would follow the existing IID S-line and associated access road. It would cross about 0.4 miles of BLM land and 0.4 miles of private lands.

Non-BLM ROW Gen-Tie Alternative

The Non-BLM ROW Alternative would originate from the western side of the Project site and would cross approximately 1.75 miles of private lands to the west. It would follow existing field roads and ditches to the C-Solar West Project site. From there, available capacity would be

utilized on that project's gen-tie line that has an approved right-of-way to the Imperial Valley Substation.

Figure 3 (Appendix A) shows the locations of the various gen-tie alternatives described above.

In addition to any of the long-term interconnection solutions described above, a short-term electrical interconnection solution may be implemented that would involve an interconnection to IID's S Line that crosses the site. If this solution is utilized, it would provide temporary interconnection to the grid and would be replaced by the permanent interconnection into the Imperial Valley Substation when completed.

1.4 Regulatory Framework

This section reviews the most relevant State, Federal, and County laws, ordinances and regulations for the protection of cultural resources and for which this study provides initial baseline data for agency assessments of impacts to cultural resources.

State of California

The California Environmental Quality Act (CEQA; PRC §21002(b), 21083.2, and 21084.1)

Historical resources are recognized as part of the environment under CEQA. The California Register of Historical Resources is an authoritative guide to the state's historical resources and to which properties are considered significant for purposes of CEQA. The California Register includes resources listed in or formally determined eligible for listing in the NRHP, as well as 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 have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC § 5024.1, 14 CCR § 4850).

Health and Safety Code Section 7050.5

This code section requires that further excavation or disturbance of land, upon discovery of human remains outside of a dedicated cemetery, cease until a county coroner makes a report. It requires a county coroner to contact the Native American Heritage Commission (NAHC) within 48 hours if the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the remains to be those of a Native American.

Health and Safety Code (Section 7052)

Section 7052 of the Health and Safety Code establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

Penal Code (Section 622.5)

Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historical or archaeological interest located on public or private lands, but specifically excludes the landowner.

Public Resources Code (Section 5097.5)

The unauthorized disturbance or removal of archaeological, historical or paleontological resources located on public lands is defined as a misdemeanor by Public Resources Code Section 5097.5.

Public Resources Code Section 5097.98

If a county coroner notifies the NAHC that human remains are Native American and outside the coroner's jurisdiction per Health and Safety Code Section 7050.5, the NAHC must determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 24 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

Federal

The National Historic Preservation Act (NHPA; Title 16 U.S. Code, Sections 470w-6)

Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings, licensed or executed by the agency, on historic properties listed or eligible for listing in the NRHP, and affords the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (16 U.S.C. 470f). The Section 106 process of the NHPA seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the Agency Official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning.

The Section 106 process includes the following steps:

1. Identify and evaluate the NRHP eligibility of historic properties;
2. Assess the effects of proposed action on any historic properties;
3. Consult with the State Historic Preservation Officer (SHPO), interested parties, and when appropriate, the ACHP;
4. Treat impacts, as necessary; and
5. Proceed with the action.

As amended May 18, 1999 and finalized January 11, 2001, 36 CFR Part 800; 65 FR 77698-77739:

1. clarifies the roles of SHPOs, THPOs, and Tribes;
2. provide more flexibility for involving groups of applicants;
3. clarifies an undertaking to include only an action that has the potential to affect historic properties;
4. reinforces a federal agency's responsibility to identify historic properties;
5. revises the role of invited signatories to Memorandums of Agreement (MOAs);
6. clarifies the actions a federal agency must take in mitigating adverse effects stated in EIRs;
7. redefines the role of the Advisory Council for improving Section 106 operations;
8. modifies documentation standards to be limited to an agency's legal authority and available funds;

9. adds requirements for agencies to provide information on NRHP eligibility of post-review discoveries;
10. provides for a routine prototype programmatic agreements;
11. improves stakeholder and public views on proposed exemptions; and
12. re-emphasizes agency obligations for Native American consultation while acknowledging agency responsibility for determining the method of consultation.

The Section 106 process has also been streamlined through a protocol between the California BLM and the SHPO. It allows BLM to forgo SHPO consultation for routine compliance proceedings.

American Indian Religious Freedom Act (Title 42, U.S. Code, Section 1996)

This act establishes policy of respect and protection of Native American religious practices. There are specific provisions for providing Native American access to religious sites.

Executive Orders

Executive Order 13007 (Federal Register Volume 61, No. 104, pp. 26771-26772) requires federal agencies with land management responsibilities to allow access and use of Native American sacred sites on public lands, and to avoid adversely affecting these sites.

Executive Order 13084 (Federal Register Volume 63, No. 96, pp. 27655-27657) reaffirms federal agency obligations to conduct government-to-government consultations and directs the agencies to establish procedures to that effect.

County

County of Imperial General Plan (1993)

Conservation & Open Space Element

The Conservation Element and Open Space Element provides detailed plans and measures for the preservation and management of biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space. The purpose of the Conservation and Open Space Element is to promote the protection, maintenance, and use of the County's natural resources with particular emphasis on scarce resources, and to prevent wasteful exploitation, destruction, and neglect of the State's natural resources. Additionally, the purpose of this Element is to recognize that natural resources must be maintained for their ecological value for the direct benefit to the public, protect open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and for public health and safety.

Significance Criteria

Cultural resources studies for the Project are carried out in compliance with California Environmental Quality Act (CEQA), Section 106 of the National Historic Preservation Act of 1966 (NHPA), and other applicable state, federal, or local laws, ordinances, rules, regulations, and policies. Section 106 is applicable to federal undertakings, including projects financed or permitted by federal agencies, regardless of whether the activities occur on land that is managed

by federal agencies, other governmental agencies, or private landowners. In practice, the National Register of Historic Places (NRHP) criteria for significance applied under Section 106 are generally in conformity with California Register of Historical Resources (CRHR) criteria, with some slight variances. Therefore, all cultural resources within the survey area are evaluated for eligibility to be listed on the NRHP and the CRHR.

National Register Criteria for Evaluation

The National Register criteria are designed to guide federal agencies and others in evaluating whether a property is eligible for inclusion on the NRHP. To be eligible for listing in the NRHP, a cultural resource must meet one of the four criteria defined by Title 36, Part 60, of the Code of Federal Regulations (36 CFR 60), which reads as follows:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and:

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that has yielded, or may be likely to yield, information important in prehistory or history.

In addition to these four criteria, there is a general stipulation that the property be 50 years old or older (for exceptions, see 36 CFR 60.4, Criteria Considerations). The importance of information that a property may yield is measured by its relevance to identified research questions that can be addressed through the analysis of particular property types. In addition to research potential, the cultural resources of Native Americans, Euroamericans, and other ethnic communities may possess public and ethnic value. Finally, cultural resources may also have broader public significance, such as serving to educate the public about important aspects of national, state, and local history and prehistory.

CEQA and the California Register Criteria for Evaluation

The California Environmental Quality Act (CEQA) requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. It defines historical resources as “any object, building, structure, site, area, or place which is historically significant in the architectural, engineering, scientific,

economic, agricultural, educational, social, political, military, or cultural annals of California,” as cited in Division I, Public Resources Code, Section 5021.1[b].

Lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed project’s impacts to historical resources. The CRHR is used in the consideration of historic resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP, as well as 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.

To be eligible for listing in the California Register, the criteria are similar to the National Register but have been modified for state use in order to include a range of historical resources which better reflect the history of California" (CCR §4852). A cultural resource must meet one of the four following criteria as per PRC §5024.1(c):

- (1) is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- (2) is associated with the lives of persons important in our past.
- (3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possess high artistic values.
- (4) has yielded, or may be likely to yield, information important in prehistory or history.

Significance Evaluation during the Present Study

Preliminary assessments of the significance of cultural resources identified during the present study are included as part of this inventory to the extent possible, in order to provide recommendations for avoidance of project impacts to resources that are likely to be significant.

1.5 Archaeological Investigations

The strategy for the Project’s cultural resources analysis includes 100 percent coverage of the Project area to be evaluated in the EIR on private land. The KPE archaeological survey included an intensive 100 percent pedestrian survey and inventory of cultural resources within the survey area but did not cover areas previously surveyed by EPG as part of the current project (Rowe 2008). The 2011 archaeological survey was performed by KPE, under the direction of Senior Project Archaeologist Patricia T. Mitchell, M.A. RPA.

Existing record search, literature review and previous Class III inventory data already generated for the Project (Rowe 2008) were relied upon to the extent applicable. All work was completed, consistent with BLM policy, as per BLM Manual Section 8100 for identifying and recording cultural resources.

This report consists of an introduction that includes the project description and background (Chapter 1); the archaeological context of the survey area, including the environmental history and cultural history (Chapter 2); previous archaeological research (Chapter 3); research design (Chapter 4); survey methods (Chapter 5); report of findings (Chapter 6); analysis of site eligibility (Chapter 7); discussion of reported sites (Chapter 8); management considerations (Chapter 9); references (Chapter 10); and appendices. All key project personnel met the *Secretary of the Interior's* Qualification Standards for their respective roles in the project. Table 1 summarizes the key Class III survey personnel and their roles. The archaeological personnel resumes are attached as Appendix B. Non-confidential report maps are provided in Appendix A. All site location information and Native American correspondence is attached as separate, confidential appendices to this report (Appendices C through F).

| Table 1. Campo Verde Solar Project Personnel. | |
|--|---------------------------------|
| Role | Individual |
| Principal Investigator / Project Archaeologist | Patricia T. Mitchell, M.A., RPA |
| Safety Officer | Shannon Bottenberg |
| Archaeological Crew Chief / Field Director | Heather Thomson |
| Archaeological Field Personnel | Marina Adame |

2. ARCHAEOLOGICAL CONTEXT

This chapter reviews the environmental setting of the survey area, and includes the prehistoric, ethnohistoric, and historic settings. Previous archaeological research conducted in the area is also included. The discussion that follows is a summary describing how relevant investigations in the general region have contributed to the current understanding of past cultural history.

2.1 Environmental Setting

This section describes the natural and cultural setting of the area surrounding the Project Area. The area is within the western portion of the Colorado Desert, which is also part of the larger Sonoran Desert. The area is located between the Colorado River on the east, the Yuha Desert on the west, the Salton Sea to the north, and the U.S.-Mexico International Border to the south. Three Native American groups are associated with this area and include the Quechan, Cocopah, and Kumeyaay. Euro-American occupation of the area has also altered the cultural landscape through processes of travel, settlement, mining, and military operations.

The area surrounding the Project Area is located in the Western Colorado Desert Region, which is a southwestern sub-region within the larger Sonoran Desert. The current climatic conditions for the Colorado Desert includes dry, mild winters and dry, hot summers. Mean winter lows of 44°F and a mean summer temperature of 104°F are typical, with record highs of 120°F. Summer storms are not unusual, but most precipitation falls in mid-winter. The Colorado River was the most reliable and abundant source of water in the area; however, in the past the River changed course and discharged into the Borrego sink and formed a freshwater lake today known as Ancient Lake Cahuilla with high stands of 40 feet (12 m) AMSL (Noah and Gallegos 2008). Other water sources would have included the New River and the Alamo River, both of which flow from the Mexicali Valley in Baja California, into the Salton Sea in California. These river courses as they run today were created in 1904; however, there is reference to the New River in Garcés' diary of the Anza 1775 expedition (Gifford 1931:2), as well as both rivers as sloughs off of the Colorado River by which, water entered the valley (Gifford 1931:4). Some minor water sources included major washes, sandy aquifers that produced perennial springs (Schaefer et al. 1987), and desert pans that may potentially have provided a short-term water source following rains.

The topography in the Project Area is relatively flat, and in open desert is crossed by a series of braided washes. The Gen-tie Line alternatives traverse habitats with vegetation that includes creosote, ocotillo, brittle bush, ephedra, and white bursage as well as other native annuals and grasses. A late June 1904 account by Dutch botanist Hugo de Vries describes the Imperial Valley desert in the early 20th century as appearing level to the eye (van der Pas 1976). Far to the east of Imperial he had observed rows of sand dunes, and he described them as separated from the fertile silt deposits by a white, sandy plain, not unlike a former beach. He described the original desert soil as hard clay, covered by a hard crust. He also found that where the crust has been broken and

crushed by carts or footsteps, the clay is very fine and will blow away in the wind. Much of his botanical information was gathered near and at the New River prior to its current configuration, which changed in the autumn of 1904 just months after his visit. De Vries notes that the plain was not completely bare as he observed saltbushes on either sides of the river. He identified three species of *Atriplex* (*A. lentiformis*, *A. polycarpa*, *A. canescens*), as well as mesquite (*Prosopis juliflora* var. *glandulosa*) a short distance away. He mentions that creosote bushes (*Larrea tridentata*) increase in number near the “rivulet” (New River). On the floor of the canyon of the New River there were remnants of a rich vegetation of small annuals, half dry grasses and many dry stems of Peppergrass (*Lepidium lasiocarpum*), a late specimen of a “desert heliotrope”, and Chinese Pusley (*Heliotropum curassavicum*). Close to the New River there were many green plants, erect and with vertical branches, silver-white Chachimilla or Arrow-root (*Pluchea serica*) and a red flowering species of *Baccharis*. All these plants had narrow and long leaves of equal size and, if they had not carried flowers, he would have called all of them willows (van der Pas 1976).

The plants de Vries observed along the canals included wild purslane (*Sesamum portulacastrum*), a few tender alkali grasses (*Leptochloa imbricata*), specimens of *Carex* and *Cyperus* of the Common Cockle bur (*Xanthium commune*), *Blitum* (*Chenopodium?*), Milk thistle, and many others, apparently imported as contaminations of agricultural seeds. In the canals, he noticed cat-tails (*Typha latifolia* and *T. angustifolia*), some of them so numerous that they narrowed the canals (van der Pas 1976).

2.2 Archaeological Setting

The history of archaeological research in the Colorado Desert goes back to the 1930s and the works of Malcolm Rogers. The culture history of the area is largely based on his work in many parts of the Colorado and Sonoran deserts, but it often relied on sites that were marginal to the main occupation on the Colorado River (Rogers 1939, 1945, 1966). Rogers established the first systematic culture history and artifact typologies of the Colorado Desert during the course of more than 40 years of field investigations. His investigations of San Dieguito and Archaic flaked stone tools and settlement patterns (Rogers 1929, 1939, 1958, 1966) and of Yuman ceramics and culture history (Rogers 1936, 1945) have been built upon over the years but they remain the foundation of current archaeological research in the area. Also included in this early period of basic archaeological research is Schroeder’s examination of lower Colorado River sites (Schroeder 1952, 1979). Schroeder developed a cultural sequence that emphasized the similarities of the Colorado River assemblages with the upland areas of western and central Arizona, lumping a number of cultural patterns into the concept of the Hakataya, an expanded version of what Rogers referred to as Yuman (Schroeder 1979).

The majority of research has occurred over the last 30 years and has been from projects sponsored by government agencies for compliance with state and federal antiquities laws or CEQA compliance on private developments. Independent research has also been conducted at

the Imperial Valley College, and at the University of California, Riverside for doctoral dissertations. Numerous syntheses (Weide 1974, E. Warren et al. 1981, McGuire and Schiffer 1982) have also been prepared to address the question of settlement patterns of the Colorado Desert region.

Cultural Periods and Patterns

The archaeological record has provided evidence of six successive periods that may be defined for the Colorado Desert, extending back in time over a period of at least 12,000 years. They are: (1) Early Man (Malpais); (2) Paleoindian (San Dieguito); (3) Archaic (Pinto and Amargosa); (4) Late Prehistoric (Patayan); (5) Ethnohistoric and Historic Native American occupation; and (6) Historic Euro-American occupation.

Early Man (Malpais) Period (50,000-12,000 years B.P.)

The Malpais Pattern is represented by a complex of archaeological material hypothesized to date from 50,000 to 12,000 years B.P. (Begole 1973, 1976; Davis et al. 1980; Hayden 1976). This term was originally used by Malcolm Rogers (1939, 1966) for ancient-looking cleared circles, tools, and rock alignments. He later classified this period as San Dieguito I. The term continued to be applied to heavily varnished choppers and scrapers found on desert pavements of the Colorado, Mojave, and Sonoran deserts that were thought to predate the Paleoindian period of projectile point makers. Dating methods remain extremely subjective and evidence for this period has been attacked on numerous grounds (McGuire and Schiffer 1982:160-164). Early settlement of the Colorado Desert is further questioned by the redating of the "Yuha Man." Originally dated to over 20,000 years B.P. based on radiocarbon analysis of caliche deposits, more reliable dates of actual bone fragments based on the accelerator mass spectrometer (AMS) method now place the burial at about 5,000 years B.P. (Taylor et al. 1985).

Paleoindian Period (San Dieguito) (12,000-7,000 years B.P.)

Most of the non-ceramic lithic assemblages, rock features, and cleared circles in the general region have been assigned to the San Dieguito complex, Phase III. In fact, many of the sites in the entire Colorado Desert are assumed to be San Dieguito. Malcolm Rogers first defined the San Dieguito complex based on surface surveys in the Colorado and Sonoran deserts, but later refined his constructs with excavated material from the C. W. Harris site, a few kilometers up the San Dieguito River from the Pacific coast in San Diego County, California (Rogers 1939, 1966). Current concepts defining the lithic technology of the San Dieguito complex are based on percussion-flaked cores and the resulting debitage, with little or no evidence of pressure flaking during the first two phases. The San Dieguito III phase tool kit is more diverse with the introduction of fine pressure flaking. Tools include pressure-flaked blades, leaf-shaped projectile points, scraper planes, plano-convex scrapers, crescentics, and elongated bifacial knives (Rogers 1939, 1958, 1966; Warren and True 1961; Warren 1967). Various attempts have also been made to seriate cleared circles into phases but a convincing chronology has not been developed (Pendleton 1984).

