APPENDIX E
CULTURAL RESOURCES REPORTS

CULTURAL RESOURCES REPORT

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

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December 30, 2011

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APPENDIX

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.

<u>Project Support Systems</u>

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 hard-wired 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. cansescens*), 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 maintained 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	SE¼SE¼	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	SE¼SW¼ 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	SW¼SW¼	22	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0006635	Eliott 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 EntryOriginal (12 Stat. 392)
CALA 0002130	Roy Carlisle Holbrook	6/29/1916	87.96	SW¼NW¼ 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	NW¼SW¼ 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	E½SW¼ SW¼SE¼	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	SW¼NW¼	27	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0014414	Alexander Wixom	11/26/1913	125.03	SE¼SE¼ 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	NW¼NW¼	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	SW¼SW¼	27	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0015129	Charles Schultz	6/29/1916	40	NW¼SW¼	27	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0011881	Lorenzo Adams	8/28/1913	120	SE¼NE¼ NE¼SE¼	28	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0001608	Milton P. Adams	2/6/1914	160	NE¼NE¼	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	E½SW¼	28	March 3, 1877: Desert Land Act (19 Stat. 377)
CALA 0007476	Michael Liebert	6/1/1915	160	SE¼NW¼ SW¼NE¼ W½SE¼	28	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CAEC 0002292	Joseph F. Nelson	11/30/1920	120	SW¼NW¼ W½SW¼	28	March 3, 1877: Desert Land Act (19 Stat. 377)
CALA 0004706	Hulda H. Vaughn	10/30/1914	137.04	NE¼NW¼ 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	SE¼SE¼	28	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0004708	John C. Vaughn	4/22/1912	80	NE¼NE¼	33	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0000866	Versie Nelson, Eugene G. Smith	10/30/1912	80	SE¼NE¼	33	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0022900	Ernest R. Stoll, Septimus E. Dykes	9/16/1914	120	SE¼SW¼ W½SW¼	33	May 20, 1862: Homestead EntryOriginal (12 Stat. 392)
CAEC 0001310	John C. Cushman	6/27/1919	40	NW¼NE¼	33	March 3, 1877: Desert Land Act (19 Stat. 377)
CALA 0004708	John C. Vaughn	4/22/1912	80	NW¼NW¼	34	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0000866	Versie Nelson, Eugene G. Smith	10/30/1912	80	SW¼NW¼	34	April 24, 1820: Sale-Cash Entry (3 Stat. 566)
CALA 0014414	Alexander Wixom	11/26/1913	125.03	NE¼NE¼	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	SE¼NE¼ E½NW¼ NE¼SW¼ W½NE¼ N½SE¼	34	March 3, 1877: Desert Land Act (19 Stat. 377)
CALA 0039059	George O. Lien	12/11/1953	80	S½SE¼	34	March 3, 1877: Desert Land Act (19 Stat. 377)
CALA 0020784	Emmitt J. Smith	12/20/1950	156.93	NE¼NE¼ 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	SE¼NE¼	35	January 21,1927: Indemnity Selections (44 Stat. 1022)
CALA 0006826	William A. McCune, Henry E. Clay	1/18/1917	280	SE¼SW¼ N½SW¼ SE¼	35	March 3, 1877: Desert Land Act (19 Stat. 377)
CACAAA 000509 02	State of California	7/23/1917	757.09	S½NW¼ SW¼NE¼	35	January 21,1927: Indemnity Selections (44 Stat. 1022)
CAEC 0002124	Cedric E. Johnson, Alexander L. Conger, William H. McCuen	3/12/1918	40	SW¼SW¼	35	May 20, 1862: Homestead EntryOriginal (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.

<u>Research Questions</u>

- 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?

<u>Data Requirements</u>

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-m^2 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-m^2 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-m^2 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, Ewiiaapaayp Band of Kumeyaay Indians
- Michael Garcia – Vice Chairman, Ewiiaapaayp Band of Kumeyaay Indians
- Jill McCormick – Tribal Archaeologist, Cocopah Indian Tribe
- Bridget Nash-Chrabascz – 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).

Table 5. KPE Class III Survey Results

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; 19th 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 Oberndorgf, 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 (NHRP) 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.

Table 6. EPG Class III Survey Results

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; 19th 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; 19th 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:

Bore	Date
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 (4/6ths 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; 19th 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

9. MANAGEMENT CONSIDERATIONS

Based on the inventory results there are two sites that are recommended eligible for the NRHP and CRHR recorded within the Proposed Project APE and the Non-BLM Gen-Tie alternative (CA- IMP-7834 and P-13-013760).

One site (CA-IMP-11758) recorded within the Proposed APE requires additional research in order to determine CRHR eligibility if it cannot be avoided through project design.

In order to minimize damage to archaeological resources, a number of options for protection and avoidance are proposed. The evaluation process itself can be considered to be a potential impact, as the process of evaluation is destructive when it involves the excavation of the site. In order to minimize damage from evaluation efforts, all of the resources in the project area are considered to be potentially eligible for nomination to the National Register or California Register. Therefore, the first option is to avoid impacts through project design to locations outside the recorded site boundary. A second option is establishing Environmentally Sensitive Areas (ESAs) around cultural resource sites. These exclusion zones will be a temporary fenced buffer around known sites. No project activities will occur within them. These areas will be established by a qualified archaeologist and will be shown on the project construction plans as ESAs with specific language for avoidance for the construction personnel. On-site project monitors will be required to maintain the protective fencing throughout the duration of construction activities in the area of the specific ESAs.

The final option will be to initiate National Register eligibility evaluations at sites where avoidance of impacts is not possible. These sites will be subjected to specific evaluation efforts in the areas of direct impact potential only. The evaluation work will be completed by a qualified archaeologist. The results of the evaluation efforts will be used by the SHPO to determine site eligibility and management recommendations for eligible sites.

There is also one non-archaeological cultural feature present within the Proposed 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.

Areas with Potential for Buried Cultural Deposits

Based on the results of the Class III Inventory conducted by KPE, the Project Area is identified as having a moderate to low probability to produce unidentified subsurface cultural materials. This assumption is based on several criteria, including the presence of sufficient sedimentation to cover potential cultural resources, geomorphology, land form characteristics, proximity to a reliable water source, and the occurrence of previously recorded cultural resources in the immediate area. Thus, although no cultural resources were identified on the ground surface in

some of these areas, it is possible that unidentified cultural resources exist below the surface, based on previous archeological studies in the region. In order to ensure as much as possible that cultural resources are not adversely impacted, it is recommended that an archaeological monitor should be present during initial ground-disturbing activities.

Conclusion

A Class III archaeological inventory has been completed for the Project, which includes the solar facility footprint and project components, and a transmission line alternative. Strategies to avoid, minimize, or mitigate effects to cultural resources have been summarized here.

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APPENDICES

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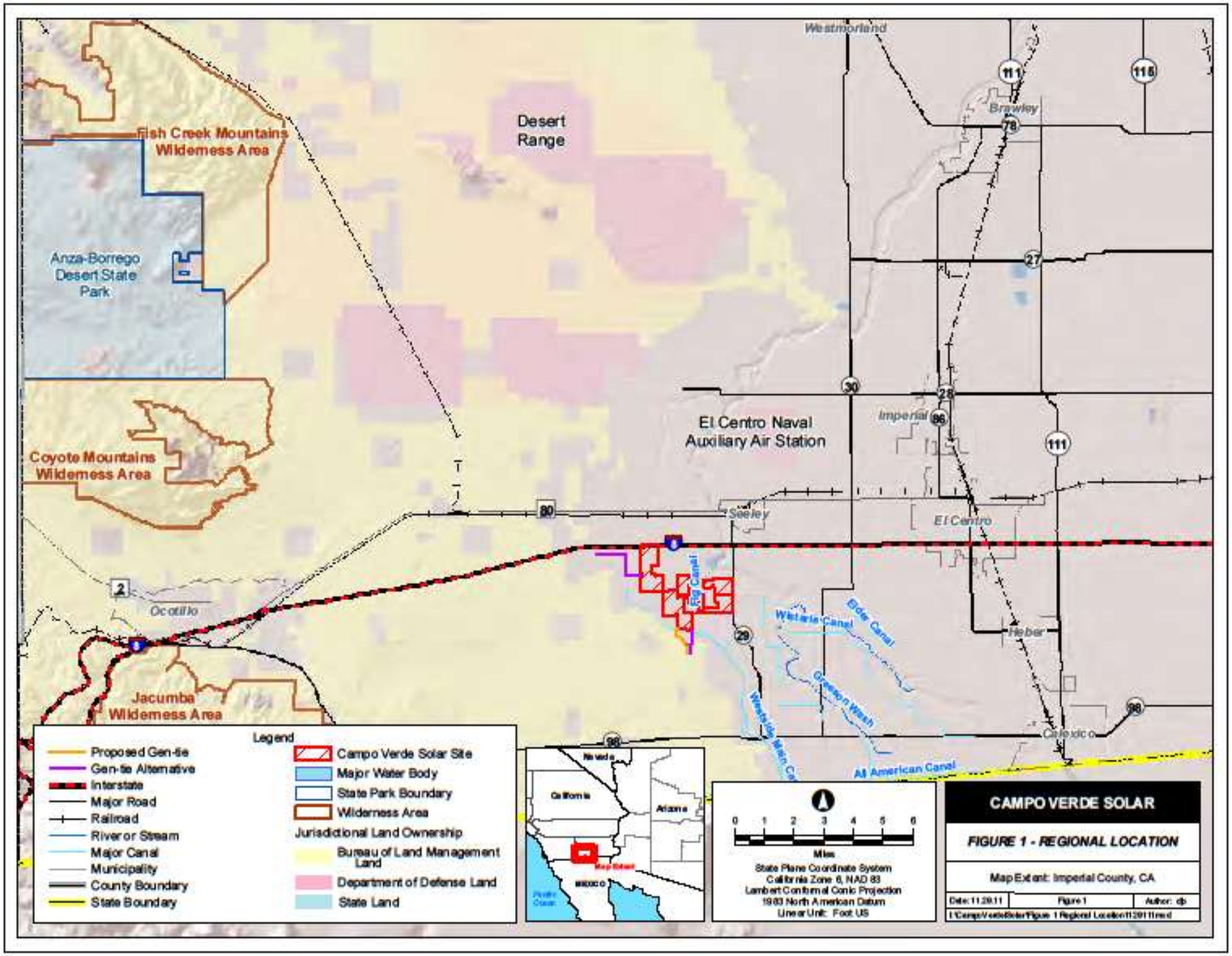