The San Dieguito “culture,” is a hunter-gatherer adaption consisting of small mobile bands exploiting small and large game and collecting seasonally available wild plants. The absence of milling tools from any complex had been seen as reflecting a lack of hard nuts and seeds in the diet, and as a cultural marker separating the San Dieguito culture from the later Desert Archaic culture (Moratto 1984; Rogers 1966; Warren 1967); however, portable manos and metates are now being increasingly recognized at coastal sites radiocarbon dated in excess of 8,000 B.P. and in association with late San Dieguito (III) adaptation. In addition, Pendleton (1984:68-74) notes that in the Colorado Desert, most ethnographically documented pounding equipment for processing hard seeds, wild mesquite, and screwbeans was made out of wood and does not preserve in the archaeological record. If milling and pounding tools from earlier time periods were also made from wood, they would rarely be preserved at open sites.

Archaic Period (Pinto and Amargosa) (7,000-1,500 years B.P.)

The Pinto Complex and the Amargosa Complex are considered regional specializations within the existent hunting and gathering adaptations characterizing the Archaic period (Campbell and Campbell 1935). These complexes are primarily found in the northern Great Basin, Mojave Desert, and in the Sonoran Desert east of the Colorado River. Few Pinto or Amargosa (Elko series) projectile points have been identified on the desert pavements of the Colorado Desert. It has been suggested that the environment in the California deserts was unstable during these time periods, particularly during the period between 7,000 and 4,000 years B.P. It is thought that this instability forced the mobile hunter-gatherers into more hospitable regions (Crabtree 1981; Schaefer 1994; Weide 1974). Some late Archaic sites are known to occur; however, indicating occupations along the boundary between the low desert and Peninsular Ranges and at more favored habitats at springs and tanks. Archaic period deposits have been excavated in Indian Hill Rockshelter in Anza-Borrego Desert State Park (McDonald 1992), Tahquitz Canyon near Palm Springs (Bean et al. 1995), and the north Lake Cahuilla shoreline (Love 1996).

Late Prehistoric Period (Patayan) (1,500-100 years B.P.)

The Late Prehistoric period is divided into four phases, including a pre-ceramic transitional phase from 1,500 to 1,200 years B.P. The major characteristics that distinguish this period from earlier periods are the introduction of pottery making by the paddle-and-anvil technique and bow-and-arrow technology around 1,200 years B.P. and the introduction of floodplain agriculture about the same time (Rogers 1945). Exact dating of early domesticates is lacking (Schroeder 1979). Both these technological advancements are thought to be introduced from either Mexico or through the Hohokam culture of the Gila River (McGuire and Schiffer 1982; Rogers 1945; Schroeder 1975, 1979). The flooding of Lake Cahuilla, referred to above, corresponds to Patayan II, 950-300 years B.P. Previous studies suggested that the final recession of Lake Cahuilla occurred around A.D. 1500; however, recent research provides support for a fifth in-filling between A.D. 1600 and 1700 (Laylander 1997; Schaefer 1994). Between A.D. 1000 and 1700, there appears to be a shift in focus from the Colorado River floodplains to a more mobile, diversified resource procurement pattern with increased travel between the

Colorado River and Lake Cahuilla (Pendleton 1984). Long-range travel to special resource collecting zones and ceremonial locales, trading expeditions, and possibly some warfare are reflected by the numerous trail systems throughout the Colorado Desert. Sites associated with these trails include pot drops and trail-side shrines (McCarthy 1982, 1993).

Native American Ethnohistoric and Historic Occupation (450-100 years B.P.)

Syntheses have been prepared for the ethnohistorically documented tribes including the Quechan (Bee 1981, 1983, 1989; Forbes 1965; Forde 1931), the Cocopah, and the Kamia-Kumeyaay. An important and detailed discussion of Yuman ethnobotany, agriculture, and land use patterns has been compiled by Castetter and Bell (1951), with additional summaries by Pendleton (1984) and Woods (1982), and a summary of Colorado Desert ethnographies by Knack (1981). Quechan oral history also establishes their residence in this location since a migration after the beginning of creation. The Imperial Valley was shared among several tribes long before non-Natives arrived on this continent, and the prehistory of socio-political relationships between those tribes are difficult to read. Modern researchers rely upon the oral histories of tribes to get a glimpse of those relationships and try to reconstruct some of the socio-political dynamics of the valley if we are fortunate enough to get an interview to hear the oral history.

Until very recently (late 2007) anthropologists have argued the Bering Strait “multiple waves” migration hypothesis, which put modern Native American tribes in North America anywhere between 17,500 to 6,000 years ago. There has not been any definitive evidence to link the Paleoindian Tradition occupants to the later inhabitants of the Colorado Desert area, hence, the San Dieguito “culture” and periods and complexes based on artifactual materials; however, recent DNA evidence has now added support for a single migration and population of North and South American as early as 30,000 years ago (PLoS 2007). It is notable that archaeological and anthropological theory, and tribal oral histories that place ethnohistoric tribes in the area is currently supported with DNA evidence.

The Kamia and Kumeyaay

The Kamia were also known as the Kamya, Comeya or Quemaya (Kroeber 1925). Gifford (1931) places their territory in Imperial Valley, where they resided sometimes on the west bank of the Colorado River in Yuma Territory (near Algodones and Dieguenos, Lower California). Both Kroeber (1925) and Gifford (1931) agree on the ethnohistoric description of Kamia territory as described by Garcés in 1775: “...began at the mountains, in latitude 33°08’, some 100 miles to the northwest of the mouth of the New River in northeastern Lower California, and extended as far as San Diego.” Again, both Kroeber (1925) and Gifford (1931) appear to be in agreement regarding Kamia settlement patterns and socio-political relationships in the valley. The Kamia residing closer to the river bank and sloughs closely resembled the Yuma in that they farmed (Kroeber 1925). They had no permanent settlements, but would move from settlement to settlement. They would plant crops in one place and gather wild vegetables and plants in another (Gifford 1931). The Kamia residing further west of the river more closely resembled the Diegueno in settlement and non-agricultural subsistence patterns (Kroeber 1925, Gifford 1931).

Prior to European settlement Kumeyaay territory extended from the Colorado Desert to the Pacific Ocean, north to Warner Springs and south to Ensenada in Baja California (Pico 2000). According to Carrico (1985), the Indian population was approximately 20,000 in San Diego at the time of Spanish arrival in 1769. By Kroeber's (1925) standard this figure is considered high; however, the archaeological and early historical records gives supporting evidence that the Kumeyaay were not "simple or typical hunters and gatherers" (Carrico 2008). The early historical records provided documentation how they controlled the vegetation through fire management; and they moved from one environmental zone to another on a regular seasonal basis in order to collect large and varied quantities of food.

The Yuman-speaking Kumeyaay people were autonomous, self-governing bands or clans and had clearly defined territories that included individual and collectively owned properties. According to Pico (2000), a band's territory extended anywhere from 10 to 30 miles, along a stream and tributaries. It included trails, shared hunting, religious, ceremonial and common gathering areas. The Kumeyaay united in defense of their territory and communicated by foot couriers. Throughout this vast area trails were forged by the Kumeyaay through the mountains, deserts and river valleys for trading, gathering for funerals, marriages and competitive games with each other and neighboring nations.

The Colorado River Peoples: The Quechan and Cocopah

The first historic accounts of the traditional inhabitants of the lower Colorado River were made by Spanish and, later, American explorers. These groups were successful in keeping Spanish missionaries out of their territory and their relative spatial and cultural isolation from Euro-Americans for a long period, allowed them to maintain their language, religion, and cultural practices to a much greater degree than most coastal California groups. The early ethnographers in the period between 1900 and 1950 were able to record a rich oral literature and reconstruct pre-contact lifeways to a considerable degree. The Lower Colorado River area was one of shifting tribal territory and tribal boundaries in ethnohistoric times due to inter-tribal warfare (Forbes 1965). When Díaz and Alarcón sailed up the lower Colorado River in 1540 the scene he observed was one of incessant warfare.

The focus on riverine subsistence resources encouraged a mixed foraging way of life for the river Yumans; small-scale agricultural practices supplemented foods procured by seasonal rounds of hunting, fishing, and gathering. According to Bee (1983), the Mohave relied more heavily on agriculture than did the Cocopah or the Quechan. In their study of Yuman agricultural strategies, Castetter and Bell (1951) estimated that about half of the Mohave diet derived from farming. They estimated that the Cocopah, by contrast, derived only about 30 percent of their diet from agriculture because of greater access to a diversity of habitats; the Quechan (and presumably Halchidhoma) diet was somewhere between the two groups (Bee 1983). Cultivated crops included maize, beans, squash, melon, and various semi-wild grasses. The river Yumans used more than 75 wild plant foods as food sources, the most important being mesquite and screwbean. The primary source of dietary protein came from fish caught in the Colorado River.

Among the more important species were the humpbacked sucker and Colorado pike minnow. Regularly hunted game included small mammals such as rabbits, squirrels, and pack rats. Larger game included deer and bighorn sheep.

Historic Euro-American Periods

The following includes a summary of extensive historical research conducted by Van Wormer (2008). It discusses the last two centuries of Euro-American history and focuses on those periods where cultural resources are likely to be found in the survey area and include various types of historic activities that have occurred within the study area including exploration and transportation, and farming.

Exploration and Transportation

The area was visited as early as 1540 by Hernando de Alarcon, discoverer of the Colorado River. The next Spaniard to enter the desert area in vicinity of the Survey area was Lt. Pedro Fages of the San Diego Presidio. He traveled east with three soldiers on October 29, 1772, in pursuit of army deserters. They followed Native American trails across the Cuyamaca Mountains and the desert via Oriflamme Canyon, Mason Valley, and the Carrizo wash. Fages would travel this route two more times, in 1782 and 1785. He discovered many of the points along the Carrizo Corridor that would later become landmarks on the overland trail, including the marshes and springs at Carrizo Creek, Palm Springs, and Vallecito. Continuing southeast into the desert, Fages' route joined the Anza Trail, established in 1776 between Sonora and San Gabriel Mission (Ives 1975; Lindsay 2001; Rensch 1955).

The first Anza expedition through present-day Imperial and eastern San Diego counties was the path finding and colonizing journey led by Juan Bautista de Anza. The journey began in the spring of 1774. Their first camp in present-day Imperial Valley was made on March 8, 1774, at Santa Rosa de las Lajas, located approximately seven miles south of present-day Plaster City near Yuha Spring (Lindsay 1973; Pourade 1960). Located 17 miles west of El Centro, California, Plaster City is an unincorporated community with a large gypsum quarry and plant owned and operated by United States Gypsum. The next camp was made the following night in an area approximately five miles north of the current location of Plaster City. On March 10, the party arrived at San Sebastian, a large marsh located on San Felipe Wash, near its junction with Carrizo Creek near present-day Harper's Well. The group continued northwest, crossing the course of current Highway 78, four miles east of the present community of Ocotillo Wells. They continued to follow San Felipe Creek, then rounded Borrego Mountain and camped near an alkali sink to the west of the mountain below the Borrego Badlands at a place Anza named San Gregorio (Lindsay 1973; Pourade 1960). After resting for a day the party continued their northwesterly trek, crossing Borrego Valley and entering Coyote Canyon where they found a spring christened Santa Caterina. The expedition followed the canyon out of the desert through San Carlos Pass, and continued on to the San Gabriel Mission (Lindsay 1973; Pourade 1960).

The following year Anza was ordered to take a group of colonists overland to California, and this second Anza expedition included 240 members (30 soldiers [29 of which were accompanied by their wives], four additional families, and 115 children). The expedition included herders, interpreters, muleteers, servants, 20 army recruits, 140 pack mules carrying clothing, food and four casks of brandy, 450 saddle horses and riding mules, and 355 cattle. Missionary Pedro Font chronicled the journey (Bolton 1930).

The Southern Overland or Gila Trail became a major thoroughfare for emigrants and livestock herds from 1848 through the mid-1870s. Beginning with the Mexican-American War of 1846-1848, until the completion of the Southern Pacific and Santa Fe Railroads in the mid-1870s, the San Felipe and San José Valleys became part of a major corridor for overland migration and communication along the Gila River route to California. It was initially used for military expeditions and followed earlier trails established by Spanish and Mexican explorers and Santa Fe traders. Invading American armies marching to California establishing the overland trail through Arizona along the Gila River to where it joined the Colorado River at present-day Yuma, Arizona (Trafzer 1980). From the junction of the Gila and Colorado Rivers, the trail followed an already well-established route across the Colorado Desert and northward along the east side of the peninsular range through the San Felipe Valley, Warner's Pass, and San José Valley. The route became well used by traders and trappers who journeyed between California and Sonora in the 1830s. During the 1840s and 1850s, invading American armies followed the route to California during the Mexican-American War, followed by thousands of Gold Rush immigrants. Then, in 1857, overland mail service was established along the trail. It was the First Transcontinental Overland Mail Route, originally the James E. Birch route (1857), from El Paso to Yuma. This stage was to run twice a month with stops in the San Diego region that included Old Town San Diego, Mission San Diego, the Ames Ranch at Flinn Springs, the Williams Ranch near Alpine, Julian Sandoval's ranch near Descanso, Lassator Ranch near Green Valley, and through the Cuyamaca Mountains to Vallecito (HCFDL 1988:21-23). Birch met an untimely death at sea and the route was taken over by John Butterfield the same year, and in 1858 he began running weekly stage routes that continued until 1861 as the Los Angeles, San Diego, and San Antonio Mail Line or as we casually call the Butterfield Stage Route (Mitchell 2010). Stage routes were later followed by the Plank Road in 1912 that ran west to San Diego County, Highway 80, and the Lee Highway.

Farming

As early as 1890, settlers began to enter the Imperial Valley of California. Prior to this, many settlers and travelers passed through the valley on their way to San Diego or Los Angeles from Ft. Yuma on the Colorado River. People viewed the Imperial Valley as a barren waste-land that was subject to instant flooding and plagues of insects in addition to arid land and scorching heat throughout the year (Bates 1970). A few settlers started the town of Imperial, and by 1900 many more settlers entered the valley and began to farm the land; however, no real development took place until water was brought into the area in 1901. This occurred with the construction of the

Alamo Canal, which was a 4 mile-long waterway that connected the Colorado River to the head of the Alamo River. The canal was constructed in 1901 to provide irrigation to the Imperial Valley. A small portion of the canal was located in the United States but the majority of the canal was located in Mexico. The Alamo Canal is also known as the Imperial Canal (Gupta 2007:208), and by 1903 hydroelectric power was being harnessed as well. By 1904 the City of Imperial was officially formed. In 1905 there were a series of floods that diverted the Colorado River into the valley and the Salton Sea was formed. Imperial County, originally part of San Diego County, was founded August 7, 1907. The same year the cities of El Centro, Brawley, and Holtville were also formed.

By the mid-1920s 500,000 acres in Imperial Valley were being irrigated. In 1934 construction began on a new irrigation canal system for the valley that would be primarily on U.S. soil, the All-American Canal, which was completed in 1940. The population by this time had grown to more than 61,000 in Imperial Valley. In the 1950s and 1960s farmers were encouraged to level and tile their fields, and install concrete ditches. In 1950 there were approximately 1,550 farmers, today there are approximately 500 farmers in Imperial Valley.

The Project Area parcels had several occupants beginning in 1911 (Table 2). Ida F. Seifert purchased 160 acres in 1911 under the Land Patent Act of 1820. The sale of public land was governed by the Land Act of 1820, and it is often called the "Cash Act" since it eliminated the previous practice of selling land on credit. Instead, parcels were sold at a set price of \$1.25 per acre, payable in full at the time of purchase. Between 1910 and 1921 there was a tremendous growth in agriculture endeavors in the surrounding area. Land was purchased under the cash act, as well as the Desert Land Act of 1877 and the Homestead Act of 1862. The Desert Land Act was passed by the United States Congress on March 3, 1877 to encourage and promote the economic development of the arid and semiarid public lands of the Western United States. Through the Act, individuals could apply for a desert-land entry to reclaim, irrigate, and cultivate arid and semiarid public lands. The act offered 640 acres of land to an adult married couple who would pay \$1.25 an acre and promise to irrigate the land within 3 years. A single man would only receive half of the land for the same price. The Homestead Act gave an applicant freehold title to up to 160 acres of undeveloped federal land outside the original 13 colonies. The law required three steps: file an application, improve the land, and file for deed of title. Anyone who had never taken up arms against the U.S. government, including freed slaves, could file an application and evidence of improvements to a federal land office. The occupant also had to be 18 or older and had to live on the land for five years. The original Homestead Act was signed into law by President Abraham Lincoln on May 20, 1862; however, much of the prime low-lying alluvial land along rivers had been homesteaded by the turn of the twentieth century, a major update called the Enlarged Homestead Act was passed in 1909. It targeted land suitable for dry-land farming, increasing the number of acres to 320.