Westmorland
Brawley
Desert Range
Fish Creek Mountains Wilderness Area
Anza-Borrego Desert State Park
El Centro Naval Auxiliary Air Station
Imperial
Coyote Mountains Wilderness Area
Seeley
El Centro
Ocotillo
Fig Canal
Westside Canal
Elder Canal
Heber
Greeson Wash
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Calexico
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Major Road
Railroad
River or Stream
Major Canal
Municipality
County Boundary
State Boundary
Campo Verde Solar Site
Major Water Body
State Park Boundary
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Jurisdictional Land Ownership
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Department of Defense Land
State Land
Nevada
California
Arizona
MEXICO
Map Extent
Miles
State Plane Coordinate System
California Zone 6, NAD 83
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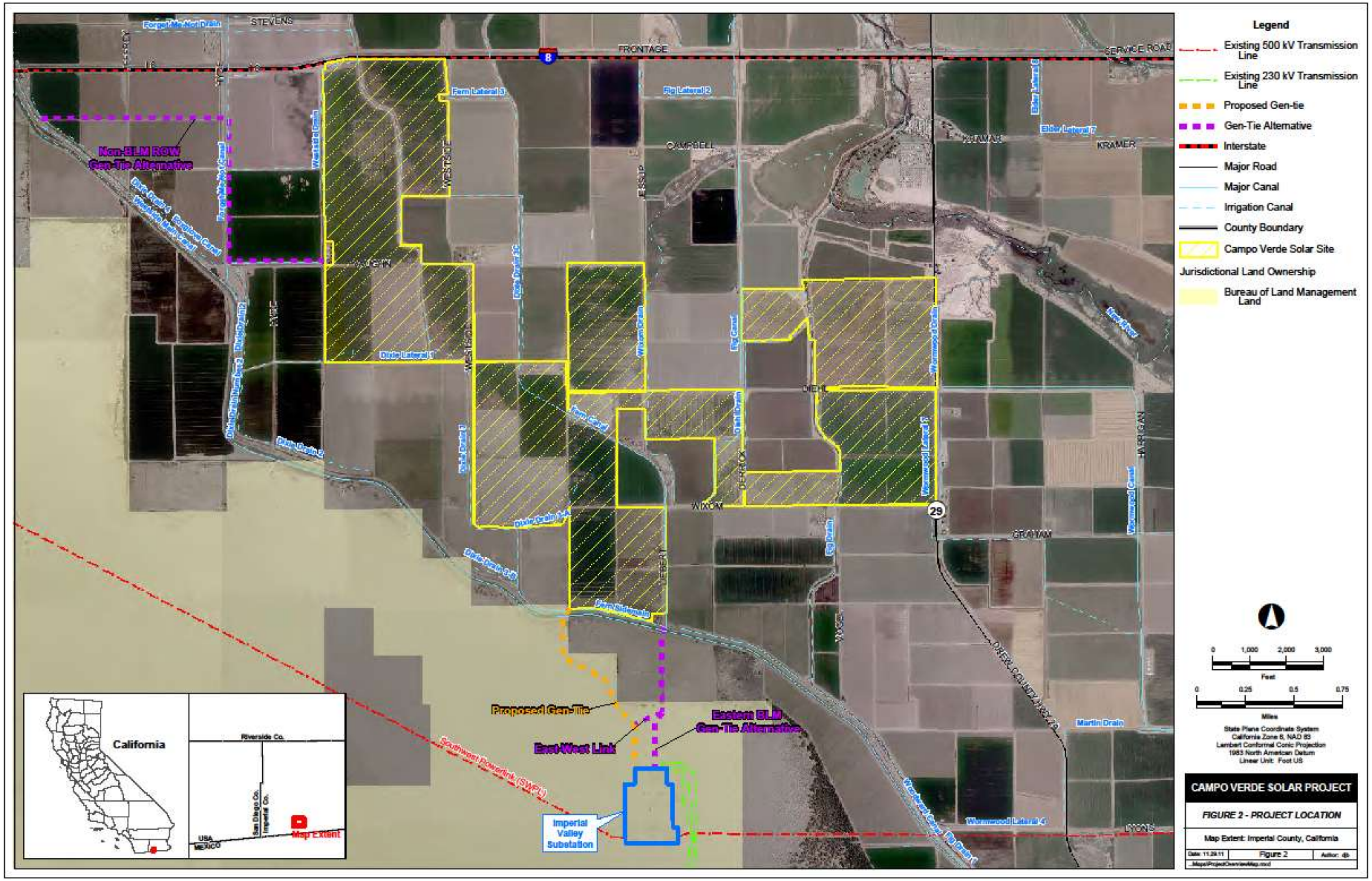
1983 North American Datum
Linear Unit: Foot US
CAMPO VERDE SOLAR
FIGURE 1 - REGIONAL LOCATION
Map Extent: Imperial County, CA
Date: 11.28.11
Figure 1
Author: db



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Existing 230 kV Transmission Line
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Gen-Tie Alternative
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Date: 11.29.11
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Author: db
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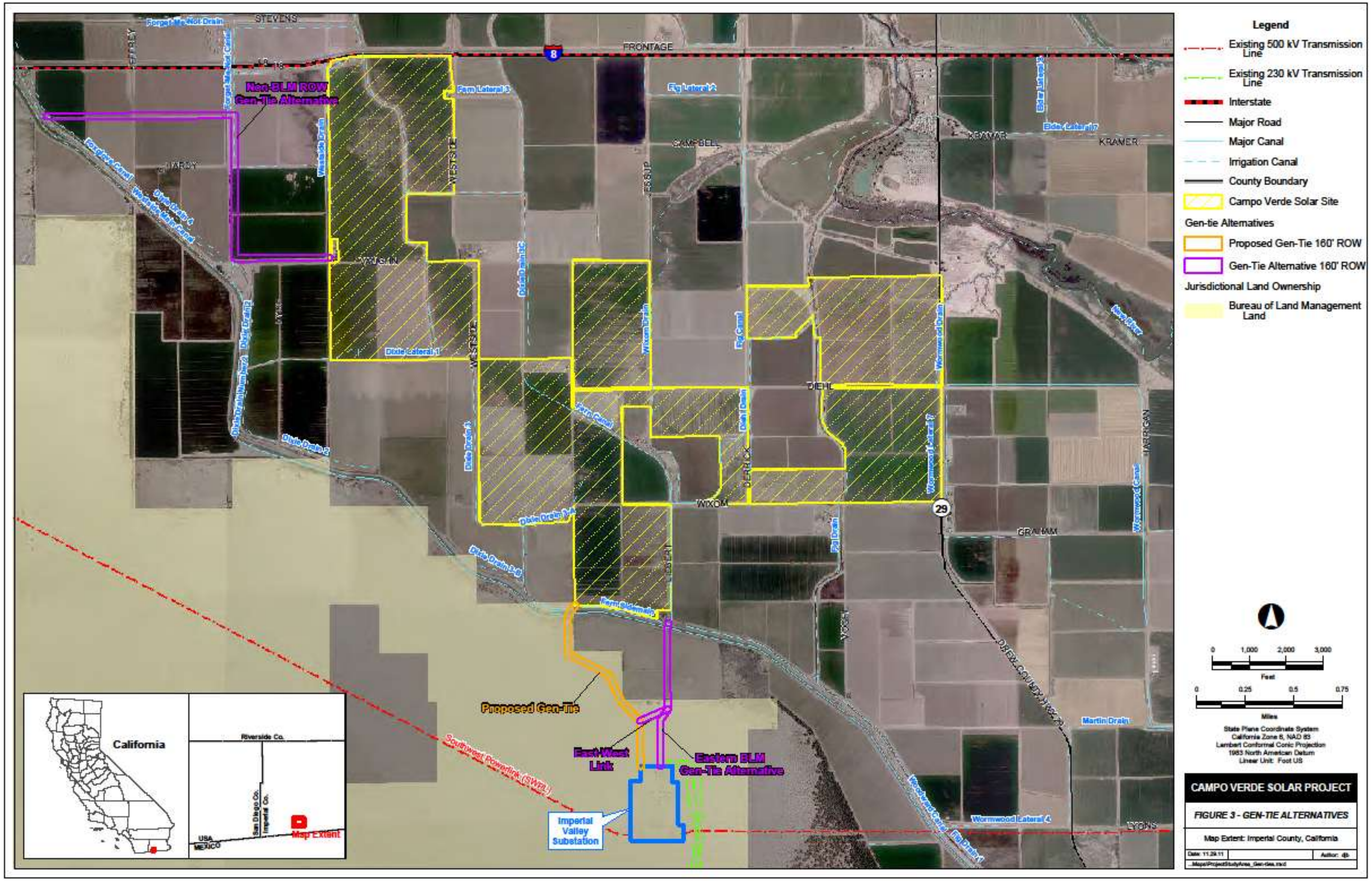
SERVICE ROAD
KRAMER
CAMPBELL
VAUGHN
WIXOM
DIEHL
GRAHAM
Non-BLM ROW Gen-Tie Alternative
Proposed Gen-Tie
East-West Link
Eastern BLM Gen-Tie Alternative
Imperial Valley Substation
Southwest Powerlink (SWPL)
California
Riverside Co.
San Diego Co.
Imperial Co.
USA
MEXICO
Map Extent