The private land patents within the study area that could be traced online, excluding the Imperial Irrigation District, totaled 68 (Table 2). Four are less than 10 acres and include lands purchased through the Cash Act (George T. Edwards 1917; Harry E. Davis 1920; Irwin Rubenstein, George J. Nigro 1954), and acquired through the Homestead Act (Hulda H. Vaughn, Dennis Sullivan 1915). Three 10-20 acre parcels were acquired under the Cash Act (Robert M. Davies 1915), the Homestead Act (Gustav E. Koch, Montgomery Auble 1916), and the Desert Land Act (Moses H. Widner, Edward F. Donnelly 1919).

Eleven of the land patents range from 39.57 acres to 80 acres and include lands purchased under the Cash Act (n=7), Homestead Act (n=2), and Desert Land Act (n=2) between 1913 and 1919 (Table 2). Fourteen land patents range from 80 to 120 acres and include lands purchased under the Cash Act (n=7), Homestead Act (n=1), and Desert Land Act (n=6) between 1912 and 1953 (Table 2). Thirty-seven land patents range from 125 to 320 acres and include lands purchased under the Cash Act (n=31), Homestead Act (n=2), and Desert Land Act (n=4) between 1911 and 1950 (Table 2).

Many of the private land patents were acquired early in the first quarter of the 20th century and tapered off toward the middle of the 20th century (Table 2).

| Table 2. Bureau of Land Management General Land Office Search Results | | | | | | |
|---|------------------------------|------------|----------|--|------------|---|
| BLM Serial No. | Name | Issue Date | Acres | Aliquot Parts | Sect/Block | Authority |
| T16S/R12E | | | | | | |
| CALA 0014984 | Arthur E. Frampton | 1/24/1914 | 160 | Lot/Trct 98 | 3 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0006597 | Mollie E. Edgar | 1/30/1914 | 234.27 | S½SE¼ SE¼SW¼ | 3 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004748 | Blanche E. Edgar | 10/29/1914 | 240 | SW¼SW¼ | 3 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0011007 | Emily Edgar | 1/4/1915 | 40.83 | Lot/Trct 10 | 3 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0011006 | James A. Marshall | 1/14/1915 | 144.2 | Lot/Trct 296 | 3 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004747 | Mabel Clare Edgar | 1/20/1915 | 240 | S½NW¼ NW¼SW¼ | 3 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CAEC 0002746 | George T. Edwards | 7/27/1917 | 8.73 | Lot/Trct 2 | 3 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0040448 | George T. Edwards | 1/21/1931 | 157.29 | Lot/Trct 1 | 3 | May 20, 1862: Homestead EntryOriginal (12 Stat. 392) |
| CACA 014357 | Imperial Irrigation District | 8/21/1984 | 17.8 | Lot/Trct 4 | 3 | October 21, 1976: Sale-Public Lands-FLPMA (90 Stat. 2743) |
| CACAAA 000001 9G | State of California | 3/2/1857 | 19927.98 | Lot/Trct 49 Lot/Trct 81 Lot/Trct 107 | 21 | March 3, 1853: California Enabling Act (10 Stat. 244) |

| Table 2. Bureau of Land Management General Land Office Search Results | | | | | | |
|---|---|------------|---------|--|------------|--|
| BLM Serial No. | Name | Issue Date | Acres | Aliquot Parts | Sect/Block | Authority |
| CACAAA 016154 02 | State of California | 4/13/1901 | 1785.65 | Lot/Trct 80 | 21 | January 21, 1927: Indemnity Selections (44 Stat. 1022) |
| CACAAA 013832 01 | State of California | 10/22/1910 | 2316.55 | Lot/Trct 82 | 21 | January 21, 1927: Indemnity Selections (44 Stat. 1022) |
| CALA 0005086 | Henry S. Jernigan, George W. Stephenson | 7/17/1913 | 160 | Lot/Trct 81 | 21 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001608 | Milton P. Adams | 2/6/1914 | 160 | SE $\frac{1}{4}$ SE $\frac{1}{4}$ | 21 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004706 | Hulda H. Vaughn | 10/30/1914 | 137.04 | Lot/Trct 8 Lot/Trct 9 | 21 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004707 | Mary Koch | 12/7/1914 | 55.86 | Lot/Trct 2 Lot/Trct 3 Lot/Trct 4 Lot/Trct 5 | 21 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0015248 | Alva T. Vaughn | 9/5/1916 | 103.74 | SE $\frac{1}{4}$ SW $\frac{1}{4}$ Lot/Trct 10 Lot/Trct 6 Lot/Trct 7 | 21 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0023445 | Gustav E. Koch, Montgomery Auble | 10/21/1916 | 13.88 | Lot/Trct 1 | 21 | May 20, 1862: Homestead EntryOriginal (12 Stat. 392) |
| CACAAA 020122 01 | State of California | 7/6/1917 | 1901.86 | Lot/Trct 79 | 21 | January 21, 1927: Indemnity Selections (44 Stat. 1022) |
| CAEC 0003328 | Alice Irene Wells, Edward F. Donnelly | 3/1/1919 | 49.67 | Lot/Trct 11 Lot/Trct 12 Lot/Trct 13 | 21 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CAEC 0003339 | Moses H. Widner, Edward F. Donnelly | 6/3/1919 | 13.9 | Lot/Trct 15 | 21 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CAEC 0004146 | Harry E. Davis | 6/5/1920 | 5.65 | Lot/Trct 14 | 21 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0000513 | Ida F. Seifert | 3/9/1911 | 160 | Lot/Trct 50 | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0000066 | Jennie E. Scott | 2/11/1913 | 95.31 | Lot/Trct 54 | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001106 | George H. Woolliscroft | 2/11/1913 | 40 | Lot/Trct 52 | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CACAAA 018651 02 | State of California | 5/14/1913 | 3453.79 | Lot/Trct 78 | 22 | January 21, 1927: Indemnity Selections (44 Stat. 1022) |
| CALA 0001198 | Arthur Ewens | 5/19/1913 | 160 | Lot/Trct 55 | 22 | May 20, 1862: Homestead EntryOriginal (12 Stat. 392) |
| CALA 0001769 | Arthur Ewens | 8/28/1913 | 159.99 | Lot/Trct 53 | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001608 | Milton P. Adams | 2/6/1914 | 160 | SW $\frac{1}{4}$ SW $\frac{1}{4}$ | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0006635 | Elliott McMullan | 2/12/1914 | 39.57 | Lot/Trct 1 | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |

| Table 2. Bureau of Land Management General Land Office Search Results | | | | | | |
|--|--|-------------------|--------------|---|-------------------|--|
| BLM Serial No. | Name | Issue Date | Acres | Aliquot Parts | Sect/Block | Authority |
| CALA 0018136 | Peter J. Storms, Marshal S. Phillips | 4/28/1914 | 40 | Lot/Trct 56 | 22 | May 20, 1862: Homestead Entry Original (12 Stat. 392) |
| CALA 0002130 | Roy Carlisle Holbrook | 6/29/1916 | 87.96 | SW ¹ / ₄ NW ¹ / ₄ Lot/Trct 3 Lot/Trct 4 Lot/Trct 5 | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CACAAA 020122 01 | State of California | 7/6/1917 | 1901.86 | Lot/Trct 204 Lot/Trct 79 | 22 | January 21, 1927: Indemnity Selections (44 Stat. 1022) |
| CAEC 0000748 | Edward F. Donnelly, Barbara P. Adams | 11/18/1918 | 86.33 | NW ¹ / ₄ SW ¹ / ₄ Lot/Trct 6 Lot/Trct 7 | 22 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0108323 | Irwin Rubenstein, George J. Nigro | 4/27/1954 | 0.43 | Lot/Trct 2 | 22 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001769 | Arthur Ewens | 8/28/1913 | 159.99 | Lot/Trct 53 | 26 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0014174 | William Ross Wright | 7/6/1914 | 160 | Lot/Trct 51 | 26 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0007219 | Maud Markwell, Halbert G. Littlejohn | 12/7/1914 | 199.99 | A, Lot/Trct 45 B, Lot/Trct 45 Lot/Trct 46 | 26 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004816 | Eugene Gannon | 2/8/1915 | 227.39 | Lot/Trct 292 | 26 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001952 | Nellie F. Minniear, Robert Barry, Daisy Calisher, Halbert G. Littlejohn | 6/1/1915 | 40 | Lot/Trct 289 | 26 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0000207 | Robert M. Davies | 6/29/1915 | 20 | Lot/Trct 291 | 26 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0000208 | Thomas W. Davies | 6/29/1915 | 158.67 | Lot/Trct 290 | 26 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004734 | David F. Harbison | 1/30/1917 | 159.58 | B, Lot/Trct 41 | 26 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0004735 | Carrie L. Harbison | 1/30/1917 | 177.48 | Lot/Trct 47 | 26 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CAEC 0000192 | Judson H. Payne | 1/20/1919 | 104.6 | Lot/Trct 293 | 26 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0000063 | Orville L. Snow, Otis Littlejohn | 3/11/1912 | 120 | E ¹ / ₂ SW ¹ / ₄ SW ¹ / ₄ SE ¹ / ₄ | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001769 | Arthur Ewens | 8/28/1913 | 159.99 | Lot/Trct 53 | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0011881 | Lorenzo Adams | 8/28/1913 | 120 | SW ¹ / ₄ NW ¹ / ₄ | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0014414 | Alexander Wixom | 11/26/1913 | 125.03 | SE ¹ / ₄ SE ¹ / ₄ Lot/Trct 5 Lot/Trct 7 | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001608 | Milton P. Adams | 2/6/1914 | 160 | NW ¹ / ₄ NW ¹ / ₄ | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |

| Table 2. Bureau of Land Management General Land Office Search Results | | | | | | |
|--|--|-------------------|--------------|--|-------------------|--|
| BLM Serial No. | Name | Issue Date | Acres | Aliquot Parts | Sect/Block | Authority |
| CALA 0007219 | Maud Markwell, Halbert G. Littleton | 12/7/1914 | 199.99 | B, Lot/Trct 45 | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0000939 | Nat R. Titus, Granville M. Boyer | 1/14/1915 | 75.8 | Lot/Trct 295 | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004816 | Eugene Gannon | 2/8/1915 | 227.39 | Lot/Trct 292 | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0007566 | Nora F. Warren | 3/19/1915 | 80 | SW $\frac{1}{4}$ SW $\frac{1}{4}$ | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0015129 | Charles Schultz | 6/29/1916 | 40 | NW $\frac{1}{4}$ SW $\frac{1}{4}$ | 27 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0011881 | Lorenzo Adams | 8/28/1913 | 120 | SE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ | 28 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0001608 | Milton P. Adams | 2/6/1914 | 160 | NE $\frac{1}{4}$ NE $\frac{1}{4}$ | 28 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CACAAA 000001 9G | State of California | 3/2/1857 | 19927.98 | Lot/Trct 81 Lot/Trct 107 | 28 | March 3, 1853: California Enabling Act (10 Stat. 244) |
| CALA 0039753 | Alice E. Liebert | 9/11/1925 | 80 | E $\frac{1}{2}$ SW $\frac{1}{4}$ | 28 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0007476 | Michael Liebert | 6/1/1915 | 160 | SE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ W $\frac{1}{2}$ SE $\frac{1}{4}$ | 28 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CAEC 0002292 | Joseph F. Nelson | 11/30/1920 | 120 | SW $\frac{1}{4}$ NW $\frac{1}{4}$ W $\frac{1}{2}$ SW $\frac{1}{4}$ | 28 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0004706 | Hulda H. Vaughn | 10/30/1914 | 137.04 | NE $\frac{1}{4}$ NW $\frac{1}{4}$ Lot/Trct 2 Lot/Trct 3 | 28 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0023849 | Hulda H. Vaughn, Dennis Sullivan | 10/27/1915 | 6.08 | Lot/Trct 4 | 28 | May 20, 1862: Homestead EntryOriginal (12 Stat. 392) |
| CALA 0007566 | Nora F. Warren | 3/19/1915 | 80 | SE $\frac{1}{4}$ SE $\frac{1}{4}$ | 28 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0004708 | John C. Vaughn | 4/22/1912 | 80 | NE $\frac{1}{4}$ NE $\frac{1}{4}$ | 33 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0000866 | Versie Nelson, Eugene G. Smith | 10/30/1912 | 80 | SE $\frac{1}{4}$ NE $\frac{1}{4}$ | 33 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0022900 | Ernest R. Stoll, Septimus E. Dykes | 9/16/1914 | 120 | SE $\frac{1}{4}$ SW $\frac{1}{4}$ W $\frac{1}{2}$ SW $\frac{1}{4}$ | 33 | May 20, 1862: Homestead EntryOriginal (12 Stat. 392) |
| CAEC 0001310 | John C. Cushman | 6/27/1919 | 40 | NW $\frac{1}{4}$ NE $\frac{1}{4}$ | 33 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0004708 | John C. Vaughn | 4/22/1912 | 80 | NW $\frac{1}{4}$ NW $\frac{1}{4}$ | 34 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0000866 | Versie Nelson, Eugene G. Smith | 10/30/1912 | 80 | SW $\frac{1}{4}$ NW $\frac{1}{4}$ | 34 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CALA 0014414 | Alexander Wixom | 11/26/1913 | 125.03 | NE $\frac{1}{4}$ NE $\frac{1}{4}$ | 34 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |

Table 2. Bureau of Land Management General Land Office Search Results

| BLM Serial No. | Name | Issue Date | Acres | Aliquot Parts | Sect/Block | Authority |
|---------------------|--|------------|--------|--|------------|--|
| CALA 0039580 | Ethel McArthur, Paul C. Ferrell | 8/21/1928 | 320 | SE ¹ / ₄ NE ¹ / ₄ E ¹ / ₂ NW ¹ / ₄ NE ¹ / ₄ SW ¹ / ₄ W ¹ / ₂ NE ¹ / ₄ N ¹ / ₂ SE ¹ / ₄ | 34 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0039059 | George O. Lien | 12/11/1953 | 80 | S ¹ / ₂ SE ¹ / ₄ | 34 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CALA 0020784 | Emmitt J. Smith | 12/20/1950 | 156.93 | NE ¹ / ₄ NE ¹ / ₄ Lot/Trct 1 Lot/Trct 2 Lot/Trct 3 | 35 | April 24, 1820: Sale-Cash Entry (3 Stat. 566) |
| CACAAA 017563 02 | State of California | 12/18/1916 | 538.89 | SE ¹ / ₄ NE ¹ / ₄ | 35 | January 21, 1927: Indemnity Selections (44 Stat. 1022) |
| CALA 0006826 | William A. McCune, Henry E. Clay | 1/18/1917 | 280 | SE ¹ / ₄ SW ¹ / ₄ N ¹ / ₂ SW ¹ / ₄ SE ¹ / ₄ | 35 | March 3, 1877: Desert Land Act (19 Stat. 377) |
| CACAAA 000509 02 | State of California | 7/23/1917 | 757.09 | S ¹ / ₂ NW ¹ / ₄ SW ¹ / ₄ NE ¹ / ₄ | 35 | January 21, 1927: Indemnity Selections (44 Stat. 1022) |
| CAEC 0002124 | Cedric E. Johnson, Alexander L. Conger, William H. McCuen | 3/12/1918 | 40 | SW ¹ / ₄ SW ¹ / ₄ | 35 | May 20, 1862: Homestead Entry Original (12 Stat. 392) |
| CAEC 0000192 | Judson H. Payne | 1/20/1919 | 104.6 | Lot/Trct 293 | 35 | March 3, 1877: Desert Land Act (19 Stat. 377) |

3. PREVIOUS INVESTIGATIONS

The previously recorded cultural resources and investigations conducted at the South Coastal Information Center (SCIC) and literature review in the vicinity of the survey area, and within a one mile buffer, were examined to determine if known cultural resources would be potentially impacted by the proposed Project. The records check revealed that 47 of the investigations have been conducted within one mile of the Project. Of these 47 investigations 6 of those are within or crossing the Project Area, primarily the (Table 3 – shaded).

Four of the six previous studies applicable to the Project Area were conducted between 1975 and 1980 (Ritter 1975; Gallegos 1979; Davis 1980; Wirth 1980), and are all linear projects (Figure 4, Appendix A). One study, also a linear study was conducted in 1993 for the Imperial Irrigation District East Lowline and Trifolium Interceptors Environmental Impact Report (IID 1993). The most recent study within the Project Area was the survey of a staging area for the Sunrise Powerlink Project by Gallegos and Associates (Noah and Gallegos 2008).