Legend
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Existing 230 kV Transmission Line
Interstate
Major Road
Major Canal
Irrigation Canal
County Boundary
Campo Verde Solar Site
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Proposed Gen-Tie 160' ROW
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KRAMER
WESTSIDE
DIEHL
WIXOM
DERRICK
GRAHAM
29
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Dixie Drain 2
Fern Canal
Wormwood Drain
Proposed Gen-Tie
East-West Link
Eastern BLM Gen-Tie Alternative
Imperial Valley Substation
Southwest Powerlink (SWPL)
LYONS
Wormwood Lateral 4
Martin Drain
California
Riverside Co.
San Diego Co.
Imperial Co.
USA
MEXICO
Map Extent
0
1,000
2,000
3,000
Feet
0
0.25
0.5
0.75
Miles
State Plane Coordinate System
California Zone 6, NAD 83
Lambert Conformal Conic Projection
1983 North American Datum
Linear Unit: Foot US
CAMPO VERDE SOLAR PROJECT
FIGURE 3 - GEN-TIE ALTERNATIVES
Map Extent: Imperial County, California
Date: 11.29.11
Author: djb

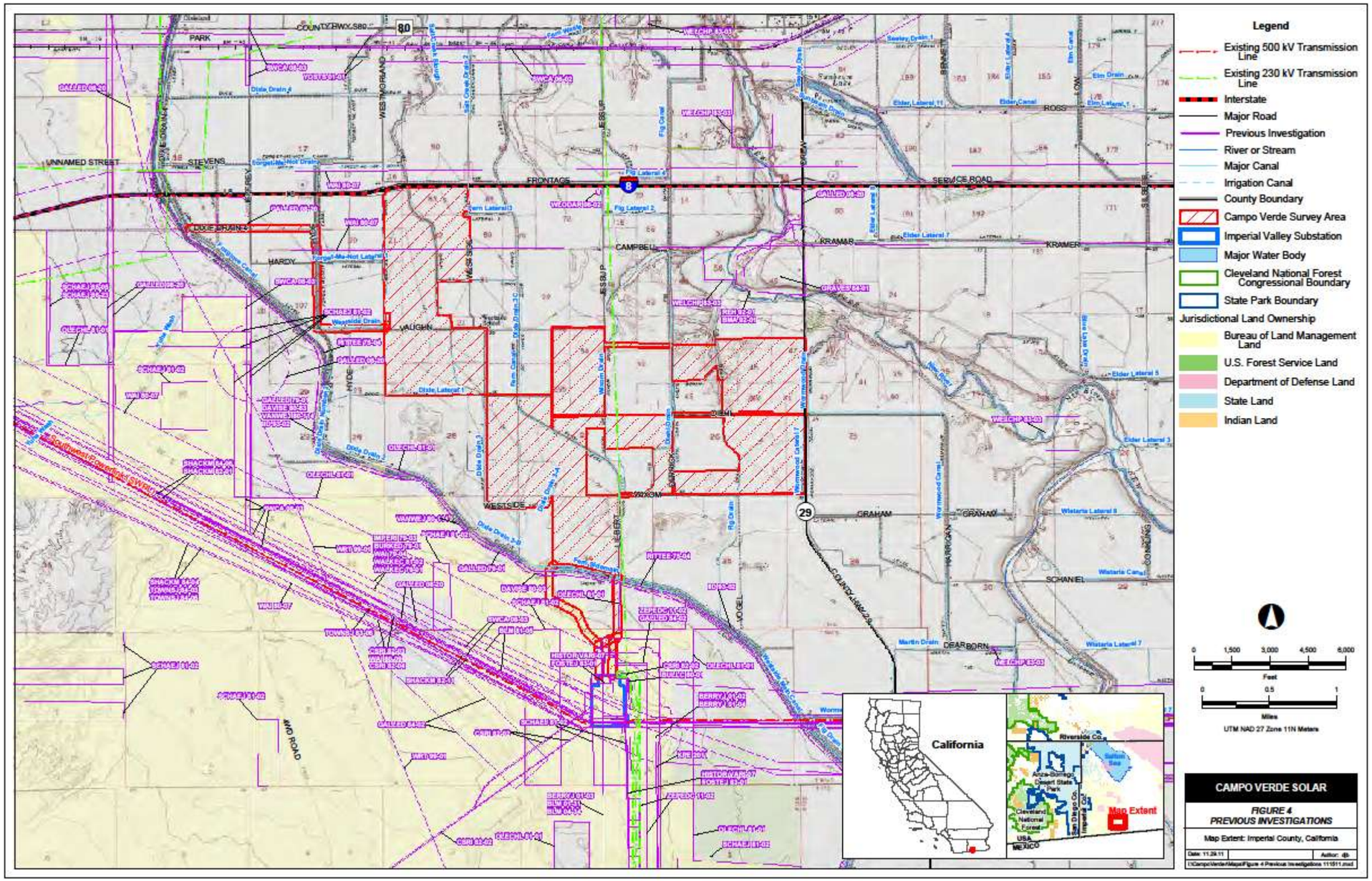
Legend
Existing 500 kV Transmission Line
Existing 230 kV Transmission Line
Interstate
Major Road
Previous Investigation
River or Stream
Major Canal
Irrigation Canal
County Boundary
Campo Verde Survey Area
Imperial Valley Substation
Major Water Body
Cleveland National Forest Congressional Boundary
State Park Boundary
Jurisdictional Land Ownership
Bureau of Land Management Land
U.S. Forest Service Land
Department of Defense Land
State Land
Indian Land
0 1,500 3,000 4,500 6,000
Feet
0 0.5 1
Miles