The records search identified a total of 139 previously recorded cultural resources within the private and public lands survey and buffer areas, 10 of which are recorded within the Project APE (Table 4 - shaded). All of the previously recorded cultural resources are historic resources. Two (CA-IMP-3404 and CA-IMP-3406) are segments of the Cross Wagon Road. The other eight historic resources are related to agriculture in the Imperial Valley, and include a portion of the Westside Main Canal (CA-IMP-7834); a portion of the Foxglove Canal (CA-IMP-8821); a portion of the Wormwood Canal (CA-IMP-8983); a portion of the Fern Canal and the Fern Drain (P-13-012689); a portion of the Forget-Me-Not Canal (P-13-012690); the Fern Check of the Westside Main Canal (P-13-012692); and a portion of the Fig Canal (P-13-012693) (Figures 5A and 5B – Confidential Appendix C).

| Table 3. Previous Investigations within One Mile of the Survey Area | | | | |
|--|-------------|----------------------------|--|---------------------------------|
| NABD | Year | Author | Project | Company |
| 1100199 | 1979 | Walker, Bull & Von Werlhof | Jade to the Sand Hills Cultural Resource Study | RECON |
| 1100203 | 1979 | Gallegos | East & West Mesa Class II Cultural Resource Inventory | Westec Services |
| 1100207 | 1980 | Davis | East & West Mesa Class II Cultural Resource Inventory | Westec Services |
| 1100210 | 1980 | Von Werlhof & McNitt | Archaeological Examinations of the Republic Geothermal Field, East Mesa | Imperial Valley College Museum |
| 1100213 | 1980 | Bull | Proposed Imperial Valley Substation Cultural Resource Survey | RECON |
| 1100233 | 1981 | Walker, Bull & Von Werlhof | Jade to the Sand Hills Cultural Resource Study | RECON |
| 1100235 | 1981 | BLM | APS/SDG&E Interconnection Supplement to Draft Environmental Document | Bureau of Land Management |
| 1100252 | 1981 | Schaefer | La Rosita to Imperial Valley Interconnection Project 230 kV TL Archaeological Survey Vol. II Appendix, Phase II | Cultural Systems Research, Inc. |
| 1100262 | 1982 | CSRI | Proposed Imperial Valley Substation Overview & Assessment | Cultural Systems Research, Inc. |
| 1100279 | 1982 | Shackley | Mountain Springs (Jade) to Sand Hills Portion of the APS/SDG&E Interconnection Project 500 kV TL Archaeological Survey, Phase II | Cultural Systems Research, Inc. |
| 1100289 | 1983 | Foster & Greenwood | La Rosita to Imperial Valley Interconnection Project 230 kV TL Cultural Resource Inventory | Greenwood & Associates |
| 1100301 | 1983 | Welch | Asset Management Parcels Cultural Resource Inventory | Welch |
| 1100307 | 1984 | Graves Engineering | Rio Bend RV Resort Ranch Environmental Impact Report | Graves Engineering |
| 1100311 | 1984 | Townsend | SWPL Cultural Resources Management Plan - Vol. II | Wirth Environmental Services |
| 1100313 | 1984 | Townsend | SWPL Cultural Resources Management Plan - Vol. I | Wirth Environmental Services |

| Table 3. Previous Investigations within One Mile of the Survey Area | | | | |
|--|-------------|------------------------------|---|---------------------------------|
| NABD | Year | Author | Project | Company |
| 1100316 | 1984 | Shackley | SWPL Mountain Springs (Jade) to Sand Hills Segment Data Recovery - Vol. 2 Appendices | Wirth Environmental Services |
| 1100319 | 1984 | Shackley | Western Colorado Desert Archaeological Investigations, Vol. 1 | Wirth Environmental Services |
| 1100325 | 1984 | Gallegos | West Mesa Cultural Resource Survey and Site Evaluation | Westec Services |
| 1100330 | 1985 | Schaefer | Camps and Quarries After the Lake: A Survey of 547 Acres Below the Relic Lake Cahuilla Shoreline in the Vicinity of Interstate 8 and Dunaway Road | Mooney-Lettieri and Associates |
| 1100459 | 1992 | REH Consultants | Rio Bend Specific Plan | REH Consultants |
| 1100460 | 1992 | Mooney Assoc. | Rio Bend Specific Plan Final Environmental Impact Report | Brian F. Mooney Associates |
| 1100477 | 1993 | Imperial Irrigation District | East Lowline and Trifolium Interceptors and Completion Projects Draft Environmental Impact Report | Imperial Irrigation District |
| 1100536 | 1979 | Burkendroad | APS/SDG&E Interconnection Environmental Study Cultural Resources: History, Phase 1 Regional Studies | David Burkenroad |
| 1100537 | 1979 | Wirth Assoc. | APS/SDG&E Interconnection Environmental Study Cultural Resources: Archaeology, Phase 1 Regional Studies | Wirth Associates, Inc. |
| 1100538 | 1979 | Imperial County | APS/SDG&E Transmission Interconnect Project, Miguel to Sand Hills, Sand Hills to PVNGS Proposed Workscope Phase II Cultural Resources Study | Imperial County |
| 1100547 | 1982 | CSRI | Mountain Springs (Jade) to Sand Hills Portion of the APS/SDG&E Interconnection Project 500 kV Transmission Line Draft Archaeological Research Design and Data Recovery Program for Cultural Resources | Cultural Systems Research, Inc. |
| 1100595 | 1982 | CSRI | Mountain Springs (Jade) to Sand Hills Data Recovery Preliminary Report | Cultural Systems Research, Inc. |

| Table 3. Previous Investigations within One Mile of the Survey Area | | | | |
|--|-------------|------------------------------------|--|--------------------------------|
| NABD | Year | Author | Project | Company |
| 1100608 | 1986 | Schaefer | Late Prehistoric Adaptations During the Final Recessions of Lake Cahuilla: Fish Camps and Quarries on West Mesa, Imperial County, California | Mooney-Levine and Associates |
| 1100773 | 1999 | Wallace Roberts & Todd | County of Imperial Bicycle Master Plan | Wallace Roberts & Todd |
| 1100906 | 2001 | BLM | EA for Presidential Permit Applications for Baja CA Power, Inc & Sempra Energy Resources | BLM |
| 1100960 | 2004 | BLM | DEIS Imperial-Mexicali 230 kV TLs | BLM |
| 1100980 | 2001 | Berryman | 230-kV Transmission Corridor Cultural Resource Survey from Imperial County, CA to the International Border with Mexico | RECON |
| 1100993 | 2006 | Wlodarski | Nextel Wireless Telecommunications Site CA8991C (Sunbeam:Kuhn 2) Cellular Archaeological Resource Evaluations | Wlodarski |
| 1101072 | 2001 | Berryman | Cultural Resource Treatment Plan: Two 230 kV TLs from Imperial Valley Substation to the International Border with Mexico | RECON |
| 1101073 | 2001 | Berryman | 230-kV Transmission Corridor Cultural Resource Survey from Imperial County, CA to the International Border with Mexico | RECON |
| 1101182 | 2001 | Yost, Mirro, Rhodes, Ing & Higgins | San Diego, CA to Yuma, AZ Final Report on Cultural Resource Monitoring Along the Level (3) Long Haul Fiber Optic Running Line | TRC |
| 1101228 | 2006 | SWCA | Cultural Resources Final Report of Monitoring and Finding for the Qwest Network Construction Project | SWCA Environmental Consultants |
| 1101275 | 1975 | Ritter | An Analysis of Cultural Resources Along the Proposed Yuha Desert ORV Courses | Ritter |
| 1101306 | 1980 | Wirth Assoc. | APS/SDG&E Interconnection Project Environmental Study Phase II Corridor Studies - Native American Cultural Resources Appendices | Wirth Associates, Inc. |

| Table 3. Previous Investigations within One Mile of the Survey Area | | | | |
|--|-------------|--------------------------------|--|---------------------------------|
| NABD | Year | Author | Project | Company |
| 1101308 | 1983 | Townsend | Southwest Powerlink Cultural Resources Management Plan (Draft) | Wirth Associates, Inc. |
| 1101311 | Various | Various | SDG&E La Rosita Line – Misc Documents | Various |
| 1101313 | 1980 | Wirth Assoc. | APS/SDG&E Interconnection Project (Phase II Corridor Studies) - Cultural Resources: Archaeology | Wirth Associates, Inc. |
| 1101315 | 1982 | Shackley | Mountain Springs (Jade) to Sand Hills Portion of the APS/SDG&E Interconnection Project 500 kV TL Vol II Confidential Technical Appendices, Phase III Archaeological Survey | Cultural Systems Research, Inc. |
| 1101330 | 2008 | SWCA | Sunrise Powerlink Project Final Cultural Resources Survey of Alternatives in Imperial, Orange, Riverside and San Diego Counties, CA | SWCA Environmental Consultants |
| 1101350 | 2008 | Noah & Gallegos | Sunrise Powerlink Project Final Class III Archaeological Inventory in San Diego and Imperial Counties, CA | Gallegos & Associates |
| 1101388 | 1981 | Olech | Yuha Basin Area of Critical Environmental Concern Management Plan | Bureau of Land Management |
| 1101433 | 2011 | Zepeda-Herman, Shultz, & Price | Class III Cultural Resources Survey for the Imperial Solar Energy Center South Project | RECON |

| Table 4. Previously Recorded Cultural Resources within One Mile | | | | | |
|--|---|--------------------------|----------------------|-------------------------|--|
| Site Number | Type | Age | Location | NRHP Eligibility | Comment |
| CA-IMP-1747 | Cross Indian Trail | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-1748 | Cross Indian Trail | | One-Mile Buffer | Insufficient Data | |
| CA-IMP-1749 | Cross Trail | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-1750 | Cross Trail | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-1751 | Cross Trail | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-1752 | Cross Trail | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-1753 | “Indian” Wells | Prehistoric/ Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-2481 | Isolate Metate Fragment | Prehistoric | One-Mile Buffer | Not Eligible | Collected & turned in to BLM (1978) |
| CA-IMP-3176 | Temporary Camp/Lithic Isolates | Prehistoric | One-Mile Buffer | Insufficient Data | Relocated in a different location than originally recorded |
| CA-IMP-3402 | Crossed Wagon Road (Ft Yuma-Warner Springs) | Historic | One-Mile Buffer | Not Eligible | “Most likely destroyed or covered by sand” |
| CA-IMP-3402 | Cross Wagon Road | Historic | One-Mile Buffer | Not Eligible | Destroyed due to cultivation |
| CA-IMP-3403 | Cross Wagon Road | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3404 | Cross Wagon Road | Historic | Proposed Project APE | Insufficient Data | |
| CA-IMP-3405 | South Shore of Big Laguna | - | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3406 | Crossed Wagon Road, N. of W. | Historic | Proposed Project APE | Insufficient Data | |
| CA-IMP-3407 | Wagon Road | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3408 | Cross Emigrant Trail | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3409 | Cross Wagon Road | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3410 | Cross Wagon Road to Indian Well | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3411 | Cross Wagon Road to Indian Well | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3412 | Cross Wagon Road | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-3790 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible | Potential for buried deposit (rodent burrow) |
| CA-IMP-3791 | Temporary Camp | Prehistoric | One-Mile Buffer | Insufficient Data | |

| Table 4. Previously Recorded Cultural Resources within One Mile | | | | | |
|--|-----------------------------------|-------------|---------------------------------------|--|---|
| Site Number | Type | Age | Location | NRHP Eligibility | Comment |
| CA-IMP-4503 | Trash Dump | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-4510 | Lithic Scatter | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2009 (Garcia-Herbst et al.) |
| CA-IMP-4518 | Temporary Campsite/Lithic Scatter | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Zepeda-Herman et al. 2011) |
| CA-IMP-4536 | Isolate Mano Fragment | Prehistoric | One-Mile Buffer | Not Eligible | Collected (CSRI 1981) |
| CA-IMP-4537 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| CA-IMP-4538 | Isolate Pottery Fragment | Prehistoric | One-Mile Buffer | Not Eligible | |
| CA-IMP-4539 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| CA-IMP-4540 | Temporary Camp | Prehistoric | One-Mile Buffer | Insufficient Data | Not relocated in 2010 (Bowden-Renna 2010) |
| CA-IMP-7834 | Westside Main Canal | Historic | Proposed Project & Non-BLM option APE | Recommended Eligible overall; however, some segments Not Significant | Part of the All-American Canal System |
| CA-IMP-8657 | Lithic Scatter & Ceramic Scatter | Prehistoric | One-Mile Buffer | Insufficient Data | |
| CA-IMP-8699 | Trash Scatter | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-8821 | Fox Glove Canal | Historic | Proposed Project APE | Recommended Not Eligible (URS 2009) | |
| CA-IMP-8983 | Wormwood Canal | Historic | Proposed Project APE | Some Segments Not Eligible | |
| CA-IMP-11439 | Trash Scatter | Historic | One-Mile Buffer | Insufficient Data | |
| CA-IMP-11440 | Lithic Scatter | Prehistoric | One-Mile Buffer | Insufficient Data | |
| CA-IMP-11443 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11444 | Lithic Scatter | Prehistoric | One-Mile Buffer | Insufficient Data | |
| CA-IMP-11445 | Lithic Scatter | Prehistoric | One-Mile Buffer | Insufficient Data | |
| CA-IMP-11448 | Lithic Scatter | Prehistoric | One-Mile Buffer | Insufficient Data | |
| CA-IMP-11449 | Lithic Scatter | Prehistoric | One-Mile Buffer | Insufficient Data | |
| CA-IMP-11450 | Lithic Scatter | Prehistoric | One-Mile Buffer | Insufficient Data | |

| Table 4. Previously Recorded Cultural Resources within One Mile | | | | | |
|--|----------------------------------|-------------|-----------------|--|----------------|
| Site Number | Type | Age | Location | NRHP Eligibility | Comment |
| CA-IMP-11469 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11473 | Lithic Scatter & Ceramic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11476 | Temporary Camp | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11479 | Lithic Scatter with Fire Hearths | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11481 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Not Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11482 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Not Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11483 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Not Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11484 | Lithic Scatter & Ceramic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11488 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Not Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11489 | Lithic Scatter & Ceramic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11490 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Not Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11494 | Temporary Camp | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |

| Table 4. Previously Recorded Cultural Resources within One Mile | | | | | |
|--|---------------------------------------|-------------|-----------------|--|---|
| Site Number | Type | Age | Location | NRHP Eligibility | Comment |
| CA-IMP-11497 | Lithic Scatter & Ceramic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11498 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11499 | Lithic Scatter & Ceramic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11500 | Lithic Scatter & Ceramic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11501 | Ceramic Scatter | Prehistoric | One-Mile Buffer | Recommended Not Eligible (Zepeda-Herman et al. 2011) | |
| CA-IMP-11502 | Lithic Scatter | Prehistoric | One-Mile Buffer | Recommended Eligible (Zepeda-Herman et al. 2011) | |
| P-13-001402 | Isolate Pottery Sherds | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Zepeda-Herman et al. 2011) |
| P-13-001403 | Isolate Pottery Sherds | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Zepeda-Herman et al. 2011) or 2011 (Mitchell 2011) |
| P-13-003792 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-004245 | Historic Dumpsite | Historic | One-Mile Buffer | Insufficient Data | |
| P-13-004355 | Isolate - Two Brown Chalcedony Flakes | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-004511 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-004512 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-004516 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Zepeda-Herman et al. 2011) |
| P-13-004517 | Isolate - Chalcedony Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-005297 | Isolate Flakes | Prehistoric | One-Mile Buffer | Not Eligible | Collected (Apple et al. 1982) |

| Table 4. Previously Recorded Cultural Resources within One Mile | | | | | |
|--|--------------------------------------|-------------|----------------------|-------------------------------------|---|
| Site Number | Type | Age | Location | NRHP Eligibility | Comment |
| P-13-005298 | Isolate Bifacial Mano | Prehistoric | One-Mile Buffer | Not Eligible | Collected (Apple et al. 1982) |
| P-13-005585 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | Collected (Foster and Greenwood 1983) |
| P-13-005586 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Zepeda-Herman et al. 2011) |
| P-13-005587 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Zepeda-Herman et al. 2011) |
| P-13-005588 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Zepeda-Herman et al. 2011) |
| P-13-005648 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | Collected (Gallegos 1984) |
| P-13-006683 | Isolate Scraping Tool | Prehistoric | One-Mile Buffer | Not Eligible | Collected (Gallegos 1984) |
| P-13-006684 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | Collected (Gallegos 1984) |
| P-13-009541 | Isolate Debitage | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Bowden-Renna 2010) |
| P-13-009542 | Isolate Debitage | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Bowden-Renna 2010) |
| P-13-009543 | Isolate Debitage | Prehistoric | One-Mile Buffer | Not Eligible | Not relocated in 2010 (Bowden-Renna 2010) |
| P-13-009726 | Isolate Pottery Sherd | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-009843 | Isolate Debitage | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-009861 | Isolate Mano Fragment | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-012688 | Dixie Drain Circle Culvert | Historic | One-Mile Buffer | Recommended Not Eligible (URS 2009) | Part of the All-American Canal System |
| P-13-012689 | Portion of Fern Canal and Fern Drain | Historic | Proposed Project APE | Recommended Not Eligible (URS 2009) | Part of the All-American Canal System |
| P-13-012690 | Portion of Forget-Me-Not Canal | Historic | Non-BLM option | Recommended Not Eligible (URS 2009) | Part of the All-American Canal System |
| P-13-012691 | Portion of Salt Creek Drain 2 | Historic | One-Mile Buffer | Recommended Not Eligible (URS 2009) | Part of the All-American Canal System |

| Table 4. Previously Recorded Cultural Resources within One Mile | | | | | |
|--|--|-------------|----------------------|-------------------------------------|---------------------------------------|
| Site Number | Type | Age | Location | NRHP Eligibility | Comment |
| P-13-012692 | Fern Check of the Westside Main Canal | Historic | Proposed Project APE | Recommended Not Eligible (URS 2009) | Part of the All-American Canal System |
| P-13-012693 | Portion of the Fig Canal | Historic | Proposed Project APE | Recommended Not Eligible (URS 2009) | Part of the All-American Canal System |
| P-13-012696 | Isolate Sherds | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013099 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013100 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013104 | Isolate Can | Historic | One-Mile Buffer | Not Eligible | |
| P-13-013105 | Isolate Glass Shard | Historic | One-Mile Buffer | Not Eligible | |
| P-13-013106 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013107 | Isolate Flakes | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013112 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013113 | Isolate Can | Historic | One-Mile Buffer | Not Eligible | |
| P-13-013114 | Isolate Bottle | Historic | One-Mile Buffer | Not Eligible | |
| P-13-013115 | Isolate - Amber Glass Shards from a bottle | Historic | One-Mile Buffer | Not Eligible | |
| P-13-013116 | Isolate Flakes | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013117 | Isolate Flakes | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013197 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013203 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013204 | Isolate Metate Fragment | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013205 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013206 | Isolate Pottery Sherds | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013207 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013208 | Isolate Mano | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013209 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013210 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013211 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013213 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013214 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013215 | Isolate Assay Cobble | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013216 | Isolate Core Tool | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013217 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013218 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013219 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013229 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013230 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |

| Table 4. Previously Recorded Cultural Resources within One Mile | | | | | |
|--|--------------------------------|-------------|-----------------|-------------------------|----------------|
| Site Number | Type | Age | Location | NRHP Eligibility | Comment |
| P-13-013242 | Isolate Assay Cobble and Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013243 | Isolate Assay Cobble | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013244 | Isolate Bifacial Assay Cobble | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013247 | Isolate Pottery Sherd | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013248 | Isolate Flakes | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013249 | Pot Drop | Prehistoric | One-Mile Buffer | Insufficient Data | |
| P-13-013250 | Isolate Pottery Sherd | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013255 | Isolate Pottery Sherd | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013256 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013269 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013274 | Isolate Pottery Sherds & FAR | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013275 | Isolate Cores & FAR | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013277 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013278 | Isolate Core | Prehistoric | One-Mile Buffer | Not Eligible | |
| P-13-013279 | Isolate Flake | Prehistoric | One-Mile Buffer | Not Eligible | |

4. RESEARCH DESIGN

The goal of this Class III archaeological inventory is to provide the County of Imperial and the Applicant with sufficient data to assess potential impacts to CRHR and NRHP eligible sites that would be affected by construction of the proposed Project. It is also to present the information as supporting technical documentation as part of the process for compliance with the NHPA.