UTM NAD 27 Zone 11N Meters
California
Map Extent
CAMPO VERDE SOLAR
FIGURE 4
PREVIOUS INVESTIGATIONS
Map Extent: Imperial County, California
Date: 11.29.11
Author: djb
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Figure 7. Memorial

HISTORIC RESOURCES REPORT

INVENTORY, EVALUATION AND ANALYSIS OF IMPACTS ON HISTORIC RESOURCES ON PRIVATE LANDS WITHIN THE AREA OF POTENTIAL EFFECT OF THE CAMPO VERDE SOLAR PROJECT, IMPERIAL COUNTY, CALIFORNIA

Prepared for:

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Prepared by:

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Jennifer Krintz, M.H.P.
Sarah Stringer-Bowsher, M.A.
Sinéad Ní Ghabhláin, Ph.D., RPA

ASM Affiliates, Inc.
2034 Corte del Nogal
Carlsbad, California 92011

December 2011
PN 18820

USGS 7.5-minute Quadrangles: Mount Signal, Seeley
Acres: approximately 1,990 acres

Keywords: CEQA, built-environment inventory, direct impacts, indirect impacts, visual impacts, auditory impacts, atmospheric impacts, Westside Main Canal

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NATIONAL ARCHEOLOGICAL DATA BASE INFORMATION

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Consulting Firm: ASM Affiliates, Inc.
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Carlsbad, California 92011
760-804-5757

Report Date: December 14, 2011

Report Title: Inventory, Evaluation, and Analysis of Impacts on Historic Resources On Private Lands within the Area of Potential Effect of the Campo Verde Solar Project, Imperial County, California

Submitted by: ASM Affiliates, Inc.