This research design is to identify the distribution of cultural resources within the area of the Project, and to analyze their placement within the established cultural chronologies and contextual settings for the Colorado Desert study region. The cultural setting for the region has been presented in the previous section and will be applied comparatively to understand the relationship(s) in terms of chronology and/or context of the cultural resources identified within the vicinity of the Project survey area.

Additional research questions that can be addressed include those regarding chronology, subsistence, land-use patterns, contact and interaction between Native Americans and Europeans and Euroamericans, and historical-period occupation as provided below.

Chronology

Chronology is a key component in understanding the processes of cultural change. Sites located in the western Colorado Desert study region are primarily surface sites. Prehistoric residential sites do, however, have the potential for subsurface cultural deposits. Chronology in this area is a major research issue for the Colorado River drainage system and sites along the Ancient Lake Cahuilla shoreline. Short of reliable absolute dates from well-understood contexts, archaeologists in the past have been forced to rely heavily on artifact cross dating. Therefore, knowledge of the chronology of cultures in the region continues to change, and comprehension of regional cultural processes remains a work in progress. Key research questions are presented below.

Research Questions

- Can the sites yield information relating to established regional lithic and ceramic typologies?
- Can the ceramic chronology be further refined?
- Are there variations in the temporal framework in Yuman manifestations in relationship to the distance from the Colorado River area?

Data Requirements

In most areas of the western Colorado Desert, addressing issues of chronology requires samples suitable for absolute-dating analysis. Sample materials include botanical and faunal remains for radiocarbon dating, burned clay associated with cultural features for archaeomagnetic dating, and wood samples from specific species for tree-ring dating. Other, less-precise absolute-dating

methods include thermoluminescence and obsidian hydration analyses. Sites that can provide the kind of samples described above in interpretable contexts are rare in the archaeological record of the Colorado River area.

Subsistence

The western Colorado Desert is in a region of alternating mountains and plains, with major washes that were often the lifelines of the Yuman people; however, the Colorado River and Ancient Lake Cahuilla provided the most reliable source of water and subsistence during certain periods of time.

Paleoindian and Archaic foraging strategies changed to hunting and gathering cultures bound to floodplain resources, and progressed to floodplain-based, logistically organized horticultural societies that continued to exploit wild riparian and desert resources. For the horticulturalists, using wild resources minimized risk imposed by an agricultural adaptation. The degree of organizational complexity needed to be responsive to a variety of environmental factors. As a result, household size, composition, and organization; the size of local population aggregates; the mix of resources used (cultigens or wild plants, riverine or desert resources) varied based on the distribution and availability of resources.

Research Questions

- What mix of resources did the Archaic people and the River Yumans use?
- If the resource mix changed through time, do these changes correlate with increasing population density, environmental fluctuations, or both?
- Are ethnographic models representative of prehistoric and/or protohistoric periods?

Data Requirements

Data required to answer these questions consist of faunal and floral remains from use contexts in Archaic, Late Prehistoric Period, and protohistoric residential sites. Macrofloral and palynological samples from sealed cultural contexts (features) and from an array of plant and animal food-processing equipment are important components in defining the resource mix, and immunoassay residue analysis on lithic tools recovered from cultural contexts could potentially provide information on patterns of animal exploitation. As with chronological needs, contexts that can provide these data are rare.

Land-Use Patterns

Land-use patterns form an important part of a culture's adaptation to its surrounding environment, and its strategy characterizes and describes the ways in which a culture interacts with and exploits its natural resources. The organization of land-use strategies is patterned and is reflected in the set of functional site types embedded in the land-use system.

Analysis of land-use systems provides considerable insights into interactions between economic adaptations and changing environmental and social circumstances, and like subsistence systems,

they operate in an ecological context and are, therefore, responsive to fluctuations in environmental conditions. Essentially land-use systems influence, and are influenced by a myriad of extant social conditions, such as organizational complexity, labor organization and scheduling, ritual and ceremonial activities, and interrelations with neighboring communities, among other factors.

Research Questions

- Did Yuman site locations co-vary with environmental factors? If so, what factors appear to have been the most significant?
- How do site location and site type relate to the spatial distribution of raw-material sources in the region?
- Did site complexity influence the direction of trade relations with the River tribes versus the Kumeyaay?

Data Requirements

By obtaining information about residential, subsistence, and functional site-type patterning, we can reconstruct land-use strategies. Using subsistence, spatial, and chronological information obtained from residential sites, nonresidential site types, and land-use systems, the entire system can be defined. Elements comprising land-use systems (including issues of economy and seasonality) must be discerned from subsistence-related data recovered from each class of sites.

Contact and Interaction between Native Americans and Europeans and Euroamericans

Historical-period accounts of the primary Native American groups in the subject area of the Imperial Valley, the Yuman, exist from the mid eighteenth and mid-nineteenth centuries. The first written account of Yuman lifeways was first recorded by Anza in the mid-eighteenth century. Archaeological information to support or augment ethnohistoric data is largely lacking. Important questions about protohistoric and historical-period Yuman subsistence and settlement systems remain.

Research Questions

- To what degree were protohistoric and historical-period Yuman Tribes integrated into the local Euroamerican economy?
- To what degree, if at all, did these Native American groups rely on wild botanical and faunal resources during the mid eighteenth and early nineteenth centuries?
- Are ethnohistoric data representative of Yuman subsistence and land use patterns? What resource mix did they rely on during the early historical period?
- How well, if at all, were European-introduced domesticated plants and animals incorporated into the Yuman resource mix?

Data Requirements

Data required to answer these questions can best be obtained from one or more eighteenth to nineteenth century Yuman residential sites. If the sites have stratigraphic depth, they may include

sealed features that contain data that inform on subsistence, economic, social, and ritual aspects of past lifeways.

Historical-Period Occupation

The eighteenth and nineteenth century occupation of western Colorado Desert had a significant impact on the lives of the Native American people of the area. While changes were already underway in the subject area of the Imperial Valley when the Europeans first encountered the area, more drastic changes followed. During the protohistoric and historic periods the Native Americans returned to a more intensive agricultural practice with the addition of non-native crops, animals, trade goods, religion, and culture.

Research Questions

- How did the establishment of missions and presidios, as well as the introduction of new crops and livestock, affect settlement pattern, subsistence strategies and cultural traditions?
- Can the study of historic archaeological sites, in conjunction with archival research, tell about the lives of the Spanish, Mexican, and Euroamerican soldiers and settlers in the Yuman area?
- How did agriculture in the Imperial Valley affect patterns of settlement and rural economies? Despite the first 20-40 cm of disturbance from the plow zone, are we still able to retrieve viable research data within areas with potential for buried deposits (e.g. historical flood zones)?

Data Requirements

While few historic resources have been previously recorded in the vicinity of the Project Area, there is potential for further research into the lives of migrants into the area. Excavation of historic archaeological sites, as well as ethnohistoric data and sources can reveal information that may provide insight into the social fabric of the lives of the migrants into the area and the effects of those cultures on the Native culture.

In order to effectively determine how the establishment of the agriculture in the Imperial Valley has affected our ability to read settlement pattern, subsistence strategies and cultural traditions in the Imperial Valley we need to take into consideration the surrounding cultural resources. Much of the damage to cultural resource sites appears to have occurred during the early to mid-20th century within the Project Area, so taking a broader view of cultural sites in the surrounding area will potentially give a better picture of what the prehistoric landscape may have contained.

5. METHODS

This chapter discusses the survey design and field methods for the current archaeological project.

Survey Design

The Secretary of the Interior has issued standards and guidelines for the identification and evaluation of historic properties (*The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* [48 FR 44720–44726]), which are used to ensure that the procedures are adequate and appropriate. The identification and evaluation of historic properties are dependent upon the relationship of individual properties to other similar properties (NPS and ACHP 1998:18-20). Information about properties regarding their prehistory, history, architecture, and other aspects of culture must be collected and organized to define these relationships (NPS 2009), which is the intent of this survey.

Survey techniques are loosely grouped into two categories, reconnaissance and intensive (BLM 2004b; NPS 2009). The choice of survey category depends on the level of effort required for a particular project, which can vary depending on the nature of the properties or property types, the possible adverse effects on such properties, and agency requirements (NPS and ACHP 1998:18).

For the Project, an intensive survey was conducted in order to adequately identify and describe specific cultural resources in the survey corridor. Intensive surveys are used to precisely document the cultural resources within a given area or when information is needed for particular properties for later evaluation and treatment decisions. Such surveys include the documentation of the types of properties that are present, the precise locations and boundaries of all identified properties, the method of survey (including the extent of survey coverage), and data on the appearance, significance, and integrity of each property (NPS 2009). For this project, full coverage (100 percent), systematic surveys with transect intervals no greater than 15 m was performed.

The survey area has been defined above as encompassing (a) a minimum of 300 feet (150 feet on each side of centerline for the right-of-way) in areas where transmission lines are proposed; and (b) the footprints around all project infrastructure not previously surveyed by EPG (Rowe 2008).

Field Methods

The portion of the Project area that was not covered by the previous EPG survey (Rowe 2008) was subject to a Class III Inventory, a full-coverage pedestrian survey conducted at 15-m transect intervals. The survey was performed July 7-21, 2011 and November 3-4, 2011. The survey crew consisted of a field director/crew chief plus one crew member. In walking the systematic 15-m transects, field personnel were allowed to interrupt the transect in order to perform judgmental inspections of locations such as potential rock features within the survey corridor, but then returned to the 15-m transects in order to maintain systematic coverage. The

survey was generally conducted from north to south, in so far as topography and access permitted doing so.

Daily survey notes on the progress, condition, and findings of the survey were taken. This included a description of vegetation cover, as well as estimates of ground surface visibility, rated as poor (0-25 percent), fair (26-50 percent), good (51-75 percent), or excellent (76-100 percent).

Evidence for buried cultural deposits was opportunistically sought through inspection of natural or artificial erosional exposures and the spoils from rodent burrows. In the daily survey notes, the field director and/or crew chief assessed the potential for buried sites on the basis of sub-regional geomorphology. For instance, the potential would be rated as high in large alluvial valleys, and as low in areas with shallow bedrock.

Standard global positioning systems (GPS) aided in navigation. Together with hard-copy field maps, GPS was used to keep the field crew aware of the limits of the survey corridor, the areas previously covered by the EPG survey, and areas of different land ownership. GPS was also used to record the datum of cultural resources encountered during the survey, to the sub-meter level of accuracy. All isolates, site features, site boundaries, loci and important diagnostic artifacts was also mapped with a Trimble unit at the sub-meter accuracy level. KPE's Geographical Information System specialist created digital maps to accompany the report.

This survey was a non-collection survey. Archaeologists recorded artifacts in the field to facilitate interpretations of site character. All new prehistoric and historic sites were recorded, and records for previously recorded sites in the survey area was updated, confirming or correcting information on their locations, spatial extent, general characteristics, and likely eligibility status. Sites were defined as any concentration of three or more artifacts in a 25-m² area. Site boundaries were defined when over 50 m of open space separates cultural materials. Isolated artifacts were defined as two or fewer artifacts in a 25-m² area. Field personnel assigned a temporary site number to all cultural resources that meet the definition of an archaeological site. Site recording included definition of site boundaries, features, and formed artifacts. Detailed sketch maps demonstrated the relationship of the location of each site to topographic features and other landmarks. Digital photographs documented the environmental associations and the specific features of all sites, as well as the general character of the survey area. If a site extended beyond the survey corridor limits, and if access to the area beyond the survey corridor was available, the whole site was documented until it is terminated by the end of the cultural deposit or by a natural feature, such as a drainage.

Site Classifications

The primary objective of the survey was to provide descriptive information on the resources present. Eligibility recommendations based on the surface manifestations of resource material and available data was also conducted. The use of a basic typological framework to characterize the sites may help in efficient management of the diverse resources that were present.

Prehistoric site types would include:

- **Habitation Sites.** These are relatively substantial deposits, typically including at least three different types of cultural evidence, such as flaked lithics, ground stone, ceramics, faunal remains, features, and midden. They are likely to represent overnight occupations by a social unit larger than an individual or a small task group, probably over an extended period or on repeated occasions.
- **Bedrock Milling Sites.** These are sites that consist primarily or exclusively of bedrock milling features (mortars, basins, and/or slicks). They are interpreted as work stations used to process materials, probably in most cases hard plant food resources such as seeds or acorns.
- **Lithic Scatters.** These consist primarily or exclusively of flaked lithic materials, such as debitage, cores, and tools. They represent areas where tools were manufactured or reworked, ranging from heavily used workshops to flaking stations where activity was more casual and transient.
- **Lithic Quarries.** Areas where lithic raw materials were procured may be marked by test blocks, cores, hammerstones, and extensive scatters of primary debitage, as well as by the geological occurrence of unworked lithic raw material.
- **Ground Stone Scatters.** These consist primarily or exclusively of portable ground stone artifacts, such as manos, metates, mortars, and pestles. Their functions are likely to have been similar to those of bedrock milling sites.
- **Ceramic Scatters.** These consist primarily or exclusively of ceramic potsherds. They may range of potdrops, where pieces from a single vessel were discarded, to extensive, multiple-vessel scatters that may represent habitation, resource processing, or pottery manufacturing.
- **Faunal Middens.** Sites consisting primarily of invertebrate and/or vertebrate faunal remains, such as the shell middens, are common along the coast. Such sites are not highly likely in the present project area, but they may occur.
- **Cremations.** Human cremations may occur either in isolation from other remains or as elements within other site types, such as habitation sites. In either case, their sensitivity for contemporary Native Americans merits particular attention.
- **Rock Art, Geoglyph, Cupule, and Yoni Sites.** Sites containing other nonutilitarian features, such as pictographs, petroglyphs, geoglyphs (ground figures, intaglios), cupules (small circular depressions manufactured in the bedrock), and yonis (vulviform bedrock features), merit particular attention. These features may occur exclusively at some sites, or they may occur in conjunction with other remains, such as habitation deposits, lithic scatters, etc.
- **Rock Features.** Rock rings, cleared circles, cairns, and roasting pits may occur in isolation from other remains, or they may be found as elements within other site types, such as habitation sites.

- Trails. Segments of trails are most likely to be observable in the eastern extreme of the project area. They occur as linear areas within desert pavements that are largely cleared of larger rocks through repetitive trampling. Trails may be associated with other remains, such as potdrops or small lithic scatters, and they may cross more substantial habitation sites or work areas.
- Isolates. Occurrences of two or fewer prehistoric artifacts within a 25-m² area are classified as isolates. As a rule, such remains do not require formal recordation beyond primary recordation or further consideration within the planning process.

Historic-period sites are likely to be both functionally more diverse and more readily interpretable. Among the types that may occur in the study area are residential sites, commercial sites, temporary camps, refuse scatters, transportation routes and facilities, water facilities, areas of military activity, mining sites, agricultural and ranching features, and historic isolates. Remains that are not recognizably more than 45 years old were not treated as cultural resources.

Reports

Documentation of sites in this inventory report are consistent with the reporting specifications in the BLM 8100 Manual (BLM 2004b), and to every reasonable extent with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716-44740), as well as the California Office of Historic Preservation Planning Bulletin Number 4(a), December 1989, *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format (ARMR Guidelines) for the Preparation and Review of Archaeological Reports*. All prehistoric and historic sites and isolates identified during this inventory were recorded on California Department of Parks and Recreation Form DPR 523 (Series 1/95), using the *Instructions for Recording Historical Resources* (Office of Historic Preservation 1995).

The results of the identification protocol are reported in a format that summarizes the design and methods of the survey and provided a basis for others to review the results (NPS 2009). The report includes: (1) the statement of objectives that were prepared prior to the survey; (2) the research design; (3) a complete description of the identification efforts, including areas surveyed and intensity of coverage; (4) descriptions of identified sites and the current condition of each site; (5) an assessment of how well the survey results met the objectives; (6) preliminary site eligibility assessment; and (7) recommendations based on that analysis, including the assessment of potential needs for further evaluation of site eligibility for appropriate state and federal inventories, a recommendation about the effects of the undertaking on identified properties, and suggestions for avoidance or, where avoidance is not practicable, of further treatment for assessing the significance of potentially eligible properties.

Native American Participation

The NAHC was contacted by KPE on June 29, 2011 about any issues of cultural concern regarding the Project Area. In particular, we inquired if there were any Traditional Cultural

Properties, Sacred Sites, resource collecting areas, or any other areas of concern. The NAHC conducted a Sacred Lands File search of the project area of potential effect (APE) and found Native American cultural resources were not identified within their inventory; however, they were aware of recorded archaeological sites and Native American cultural resources in close proximity to the APE. The NAHC urged KPE to consult with the tribes and interested Native Americans they provided in their June 29, 2011 correspondence.

On August 3, 2011 KPE contacted (by email – except Ms. Lucas) the following tribes and Native Americans as recommended by the NAHC:

- Gwendolyn Parada - Chairperson, La Posta Band of Mission Indians
- Leroy J. Elliott – Chairperson, Manzanita Band of Kumeyaay Nation
- Monique LaChappa – Chairperson, Campo Kumeyaay Nation
- Carmen Lucas (letter sent), Kwaaymii Band of Mission Indians
- Keeny Escalanti, Sr. - President, Fort Yuma Quechan Tribe
- Will Micklin – Executive Director, Ewiiapaayp Band of Kumeyaay Indians
- Michael Garcia – Vice Chairman, Ewiiapaayp Band of Kumeyaay Indians
- Jill McCormick – Tribal Archaeologist, Cocopah Indian Tribe
- Bridget Nash-Chrabasz – THPO, Fort Yuma Quechan Tribe
- Preston J. Arrow-Weed, Ah-Mut-Pipa Foundation
- Bernice Paipa – Vice Spokesperson, Kumeyaay Cultural Repatriation Committee

In addition KPE reached out to Tribal leaders on behalf of First Solar, Inc. on October 26, 2011, November 3 and 4, 2011 to request a meeting to introduce the Project and discuss any concerns they may have. Ms. Lucas has requested a site visit. KPE arranged a site visit with Ms. Lucas with hopes that other interested Tribal leaders and interested Native Americans can also attend. Ms. Lucas and Ms. Jill McCormick, Cultural Resources Manager with the Cocopah Indian Tribe attended the site visit on December 6, 2011. A tentative date for another site visit with the Fort Yuman Quechan Historic Preservation Officer and the Cultural Committee has been arranged for January 5, 2012. Native American correspondence is provided in Appendix D (Confidential Appendix).

Management and Treatment of Human Remains

At the survey level, it is typically not possible to identify surface bone as human; however, in the event probably human bones are encountered in the field the following protocol will be implemented. When surface bones are discovered, field staff will record the presence of the bones and made a tentative, unofficial assessment of the likelihood of them being human. The KPE Principal Investigator, Patricia Mitchell will notify the County Coroner as per Health and Safety Code Section 7050.5.

6. RESULTS OF INVENTORY

6.1 KPE Survey Area

Archaeological inventory of the KPE survey area involved a 100 percent survey of approximately 1,015 acres. Fourteen cultural resources (five sites and nine isolates) were newly recorded within the project APE (Table 5, Figure 6 – Confidential Appendix C). Seven previously recorded sites were also updated. State of California DPR Primary record forms were prepared for the newly recorded resources and submitted to the SCIC for archiving and issuance of record numbers for newly recorded resources. Updated forms were prepared for the previously recorded sites and also submitted to the SCIC. Forms for this inventory are also provided in Appendix E (Confidential – bound separately). Site photos are provided in Appendix F (Confidential – bound separately).

| Site Number | Site Type | Age | Eligibility (NRHP/CRHR) |
|--------------|---|----------|--|
| CA-IMP-7834 | Westside Main Canal | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |
| CA-IMP-8821 | Foxglove Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-008983 | Wormwood Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012688 | Dixie Drains 2, 3, & 4, Dixie Lateral 1 (portions) | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012689 | Fern Canal and Fern Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012690 | Forget-Me-Not Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012693 | Fig Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013747 | Diehl Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013748 | Fig Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013760 | Westside Drain | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |
| P-13-013761 | Wixom Drain | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |
| P-13-013749 | Isolate bottle base and nail | Historic | Recommended Not Eligible |
| P-13-013750 | Isolate bottle base | Historic | Recommended Not Eligible |
| P-13-013751 | Isolate whiteware ceramic fragment | Historic | Recommended Not Eligible |
| P-13-013752 | Isolate whiteware ceramic fragment | Historic | Recommended Not Eligible |
| P-13-013753 | Isolate glass fragments: 1 purple dating to 1890-1920; and 1 clear 1935-1964 | Historic | Recommended Not Eligible |
| CA-IMP-11758 | Historic refuse scatter; 19 th century kaolinite pipestem fragment & 3 prehistoric pottery fragments also found within the trash scatter | Historic | Insufficient Data – likely a secondary deposit, greatly disturbed. |
| P-13-013755 | Isolate “SMIRNOFF” bottle dating to 1932-1964. | Historic | Recommended Not Eligible |
| P-13-013756 | Isolate 1911 Liberty Head nickel | Historic | Recommended Not Eligible |
| P-13-013757 | Isolate green/black bottle glass fragment | Historic | Recommended Not Eligible |
| P-13-013759 | Isolate purple glass | Historic | Recommended Not Eligible |

In addition to the archaeological sites, one recent cultural feature was encountered and documented with the Project APE. It was not recorded as an archaeological or historical site because it was established post-2010. The cultural feature is a memorial for an individual named Margarito Hernandez. There is a wooden cross with offerings, as well as a newer granite memorial with offerings that is inscribed with the following text:

Margarito Hernandez

03-12-37 – 10-18 10

Al paraiso te lleven los angeles a tu llegada te reciban los martires y te introduzcan en la ciudad
Santa de Jerusalén.

El coro de los angeles te resiba y junto con lázaro, pobre en esta vida, tengas descanso eterno

Below is the English translation (with some poetic license from this author):

Margarito Hernandez

03-12-37 – 10-18 10

The angels will take you to paradise and upon your arrival the martyrs will receive you as you
enter into the Holy City of Jerusalem.

The chorus of angels receives you and as with Lazarus, poor in this life, you have eternal rest.

It appears to be a place where people intended to celebrate or honor the memory of Margarito Hernandez (Figure 7, Appendix A).

Newly Recorded Resources

P-13-013747 also known as Diehl Drain consists of an earthen irrigation drainage ditch. The ditch is basically trapezoidal in shape with earthen banks and levees on either side that provide vehicular access along the length of the canal. The open drains collect tailwater and tilewater from area farms, as well as operational discharge water from the IID's irrigation system. Tilewater is subsurface drainage water generated primarily through salt-leaching operations performed by farmers. Tailwater is applied irrigation water that does not percolate into the soil, thereby exiting at the lower end of the field, into an IID drain. Diehl Drain drains into Fig Drain which in turn empties in the New River and ultimately empties into the Salton Sea. When the All American Canal was completed in 1941, improvements were made to existing canal systems, drain ditches in particular. This drain is associated with the Westside Main and ultimately the All American Canal.

P-13-013748 also known as Fig Drain consists of an earthen irrigation drainage ditch. The ditch is trapezoidal in shape with earthen banks and levees on either side that provide vehicular access along the length of the canal. The open drains collect tailwater and tilewater from area farms, as well as operational discharge water from the IID's irrigation system. Tilewater is subsurface drainage water generated primarily through salt-leaching operations performed by farmers. Tail water is applied irrigation water that does not percolate into the soil, thereby exiting at the lower end of the field, into and IID drain. Fig Drain drains into the New River 728-meters north of the project area, which ultimately empties into the Salton Sea. Concrete wing walled culverts channel water flow below surface streets and dirt access roads. Like Diehl Drain when the All American Canal was completed in 1941, improvements were made to existing canal systems, drain ditches in particular. This drain is associated with the Westside Main and ultimately the All American Canal.

P-13-013760 also known as Westside Drain consists of an earthen irrigation drainage ditch. The ditch is basically trapezoidal in shape with earthen banks and levees on either side that provide vehicular access along the length of the canal. The open drains collect tailwater and tilewater from area farms, as well as operational discharge water from the IID's irrigation system. Tilewater is subsurface drainage water generated primarily through salt-leaching operations performed by farmers. Tailwater is applied irrigation water that does not percolate into the soil, thereby exiting at the lower end of the field, into an IID drain. Westside Drain drains into Dixie Drain 3 which in turn empties in Salt Creek which ultimately empties into the Salton Sea. Like the Diehl and Fig Drains when the All American Canal was completed in 1941, improvements were made to existing canal systems, drain ditches in particular. This drain is associated with the Westside Main and ultimately the All American Canal.

P-13-013761 also known as Wixom Drain consists of an earthen irrigation drainage ditch. The ditch is basically trapezoidal in shape with earthen banks. The open drain collects tailwater and tilewater from area farms, as well as operational discharge water from the IID's irrigation system. Tilewater is subsurface drainage water generated primarily through salt-leaching operations performed by farmers. Tailwater is applied irrigation water that does not percolate into the soil, thereby exiting at the lower end of the field, into an IID drain. Wixom Drain drains into the New River, which ultimately empties into the Salton Sea. Like the Diehl, Fig, and Westside Drains when the All American Canal was completed in 1941, improvements were made to existing canal systems, drain ditches in particular. This drain is associated with the Westside Main and ultimately the All American Canal.

P-13-013749 is a historic bottle base fragment and a large nail. The bottle base is clear glass with the text [BISH___] embossed on it. Situated 63' north of the glass artifact, is a large nail. The nail is approximately six inches long and is highly corroded. The isolated artifacts were found at the northwestern corner of an agricultural field, which was fallow at this time of the survey. The field has been under agriculture for many years and is highly disturbed.

P-13-013750 consists of a fragment of clear glass bottle base. There is no identifying trademark visible. The isolate was found in a fallow agricultural field that is highly disturbed.

P-13-013751 consists of a single historic whiteware ceramic fragment. The isolate was found at the western edge of an agricultural field. The area has been under cultivation for many years and is highly disturbed. Although nothing remains today, there are two nearby structures depicted on the 1957 USGS 7.5 Seeley, Calif. quadrangle. One was situated approximately 1092' to the north of the artifact, and the other was 1285' to the east.

P-13-013752 consists of a single historic whiteware ceramic fragment. The isolate was found at the northern edge of an agricultural field. The area has been under cultivation for many years and is highly disturbed. Although nothing remains today, a structure is depicted on the 1957 USGS 7.5, Seeley, California quadrangle. It was located approximately 50' south of the artifact.

P-13-013753 consists of two historic glass fragments. One fragment is a clear piece of glass from the body of a bottle. Embossed on the bottle is the text [.....BIDS__SAL__BOT.....]. This artifact has a date range of 1935-1964. The other piece of glass is a fragment of solarized purple glass. Embossed on the glass is the letter E and the letter S. It has a date range from 1890-1920. The artifacts were found at the northern edge of a highly disturbed agricultural field that is currently under cultivation and has been for many years.

CA-IMP-11758 is a historic refuse scatter situated on the west bank of Fig Drain and spread over an area 205' north to south by 73' east to west. The main concentration is on the east facing slope of the bank. There are several large piles of large broken chunks of concrete and metal debris that has been dumped along the upper, bank to the north. Several additional historic artifacts were found widely dispersed throughout these piles. Artifacts identified in the main concentration consist of several black/green bottles, a 19th century ball clay (kaolinite) pipe stem (Seth Mallios Ph.D. personal communication 7/19/2011), a *Bos taurus* (cow) metacarpal diaphysis, and three prehistoric ceramic sherds. The bottles are broken and several were found sitting upright. Due to the presence of broken clay targets, it is likely that they were used for target practice. Five bases and two neck and finish portions were present. The bases were all kick up, with a pontil mark present on one and the number 8 embossed on another. Two neck portions were also present, one with an applied finish. The prehistoric ceramics were buffware, all from the same vessel. Wipe marks were visible and one exhibited possible red painted decoration. The northernmost artifact is a fragment of historic yellow ceramic. The piece has a yellow glaze and a portion of some type of handle is present. Also found was a single can with an external friction lid, a piece of cut bone (possibly pig), a fragment of brown glass bottle base which exhibits an Owens suction scar and kurling around the edge of the bottle base. Additionally, there was a metal hinge, a piece of milled lumber, a light green colored bottle fragment, and a ceramic fragment with white glaze.

The site is located within a very disturbed area, bounded by agricultural fields to the west and north and by a large earthen ditch to the east. It is likely that this is a secondary deposit and the result of illegal trash dumping.

P-13-013755 is a single clear glass screw-top bottle. The text FEDERAL LAW FORBIDS RESALE OR REUSE OF THIS BOTTLE, the figure of a crown and the words _ _ _ _ _ SMIRNOFF are embossed on the front of the bottle. The date range for the bottle is 1932-1964.

P-13-013756 is a 1911 Liberty Head nickel. It was found on the east bank of Fig Drain, at the edge of a dirt road that is used to access the agricultural fields that are adjacent. There is a small amount of modern refuse located several meters down-slope of the coin.

P-13-013757 consists of two fragments of green/black bottle glass. Both the pieces are from the body portion of a single bottle and no diagnostic attributes are present. The isolate was discovered on the east bank of Fig Drain adjacent to an active agricultural field.

P-13-013759 is a historic fragment of solarized glass. It was located on the east levee of Forget-Me-Not Drain.

Updated Sites

CA-IMP-7834 is the West Side Main Canal, an irrigation feature. The canal was first recorded in 1999 by Jill Hupp who conducted extensive background research documenting the history of the Westside Main Canal. This resource has been recorded, evaluated, re-recorded, updated and re-evaluated seven times since it was first recorded in 1999. Each time only the portion of the canal within the project right-of-way was documented and ultimately evaluated for significance:

1. May 24, 1999 - Jill Hupp, Caltrans Environmental Program - The project APE was the area where State Route 98 crosses the Westside Canal; *The Westside Main Canal appears to possess significance under criteria A and C for its association with the development of irrigated commercial agriculture in the Imperial Valley west of New River in the early 1900's and as a good example of an early large scale irrigation canal system... The segment within the project vicinity does not appear to possess sufficient integrity of workmanship, design, setting, feeling, and association to represent the canals significance in itself or as a contributor to a larger property.*
2. June 2000 - N. Harris and Michael Oberndorfg, HDR Engineering - The project APE was located approximately 1300' south of Dixieland at the ROW of the San Diego and Eastern Railroad; *As part of the All American Canal System, this canal is eligible for NRHP inclusion.*
3. February 28, 2007 - Jeanette A. McKenna; McKenna updated the site record at this time stating that the canal was considered a significant resource and as part of the All American Canal System, was recommended eligible for inclusion on the National Register of Historic Places.

4. April 19, 2007 - SWCA Environmental Consultants - SWCA examined a 300-foot long segment of the canal during survey activities conducted for alternatives related to the Sunrise Powerlink Project; *The Westside Main Canal has not been altered or modified since its last update 1999 (Jill Hupp), when it was found not eligible for listing in the National Register (NRHP) as a separate property or as a contributor to a district. However in 2001 the Bureau of Reclamation and California State Historic Preservation Officer concurred that the All American Canal is ELIGIBLE for the NRHP; by extension the Westside Main Canal is now recommended ELIGIBLE for NRHP and California Register of Historic Resources (CRHR) under Criterion A/1 for its significance in association of the Imperial Valley.*
5. December 12, 2007 – EPG - Robert A. Rowe evaluated a portion of the canal located within the APE of the Mount Signal Solar Hybrid Plant; *EPG determined that the Westside Main canal is eligible under Criterion A, for its potential to provide information about the settlement and economic development in the area and thus the transition of desert lands into irrigated area, thus affecting the local economy and subsistence.*
6. December 2009 - URS Corporation – for a proposed solar project; *the portion of the Westside Main Canal within the historic architecture APE does not appear to be individually eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA, and does not appear to be a contributing element or significant related feature/component to the larger linear Westside Main Canal system (if it is determined that such a resource exists).*
7. January, 2010 - C. Bowden-Renna - IID Dixieland 230 kV Transmission Line and Substation Expansion Project; *While the canal has been recommended eligible for the National Register of Historic Places (NRHP), the portion of the canal within the proposed project area was examined in 1997 and 1998 and was recommended not eligible for the NRHP due to lack of integrity (Hupp 1999). Caltrans also evaluated a portion of the canal as it crosses under I-8. Caltrans determined that, under California Environmental Quality Act (CEQA), the portion of the canal under I-8 is not a historic resource and therefore is not eligible for the NRHP (Hupp 1999”).*

For the KPE survey, an approximately 341’ section of the canal falls within the survey area. The section of canal inspected consists of an earthen, unlined canal. In addition, a turnout with concrete wing walls provides water to a large concrete block reservoir, which in turn flows into a lateral canal located west of the Westside Main. This lateral, the reservoir and the remains of an electrical panel and tin shed roof appear abandoned and no longer in use.

The Westside Main Canal joins the All-American Canal near the western edge of the Imperial Valley and serves the western part of the IID water service area. Water is released from the Westside Main canal into the heading of each lateral canal. From the lateral canals, zanjeros measure and divert the required amount of water from the lateral canal through individual customer delivery gates.