Submitted to: Patricia T. Mitchell

Prepared for: KP Environmental, LLC
1614 E. Weathervane Lane
Tempe, Arizona 85283

Project Number: ASM PN 18820

USGS Quadrangle: 7.5-minute Mount Signal and Seeley

Acres: approximately 1,990 acres

Keywords: CEQA, built-environment inventory, direct impacts, indirect impacts, visual impacts, auditory impacts, atmospheric impacts, Westside Main Canal

MANAGEMENT SUMMARY

This report summarizes the results of a survey for historic resources located on private lands within the Area of Potential Effect (APE) of the Campo Verde Solar Project (Project) proposed by First Solar, Inc. (First Solar) in Imperial County, California. The report addresses the potential for direct impacts to those historic resources, and also the potential for indirect impacts resulting from the introduction of visual, auditory, or atmospheric elements on historic resources situated within the APE. The proposed Project consists of two primary components: (i) a solar field on privately owned land (the "Campo Verde Facility") and (ii) an aboveground, transmission line (the "Gen-tie Line") that will connect the Campo Verde Facility with the Imperial Valley Substation located on federal land within the California Desert Conservation Area under the jurisdiction of the Bureau of Land Management (BLM). The Gen-tie Line will be addressed in a separate report for the BLM. The Campo Verde Facility and Gen-tie Line are referred to collectively as the "Project." In this report, the area encompassing only the private land areas within the Campo Verde Facility and the Gen-tie Line are referred to as the "Project Area."

The APE is the geographic area or areas, regardless of land ownership, within which an undertaking may directly or indirectly cause alterations in the character or use of historic resources, if any such properties exist. The APE for this assessment of direct and indirect impacts was defined as encompassing an area extending 0.5 mile (mi.) from the centerline of the proposed transmission line and a radius of 0.5 mi. surrounding the solar field in order to assess indirect visual, auditory, or atmospheric impacts on significant historic resources. ASM Affiliates, Inc. (ASM) conducted field surveys within that APE, to identify historic resources and to assess the potential direct and indirect impacts on those historic resources as a result of the Project. This report presents those findings for the areas within the APE only located on private lands, referred to as the Project APE.

Historical resources studies for this report were carried out in compliance with the California Environmental Quality Act (CEQA). As such, this report identifies and evaluates historic resources within the Project APE for eligibility for inclusion in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR), and as CEQA historical resources.

To assess direct and indirect impacts to historic resources, ASM completed an inventory and field documentation of built-environment properties (i.e., buildings and structures) more than 45 years old within the APE where impacts to the historic resources and settings could occur, or 0.5 miles (mi.) around the Project Area footprint, including the solar field and transmission line. Historic resources constructed prior to 1966 were identified through an analysis of historical maps, aerial photographs, and a records search at the South Coastal Information Center provided by KP Environmental, LLC. A field survey was then conducted, and all historic resources visible from the public right-of-way (ROW) were documented. The buildings and structures identified as a result of archival research and field survey were then evaluated

using NRHP and CRHR eligibility. An analysis of impacts was completed for all buildings and structures recommended eligible to the NRHP and CRHR.

This report is divided into seven chapters. Following an introduction to the undertaking in Chapter 1, Chapter 2 provides an historical overview for the Project Area. Chapter 3 summarizes previous surveys conducted within the APE for indirect impacts and previously recorded historic resources. Chapter 4 discusses the research and field methods guiding the identification and evaluation of historic resources. Chapter 5 summarizes the survey results, and provides details on the limitations of the field survey. Chapter 6 provides evaluation of historic resources for their eligibility for listing in the NRHP and/or CRHR, and Chapter 7 is an assessment of direct and indirect impacts to eligible historic resources.