The All American Canal is eligible for State inclusion on the NRHP and by extension, the Westside Main Canal as well. The portion of Westside Main Canal inspected during the current survey found the resource appeared to retain sufficient historic integrity aspects of location and materials.

CA-IMP-8821 is the Foxglove Canal and was first recorded by SWCA archaeologists in April 2007. There is no firm date for the construction of the Foxglove Canal; however, it does appear on maps as early as 1912 (Hollins 2009 – URS 2009 site record). SWCA's evaluation of the 300' section of the Foxglove Canal concurred with the SHPO's finding that the canal as part of the Westside Main Canal system is recommended eligible for the NHRP and CRHR under criterion A/1 for its significance in association with development of the Imperial Valley. URS conducted another study of the Foxglove Canal where it crosses Evan Hewes Highway and found that the portion of the Foxglove Canal at the crossing of Evan Hewes Highway does not appear to be individually eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA, and does not appear to be contributing element or significant related feature/component to the larger linear Westside Main Canal system (if it is determined that such a resource exists).

The current survey conducted by KPE encountered small segments of the Foxglove Canal. This includes: a section located south of Interstate 8 that is situated between Dixie Drain 4 and the Westside Main Canal; a check structure and small length of canal located at the western end of Vaughn Road. This is also the heading for the Forget-Me-Not Canal, which is fed by the Foxglove Canal.

P-13-008983 is the Wormwood Canal and was first recorded by Hupp in 1999. A bridge crossing over SR98 was recorded during this survey and inspection of the canal was limited to the portion adjacent to the bridge. In July 1997 and April 1998, segments of other canals within the IID system were examined and found ineligible because of loss of integrity. The section of Wormwood Canal within their current project area also appears to lack integrity to be individually eligible for the NRHP or to be a contributing element of the canal, as a whole, should the canal constitute an eligible property. There was no evidence of a possible historic district or historic landscape which might include this segment of the canal as a contributing element. Likewise, Caltrans had evaluated the resource in accordance with Section 15064.5 (a)(2)-(3) of the CEQA Guidelines, using criteria outlined in Section 5024.1 of the California Public Resources Code, and determined that the canal was not a historical resource for the purposes of CEQA.

The site record was updated in December 2010 by archaeologists with Laguna Mountain Environmental. Two previously unrecorded segments of the Wormwood Canal were documented at this time. These segments are located to the south of the current project area.

An additional 2272' segment of canal was recently documented by KPE archaeologists. The segment identified is situated on the west side of and runs parallel to Drew Road, north of the intersection with West Diehl Road. The Wormwood Canal is channeled beneath Drew Road from the east to a check. A check is a structure built to regulate or raise the water level and in this case, combines the functions of both a check and a drop: the water level may be raised upstream of a gate and is dropped on the downstream side. Gate 88 is also located here and this supplies water to the Wormwood Lateral 7 which is adjacent to the west and to the south. The segment inspected, begins 617' north of West Diehl, and ends 2.19 miles south at the intersection of Drew Road and West Wixom Road. There are several gates, associated with these canals. These include Gate 94 a turnout to ag fields to the west and a check gate about half way up the portion of the lateral within the project area on Wormwood Lateral 7 and on the Wormwood Canal, Gate 88 located at the southern end, is situated at the intersection of Wormwood and Drew, and 90, 90A and 90B are at a check in the north. Wormwood Lateral 7 turns into a ditch and terminates just south of this spot. There are also several concrete irrigation canals and ditches located around the perimeters of the agricultural fields to the west. Wormwood Lateral 7 has a date stamp of 1954 with the initials JP next to the date in the south and a date of 1950 with the initial P next to the date in the north. Wormwood Canal has a date stamp of 1984 as well as a stamp with the text, Rykerson and the date 1984.

P-33-012688 is an irrigation feature, the Dixie Drain 3. In May of 2009, URS recorded a portion of this drainage feature at the crossing of Evan Hewes Highway. Dixie Drain 3, as a whole, is associated with the Westside Main Canal system and reflects the development associated with the construction and operation of the All-American Canal between 1941 and 1950, which is primarily when the system was widened, shortened (portions in Mexico were removed from service), and modernized (Hollins 2009 – URS 2009 site record).

URS found that the portion of Dixie Drain 3 at the crossing of Evan Hewes Highway does not appear to be individually eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA, and does not appear to be a contributing element or significant related feature/component to the larger linear All-American or Westside Main Canal system (if it is determined that such a resource exists) (Hollins 2009 – URS 2009 site record).

During a recent survey conducted by KPE, an additional segment of Dixie Drain 3, and sections of related features were documented. These include Dixie Lateral 1, Dixie Drain 2, Dixie Drain 3, and Dixie Drain 4.

Dixie Lateral 1 consists of an unlined dirt channel with an average depth of 7 feet. The portion of Dixie Lateral 1 identified during the survey effort consists of an east/west segment approximately 3983' in length. An approximately 909' section in the western portion has been rerouted sometime after 1979.

Dixie Drain 2 is also an unlined dirt channel. Only the very northern end of this feature was located within the survey area.

Dixie Drain 3 is an unlined, dirt channel with an average depth of 8-11 feet. The segment inspected is approximately 1.7 miles in length, beginning just south of Interstate 8 and ending at the point where Dixie Drain 3 and Dixie Lateral 1 meet. West Diehl Road is adjacent to the east at the southern end. Extending out of the project area to the north and south, Dixie Drain 3 is channeled below several roads by way of culverts with concrete winged walls. In addition, there are several marked tailwater and tile lines along the length of the surveyed portion of the drain. An approximately 1123' section of the drain has been rerouted sometime after 1979.

Dixie Drain 4 is another unlined dirt channel. A segment approximately 422' in length is located within the survey area. Vegetation in each of the drains consists of invasive species such as saltgrass, salt bush, Bermuda grass, common reed, and salt cedar.

P-33-012689 consists of irrigation features, Fern Canal and Fern Drain. In May of 2009, URS recorded a portion of these drainage features at the Evan Hewes Highway, which are part of the larger Fern Canal drainage system. The Fern Canal, as a whole, is associated with the Westside Main Canal system and reflects the development associated with the construction and operation of the All-American Canal between 1941 and 1950, which is primarily when the system was widened, shortened (portions in Mexico were removed from service), and modernized (Hollins 2009 – URS 2009 site record). The Fern Drain, although associated with the Westside Main Canal system, does not appear to reflect the development associated with the construction and operation of the All-American Canal between 1941 and 1950 (Hollins 2009 – URS 2009 site record).

URS concluded that the portions of Fern Canal and Drain at Evan Hewes Highway do not appear to be individually eligible for listing to the NRHP, CRHR, or considered historical resources for purposes of CEQA, and do not appear to be a contributing element or significant related feature/component to the larger linear All-American Canal or Westside Main Canal system (if it is determined that such a resource exists) (Hollins 2009 – URS 2009 site record).

During KPE's survey, additional features associated with this system were identified and subsequently documented. One of these features is a segment of concrete canal, Fern Lateral 3. This 961' segment is located just south of I-8 and runs parallel to Westside Drive on the west side of the road. At the northern end within the project area is gate 26 which opens to the north and gate 27 which is a turnout for irrigation water for a small irrigation canal to the west, used to irrigate adjacent fields. In front of the residence located at 1651 Westside Road, are a check with two turnout gates and gate 25 that allows water to pass under the road and turns the canal to the east and out of the project area. There is a stamp in the concrete near gates 26 and 27 which indicate 1966 as the year of manufacture for this particular segment.

Another feature, Fern Check was identified at the intersection of Liebert Road and Wixom Road. A date stamp of 1974 was found stamped in the concrete, indicating that this feature has been modified within the last 35 years and is not historic.

P-13-012690 consists of irrigation feature Forget-Me-Not Canal. In May of 2009, URS recorded a portion of this irrigation feature at the Evan Hewes Highway. There is no firm date for the construction of the Forget-Me-Not Canal; however, it does appear on maps as early as 1912 (Hollins 2009 – URS 2009 site record). The Forget-Me-Not Canal, as a whole, is associated with the Westside Main Canal system and reflects the development associated with the construction and operation of the All-American Canal between 1941 and 1950, which is primarily when the system was widened, shortened (portions in Mexico were removed from service), and modernized (Hollins 2009 – URS 2009 site record). URS concluded that the portion of the Forget-Me-Not Canal at the crossing of Evan Hewes Highway does not appear to be individually eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA, and does not appear to be a contributing element or significant related feature/component to the larger linear All-American Canal or Westside Main Canal system (if it is determined that such a resource exists) (Hollins 2009 – URS 2009 site record).

During KPE's survey additional features associated with this canal system were identified and subsequently documented. One of these features is a segment of the main Forget-Me-Not Canal. The 4057' segment inspected begins 1099' south of I-8 and runs parallel to Hyde Road on the east side of the road, terminating at the corner of Hyde and Vaughn Roads in the south. Along the canal are several features such as culverts and gates. At the corner of Hyde and Hardy, a concrete culvert allows water to flow north beneath a dirt field access road. Directly north of this, a drop gate allows water to flow into East-west aligned Lateral 1. There is a 1999 date stamp in the concrete of the wing wall indicating year of manufacture. Lateral 1 canal, has a 1994 date stamp indicating there has been some modifications to this system. A few yards north of Lateral 1, gate structure 7 provides water to another smaller concrete irrigation canal to the east. This canal in turn, provides irrigation water to the fields to the east. Although there is no indication of when the smaller canal was constructed, the turnout has a date stamp of 1955. Directly north of these two gates is a check structure which can be adjusted to raise or lower the water level in the Forget-Me-Not and provide water to these smaller irrigation canals. There is one structure, Turnout 2, which has square wing walls and appears to be very recent.

In addition, a 1428' segment of Forget-Me-Not Drain is situated on the opposite side of Hyde Road and runs perpendicular to the canal. The drain has an inflow Tailwater Pipe and Seep Pipe. This is a dirt ditch approximately 30' wide that collects excess surface flow (tailwater) from agricultural fields, and operational discharge from canals and laterals.

P-33-012693 is an irrigation feature, named Fig Canal. In May of 2009, URS recorded a portion of this canal near Evan Hewes Highway. The Fig Canal appears to terminate to the north at Fern Canal and to the south at the Westside Main Canal. The Fig Canal as a whole, is associated with

the Westside Main Canal system and reflects the development associated with the construction and operation of the All-American Canal between 1941 and 1950, which is primarily when the system was widened, shortened (portions in Mexico were removed from service), and modernized (Hollins 2009 – URS 2009 site record). URS concluded that the portion of the Fig Canal near Evan Hewes Highway does not appear to be individually eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA, and does not appear to be a contributing element or significant related feature/component to the larger linear All-American Canal or Westside Main Canal system (if it is determined that such a resource exists) (Hollins 2009 – URS 2009 site record).

During KPE's survey an additional segment of this canal as well as additional features related to this resource were documented. These consist of Fig Heading and a 1264' segment of Fig Canal and Levee. Fig Heading is situated at the intersection of Liebert Road and Wixom Road. The heading receives water from Fern Check/Canal adjacent to the west. As the water level rises, it is released into the lateral canal (Fig Canal) to the east and flows through several delivery gates (Gate 3) to be used for irrigation of crops located in fields to the north.

6.2 EPG Survey Area

Archaeological inventory of the EPG survey area involved a 100 percent survey of approximately 975 acres in December 2007. No new sites or isolates were identified. EPG archaeologists revisited the locations of five previously recorded sites within their survey area (Table 6, Figure 6 - Confidential Appendix C). These included CA-IMP-1403, CA-IMP-3176, CA-IMP-5297, CA-IMP-5298, and CA-IMP-7834.

CA-IMP-1403 is reported to be a small site consisting of two ceramic sherds identified as Yuman, and was originally recorded is located in a dunal depositional area south of the Westside Main Canal. The area is currently within an existing access road along the southern edge of an agricultural field. The site was recorded prior to agricultural activities on this particular plot and it is likely that the subsequent disturbance has removed the artifacts from their recorded location. The site was not relocated (Rowe 2008).

CA-IMP-3176 is a small site that consists of a small scatter of ceramics and lithics identified as temporary camp, possibly from the Yuman III Phase (Post A.D. 1500), and was originally recorded is located in a dunal depositional area south of the Westside Main Canal. The site was recorded prior to agricultural activities on this particular plot and it is likely that the subsequent disturbance has removed the artifacts from their recorded location. The site was not relocated (Rowe 2008). In 2010 Bowden-Renna relocated some of the lithics from site CA-IMP-3176 at its originally mapped location; however, this site location is outside the current Non-BLM option solar footprint.

CA-IMP-5297 was originally recorded as an isolated feature, and consists two porphyritic flakes in an area measuring 1 by 1 meter. The artifacts were collected during the original site recordation activities. CA-IMP-5297 was not relocated (Rowe 2008).

CA-IMP-5298 was originally recorded as an isolated feature, and consist a single mano in an area measuring 1 by 1 meter. The artifact was collected during the original site recordation activities. CA-IMP-5298 was not relocated (Rowe 2008).

CA-IMP-7834 is identified as the Westside Main Canal. EPG identified and recorded several related features (e.g., Fig Canal, Fern Canal, Wixom Drain, Diehl Drain, Fern Side Drain, Fig Drain, Dixie Drain Number 3, Dixie Drain Number 3-A, and Dixie Drain Number 3-C, as well as smaller concrete laterals and spiles), which are contributing elements associated with the Westside Main Canal (Rowe 2008).

KPE has addressed CA-IMP-7834 and EPG’s assessment of CA-IMP-7834 above in subsection 6.1.

| Site Number | Site Type | Age | Eligibility (NRHP/CRHR) |
|--------------------|--|-------------|---|
| CA-IMP-1403 | Isolate Pottery Sherds – Not relocated | Prehistoric | Recommended Not Eligible |
| CA-IMP-3176 | Ceramic and Lithic Scatter | Prehistoric | Insufficient Data |
| CA-IMP-5297 | Isolate Flakes – Collected | Prehistoric | Recommended Not Eligible |
| CA-IMP-5298 | Isolate Mano - Collected | Prehistoric | Recommended Not Eligible |
| CA-IMP-7834 | Westside Main Canal | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |

7. ELIGIBILITY ANALYSIS

The Proposed Project was surveyed by EPG in 2007 (Rowe 2008) and KPE in 2011. Twenty-five cultural resources were identified from the Project surveys (Table 7). Of the 25 resources, 21 are within the Project APE (Figure 6, Confidential Appendix C). Three isolates (CA-IMP-1403, -5297, and -5298) were not relocated, and one site (CA-IMP-3176) is no longer within the Non-BLM option APE. The eligibility recommendations for the remaining 21 resources are discussed below.

Newly Recorded Resources

Nine isolated artifacts were newly recorded within the Proposed Project APE (P-13-013749, P-13-013750, P-13-013751, P-13-013752, P-13-013753, P-13-013755, P-13-013756, P-13-013757, and P-13-013759). However, isolated archaeological occurrences are generally considered to be not NRHP eligible, and in order for it to be CRHR eligible it must be of exceptional importance. P-13-013749, P-13-013750, P-13-013751, P-13-013752, P-13-013753, P-13-013755, P-13-013756, P-13-013757, and P-13-013759 are recommended not eligible for listing on the NRHP or CRHR.

Site CA-IMP-11758 is a historic refuse scatter situated on the west bank of Fig Drain and spread over an area 205' north to south by 73' east to west. Diagnostic artifacts identified in the main concentration consist of several black/green bottles, a 19th century ball clay (kaolinite) pipe stem (Seth Mallios Ph.D. personal communication 7/19/2011), a *Bos taurus* (cow) metacarpal diaphysis, and three prehistoric ceramic sherds. The bottles are broken and several were found sitting upright. Due to the presence of broken clay targets, it is likely that they were used for target practice. The site is located within a very disturbed area, bounded by agricultural fields to the west and north and by a large earthen ditch to the east. It is likely that this is a secondary deposit and the result of illegal trash dumping. If the site cannot be avoided through project design additional study is necessary at CA-IMP-11758 to determine its ability to provide any additional information other than what has already been documented.

Diehl Drain (P-13-013747), Fig Drain (P-13-013748), and Wixom Drain (P-13-013761) are earthen irrigation drainage ditches. Diehl Drain drains into Fig Drain, which in turn empties in the New River and ultimately empties into the Salton Sea. Wixom Drain drains directly into the New River. When the All American Canal was completed in 1941, improvements were made to existing canal systems, drain ditches in particular. These drains are associated with the Westside Main Canal and ultimately the All American Canal. All three sites were evaluated for this project by ASM Affiliates and found to be not eligible for listing on the NRHP or CRHR (Davis et al. 2011).

| Table 7. Summary of EPG and KPE Survey Results | | | |
|--|---|-------------|--|
| Site Number | Site Type | Age | Eligibility (NRHP/CRHR) |
| CA-IMP-1403 | Isolate Pottery Sherds | Prehistoric | N/A– Not relocated |
| CA-IMP-3176 | Ceramic and Lithic Scatter | Prehistoric | N/A– Not in Non-BLM option APE |
| CA-IMP-5297 | Isolate Flakes | Prehistoric | N/A – Collected |
| CA-IMP-5298 | Isolate Mano | Prehistoric | N/A – Collected |
| CA-IMP-7834 | Westside Main Canal | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |
| CA-IMP-8821 | Foxglove Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-008983 | Wormwood Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012688 | Dixie Drains 2, 3, & 4, Dixie Lateral 1 (portions) | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012689 | Fern Canal and Fern Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012690 | Forget-Me-Not Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012693 | Fig Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013747 | Diehl Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013748 | Fig Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013760 | Westside Drain | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |
| P-13-013761 | Wixom Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013749 | Isolate bottle base and nail | Historic | Recommended Not Eligible |
| P-13-013750 | Isolate bottle base | Historic | Recommended Not Eligible |
| P-13-013751 | Isolate whiteware ceramic fragment | Historic | Recommended Not Eligible |
| P-13-013752 | Isolate whiteware ceramic fragment | Historic | Recommended Not Eligible |
| P-13-013753 | Isolate glass fragments: 1 purple dating to 1890-1920; and 1 clear 1935-1964 | Historic | Recommended Not Eligible |
| CA-IMP-11758 | Historic refuse scatter; 19 th century kaolinite pipestem fragment & 3 prehistoric pottery fragments also found within the trash scatter | Historic | Insufficient Data – likely a secondary deposit, greatly disturbed. |
| P-13-013755 | Isolate “SMIRNOFF” bottle dating to 1932-1964. | Historic | Recommended Not Eligible |
| P-13-013756 | Isolate 1911 Liberty Head nickel | Historic | Recommended Not Eligible |
| P-13-013757 | Isolate green/black bottle glass fragment | Historic | Recommended Not Eligible |
| P-13-013759 | Isolate purple glass | Historic | Recommended Not Eligible |

Westside Drain (P-13-013760) is an earthen drainage feature. Westside Drain drains into Dixie Drain 3, which in turn empties in Salt Creek which ultimately empties into the Salton Sea. Like the Diehl, Fig, and Wixom Drains when the All American Canal was completed in 1941 improvements were made to existing canal systems, drain ditches in particular. This drain is also associated with the Westside Main and ultimately the All American Canal. This site was evaluated for this project by ASM Affiliates and is recommended eligible for listing on the NRHP under Criterion A and the CRHR under Criterion 1. It is associated with events that have

made a significant contribution to the broad patterns of our history / for its significance in the development of the Imperial Valley history (Davis et al. 2011).

Updated Sites

CA-IMP-7834 is the West Side Main Canal, an irrigation feature that has been recorded, evaluated, re-recorded, updated and re-evaluated seven times since it was first recorded in 1999. For the KPE survey, an approximately 341' section of the canal falls within the survey area, and approximately 2500' section within the EPG survey area. The section of canal inspected consists of an earthen, unlined canal. In addition, a turnout with concrete wing walls provides water to a large concrete block reservoir, which in turn flows into a lateral canal located west of the Westside Main. This lateral, the reservoir and the remains of an electrical panel and tin shed roof appear abandoned and no longer in use.

The Westside Main Canal joins the All-American Canal near the western edge of the Imperial Valley and serves the western part of the IID water service area. Water is released from the Westside Main canal into the heading of each lateral canal. From the lateral canals, zanjeros measure and divert the required amount of water from the lateral canal through individual customer delivery gates. The All American Canal is eligible for State inclusion on the NRHP and by extension, the Westside Main Canal as well. The portion of Westside Main Canal inspected during the current survey found the resource appeared to retain sufficient historic integrity aspects of location and materials.

This site was also evaluated for this project by ASM Affiliates and is recommended eligible for listing on the NRHP under Criterion A and the CRHR under Criterion 1. It is associated with events that have made a significant contribution to the broad patterns of our history / for its significance in the development of the Imperial Valley history (Davis et al. 2011).

Six previously recorded irrigation features as a whole, are associated with the Westside Main Canal system and reflects the development associated with the construction and operation of the All-American Canal; however, ASM Affiliates evaluated them for this project and found that they lacked integrity and did not convey the theme of the early irrigation system of the Imperial Valley as well as other similar examples. ASM Affiliates recommended them not eligible for listing in the NRHP or CRHR (Davis et al. 2011). These irrigation features include CA-IMP-8821 (Foxglove Canal), P-13-008983 (Wormwood Canal), P-13-012688 (portions of Dixie Drains 2, 3, & 4, Dixie Lateral 1), P-13-012689 (Fern Canal and Fern Drain), P-13-012690 (Forget-Me-Not Canal), P-13-012693 (Fig Canal).

8. DISCUSSION

The inventory report focused on identifying all cultural resources within the Project Area that are greater than 45 years in age. Recommendations regarding their potential eligibility for the NRHP or the CRHR, consistent with applicable federal and state legal requirements, are included. One of the crucial elements in evaluating many cultural resources for eligibility for the NRHP or the CRHR is the determination of whether they contain significant research or Native American heritage value. The importance of data potentially available from sites is measured against a set of research issues presented in Section 4.

This chapter provides a discussion of site function and irrigation technology. A summary of site significance evaluations is presented along with a summary and discussion of the site types encountered during the current study: historic irrigation features, historic trash scatters, and isolates. Only identified previously recorded sites and newly documented sites are addressed in this discussion. The historic isolates that have been identified are used as an indication of general historic presence in the study region. They may indicate possible buried or masked cultural resource deposits within the APE. Isolates alone are generally not considered eligible for nomination to the National Register and no further work is recommended or required for these resources.

Significance Criteria

Cultural resources studies for the Project was carried out in compliance with Section 106 of the NHPA, CEQA, and other applicable federal, state, or local laws, ordinances, rules, regulations, and policies. Section 106 is applicable to federal undertakings, including projects financed or permitted by federal agencies, regardless of whether the activities occur on land that is managed by federal agencies, other governmental agencies, or private landowners. In practice, the NRHP criteria for significance applied under Section 106 are generally in conformity with CRHR criteria, with some slight variances. Therefore, all cultural resources within the survey corridor were evaluated for eligibility to be listed on the NRHP, as well as the CRHR.

Significance Evaluation during the Present Study

Preliminary assessments of the significance of cultural resources identified during the present study were included as part of this inventory to the extent possible, in order to provide recommendations for avoidance of project impacts to resources that were likely to be significant.

The majority of cultural resources encountered within the Project Area was historic and included irrigation-related sites, historic trash scatter, and isolates (12 sites; 9 isolates). One trash scatter site (CA-IMP-11758) also contained prehistoric pottery fragments. As stated above isolates alone are generally not considered eligible for nomination to the NRHP and no further work is recommended. Table 8 and the following text present the recommended NRHP eligibility where possible for the historic cultural resources encountered within the Project Area.

Irrigation Features

Irrigation feature sites may contain information that is relevant to several regional research questions, especially those pertaining to the development of irrigated commercial agriculture in the Imperial Valley. They might be eligible for listing in the NRHP/CRHR (under 36 CFR §60.4d and Pub. Res. Code §15064.5(a)(3)(D), respectively).

Site CA-IMP-7834 is determined eligible, and under the themes of agriculture and economic development, ASM Affiliates has recommended that this section of the Westside Main Canal (CA-IMP-7834) is eligible for the NRHP and CRHR on the local and state levels under criterion A/1 for its significance in association with development of the Imperial Valley (Davis et al. 2011). From a management standpoint CA-IMP-7834 is eligible for the NRHP and CRHR until it is demonstrated that it is not.

Site P-13-013760 (Westside Drain) is also associated with the Westside Main Canal and ultimately the All American Canal. ASM Affiliates has recommended that this section of the Westside Main Canal, including the associated Westside Drain, is eligible for the NRHP and CRHR on the local and state levels under criterion A/1 for its significance in association with development of the Imperial Valley (Davis et al. 2011). From a management standpoint P-13-013760 is eligible for the NRHP and CRHR until it is demonstrated that it is not.

Sites CA-IMP-8821 (Foxglove Canal), P-13-008983 (Wormwood Canal), P-13-012688 (portions of Dixie Drains 2, 3, & 4, Dixie Lateral 1), P-13-012689 (Fern Canal and Fern Drain), P-13-012690 (Forget-Me-Not Canal), P-13-012693 (Fig Canal), P-13-013747 (Diehl Drain), P-13-013748 (Fig Drain), and P-13-013761 (Wixom Drain) were evaluated by ASM Affiliates for this project and found to be not eligible for the NRHP and CRHR. Although these features are associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, these particular waterways do not convey that theme as well as other similar resources such as the Westside Main and the All-American canals, in part due to their loss of integrity (Davis et al. 2011). From a management standpoint these segments of CA-IMP-8821 (Foxglove Canal), P-13-008983 (Wormwood Canal), P-13-012688 (portions of Dixie Drains 2, 3, & 4, Dixie Lateral 1), P-13-012689 (Fern Canal and Fern Drain), P-13-012690 (Forget-Me-Not Canal), P-13-012693 (Fig Canal), P-13-013747 (Diehl Drain), P-13-013748 (Fig Drain), and P-13-013761 (Wixom Drain) are not eligible for the NRHP and CRHR.

Trash Scatters

Trash scatter sites may contain information that is relevant to several regional research questions, especially those pertaining to chronology and settlement systems, and technology. They might be eligible for listing in the NRHP/CRHR (under 36 CFR §60.4d and Pub. Res. Code §15064.5(a)(3)(D), respectively) for their data content; however, site CA-IMP-11758 has been recommended as not eligible for listing in the NRHP based on preliminary evaluation. The site is

| Table 8. Project Site Eligibility | | | |
|--|---|------------|--|
| Site Number | Site Type | Age | Eligibility (NRHP/CRHR) |
| CA-IMP-7834 | Westside Main Canal | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |
| CA-IMP-8821 | Foxglove Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-008983 | Wormwood Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012688 | Dixie Drains 2, 3, & 4, Dixie Lateral 1 (portions) | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012689 | Fern Canal and Fern Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012690 | Forget-Me-Not Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012693 | Fig Canal | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013747 | Diehl Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013748 | Fig Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013760 | Westside Drain | Historic | Recommended Eligible: A/1 (Davis et al. 2011) |
| P-13-013761 | Wixom Drain | Historic | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013749 | Isolate bottle base and nail | Historic | Recommended Not Eligible |
| P-13-013750 | Isolate bottle base | Historic | Recommended Not Eligible |
| P-13-013751 | Isolate whiteware ceramic fragment | Historic | Recommended Not Eligible |
| P-13-013752 | Isolate whiteware ceramic fragment | Historic | Recommended Not Eligible |
| P-13-013753 | Isolate glass fragments: 1 purple dating to 1890-1920; and 1 clear 1935-1964 | Historic | Recommended Not Eligible |
| CA-IMP-11758 | Historic refuse scatter; 19 th century kaolinite pipestem fragment & 3 prehistoric pottery fragments also found within the trash scatter | Historic | Insufficient Data – likely a secondary deposit, greatly disturbed. |
| P-13-013755 | Isolate “SMIRNOFF” bottle dating to 1932-1964. | Historic | Recommended Not Eligible |
| P-13-013756 | Isolate 1911 Liberty Head nickel | Historic | Recommended Not Eligible |
| P-13-013757 | Isolate green/black bottle glass fragment | Historic | Recommended Not Eligible |
| P-13-013759 | Isolate purple glass | Historic | Recommended Not Eligible |

located within a very disturbed area, and some of the artifacts have been used for gun target practice. It is also likely that this is a secondary deposit and the result of illegal trash dumping.

Despite the secondary deposit, amid the disturbed trash deposit are several interesting artifacts that may be significant under CEQA. Three prehistoric buffware pottery fragments were identified, as well as a 19th century kaolinite pipestem fragment. The buffware pottery fragments are representative of the local area and along the Colorado River. The 19th century kaolinite pipestem fragment is a useful artifact when encountered at historical archaeological sites. Their short use-life and easily recognizable stylistic evolution provide valuable dating ranges (Noël Hume 1969; Oswald 1951). Clay pipes were first developed in the early 17th century and were in use into the late 19th century. According to an article by Maj. Robert J. Dalessandro (1995), pipe stems were the "17th, 18th, and 19th century equivalent of the cigarette butt". Clay pipes had very long stems and as the stems became clogged, the ends would be broken off and discarded. It's not uncommon to find these discarded pipe stems, but it wasn't until excavations at Jamestown in the early 1950s that archaeologists began realizing that these discarded stems could help them date a site. J.C. Harrington, a National Park Service archaeologist, studied hundreds of dated pipes and realized that the stem's bore diameters directly related to certain time periods (Harrington 1954). These are the guidelines Harrington determined:

| <u>Bore</u> | <u>Date</u> |
|-------------|-------------|
| 9/64" | = 1590-1620 |
| 8/64" | = 1620-1650 |
| 7/64" | = 1650-1680 |
| 6/64" | = 1680-1710 |
| 5/64" | = 1710-1750 |
| 4/64" | = 1750-1800 |

Seth Mallios, Ph.D. from San Diego State University Department of Anthropology concurred that this was a kaolinite pipestem fragment, and that the diameter of the bore hole looked small (4/6^{ths} of an inch), making it 19th century (Binford 1962; Deetz 1987; Munroe et al. 2004).

From a management standpoint CA-IMP-11758 is not eligible for the NRHP, but may be still eligible for the CRHR if it has the potential to contain additional unique artifacts. There is currently insufficient data regarding the CA-IMP-11758 to recommend CRHR eligibility at the survey level. If CA-IMP-11758 cannot be avoided through project design additional research would be required to determine CRHR eligibility.

Isolates

Isolated archaeological occurrences are generally considered to be not NRHP-eligible, and no management recommendations are made. These artifacts can; however, provide some important indications of the overall use of an area or the apparent density of occupation or continuous use of an area. More importantly, while individual artifacts may not contribute greatly to the

archaeological record they are often viewed as evidence of potential archaeological site presence or as markers for areas that may require close monitoring or have a higher potential for masked or buried deposits.

Summary

Table 9 provides a summary of potential site impact based on the inventories generated from the KPE July 2011 survey and the EPG 2007 survey (Rowe 2008).

Based on the inventory results, 12 sites and 9 isolates are recorded within the Proposed Project Area or project components. Nine isolates and nine irrigation sites are recommended not eligible for the NRHP/CRHR. Even though the nine irrigation sites are recommended not eligible no impacts to drains or canals are expected. Some may be spanned by transmission lines, but are not expected to be affected, and they would continue to operate.

Proposed Project

The Westside Main Canal (CA-IMP-7834) and Westside Drain (P-13-013760) are recommended eligible for the NRHP/CRHR under Criteria A/1 (Davis et al. 2011); however, no impacts to drains or canals are expected. Some may be spanned by transmission lines, but are not expected to be affected, and they would continue to operate.

If it cannot be avoided through project design, historic trash scatter site CA-IMP-11758 requires additional analysis to determine CRHR eligibility. CA-IMP-11758 is located within the Project APE.

In addition, there is also one non-archaeological cultural feature present within the exterior boundaries of Proposed Campo Verde Solar Project area. The memorial for Margarito Hernandez is not a recorded archaeological or historic site; however, it is a modern cultural feature. If this feature might be impacted by the Project, management will be coordinating with the landowner for the appropriate treatment for the memorial.

Non-BLM Gen-Tie Alternative

The Westside Main Canal (CA-IMP-7834) and Westside Drain (P-13-013760) are recommended eligible for the NRHP/CRHR under Criteria A/1 (Davis et al. 2011); however, no impacts to drains or canals are expected. Some may be spanned by transmission lines, but are not expected to be affected, and they would continue to operate.

| Table 9. Site Impact | | | | | |
|----------------------|---|------------------|-----------------|-----------------|--|
| Site | Site Type | Proposed Project | Non-BLM Gen-Tie | Impact | NRHP/CRHR Eligibility |
| CA-IMP-7834 | Westside Main Canal | X | X | Avoided | Recommended Eligible: A/1 (Davis et al. 2011) |
| CA-IMP-8821 | Foxglove Canal | | X | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-008983 | Wormwood Canal | X | | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012688 | Dixie Drains 2, 3, & 4, Dixie Lateral 1 (portions) | X | X | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012689 | Fern Canal and Fern Drain | X | | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012690 | Forget-Me-Not Canal | | X | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-012693 | Fig Canal | X | | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013747 | Diehl Drain | X | | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013748 | Fig Drain | X | | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013760 | Westside Drain | X | X | Avoided | Recommended Eligible: A/1 (Davis et al. 2011) |
| P-13-013761 | Wixom Drain | X | | Avoided | Recommended Not Eligible (Davis et al. 2011) |
| P-13-013749 | Isolate bottle base and nail | X | | No Impact | Recommended Not Eligible |
| P-13-013750 | Isolate bottle base | X | | No Impact | Recommended Not Eligible |
| P-13-013751 | Isolate whiteware ceramic fragment | X | | No Impact | Recommended Not Eligible |
| P-13-013752 | Isolate whiteware ceramic fragment | X | | No Impact | Recommended Not Eligible |
| P-13-013753 | Isolate glass fragments: 1 purple dating to 1890-1920; and 1 clear 1935-1964 | X | | No Impact | Recommended Not Eligible |
| CA-IMP-11758 | Historic refuse scatter; 19 th century kaolinite pipestem fragment & 3 prehistoric pottery fragments also found within the trash scatter | X | | Possible Impact | Insufficient Data – likely a secondary deposit, greatly disturbed. |
| P-13-013755 | Isolate “SMIRNOFF” bottle dating to 1932-1964. | X | | No Impact | Recommended Not Eligible |
| P-13-013756 | Isolate 1911 Liberty Head nickel | X | | No Impact | Recommended Not Eligible |
| P-13-013757 | Isolate green/black bottle glass fragment | X | | No Impact | Recommended Not Eligible |
| P-13-013759 | Isolate purple glass | | X | No Impact | Recommended Not Eligible |