As a result of the inventory, 20 historic resources were identified within the areas of the Project APE that were surveyed. One NRHP-eligible historic resource was identified, the Westside Main Canal (CA-IMP-7834). No significant direct or indirect (visual, auditory, or atmospheric) impacts were identified. The Project will not result in the any direct impacts to the Westside Main Canal system within the Project Area. The canal would not be subject to a visual intrusion by the Project, but may be subject to temporary auditory and atmospheric intrusions during Project construction. However, neither intrusion is likely to affect the qualities or values that would qualify this property for listing in the NRHP/CRHR and would not result in a significant impact under CEQA.

Documentation of historic resources complied with the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716-44740), and the California Office of Historic Preservation Planning Bulletin Number 4(a), December 1989, *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format for the Preparation and Review of Archaeological Reports* (ARMR Guidelines). All historic buildings and structures identified during this inventory were recorded on California Department of Parks and Recreation (DPR) Form DPR 523 (Series 1/95), using the *Instructions for Recording Historical Resources* (Office of Historic Preservation 1995). These forms are included a confidential appendix (Appendix A) to this report.

1. INTRODUCTION

This report describes the goals and methods of the historic resources survey completed by ASM Affiliates, Inc. (ASM) in support of the Project in Imperial County, California, which is bordered by Mexico to the south, Arizona to the east, and San Diego County to the west. The following introductory sections present a description of the project and an introduction to the survey.

PROJECT DESCRIPTION

Solar Project

The Campo Verde Solar 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 – Confidential Appendix C).

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 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 Westside Main Canal. Figure 2 (Confidential Appendix C) shows the boundary of the 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 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 (KP Environmental 2011).

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.

The boundaries of the APE for this study, comprising only those areas in private ownership, are shown in Figure 3 (Confidential Appendix C).

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 Imperial Irrigation District (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 2 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.

REGULATORY FRAMEWORK

The County of Imperial is the lead agency under CEQA. Public Resources Code (PRC) Section 5020.1 and CEQA Guidelines Section 15064.5(b)(1) define a significant effect as one that would materially impair the significance of an historical resource. An adverse visual, auditory, or atmospheric effect to a historic resource is one that negatively affects the integrity of setting or feeling of the resource to the extent that the characteristics that would qualify the resource for listing in the NRHP or the CRHR are compromised. Accordingly, this report addresses direct and indirect significant impacts under CEQA to historic buildings and structures.

A phased approach to evaluating potential impacts on historic resources was implemented. First, an inventory of known historic resources within the Project APE was compiled and historic maps were examined. Second, a field survey was conducted within the APE, to identify and evaluate the eligibility of historic structures (see Figure 3). This information was then analyzed to determine the age, integrity, and historic context of the resources present. Third, direct and indirect impacts were evaluated for those historic structures considered

eligible for the NRHP and/or CRHR or as CEQA historical resources within the areas of the APE where impacts could occur.

PROJECT PERSONNEL

Table 1. ASM Project Personnel

Role	Individual
Principal in Charge / Contract Administration	John R. Cook, B.A., RPA
Project Manager	Sinéad Ní Ghabhláin, Ph.D., RPA
Senior Architectural Historian	Shannon Davis, M.A.
Associate Architectural Historian	Jennifer Krintz, M.H.P.
Senior Historian	Sarah Stringer-Bowsher, M.A.

ASM's team of cultural resource professionals included Dr. Sinéad Ní Ghabhláin, as Project Manager. Dr. Ní Ghabhláin has 26 years of professional and academic experience in historical archaeology, history, and architectural history. Shannon Davis, M.A., has 14 years experience in historic preservation, 10 of which were spent as a Historian with the NRHP, and is qualified as Architectural Historian and Historian under the SOI's qualifications standards. Jennifer Krintz, M.H.P., has seven years of experience in cultural resources and historic preservation planning, evaluation, and documentation, and is qualified as Architectural Historian under the SOI's qualifications standards. Both Ms. Davis and Ms. Krintz are well-versed in all aspects of evaluating buildings and structures for listing in federal and state registers, and in applying the aspects of integrity to a given property. Sarah Stringer-Bowsher, M.A., has seven years of experience and is qualified as a Historian under the SOI's qualifications standards. She is also registered as a professional historian in the state of California. Ms. Stringer-Bowsher has worked for a water utility and has a wealth of experience developing historic contexts, especially concerning irrigation systems, for clients such as the Bureau of Reclamation and the Coachella Valley Water District.

2. NATURAL AND HISTORICAL SETTING

NATURAL SETTING

The Project APE is roughly bordered on the west by the Yuha Basin and Yuha Desert; on the east by Drew Road; on the north by Interstate 8; and on the south by the Westside Main Canal. It is mostly comprised of agricultural land and open space y. The nearest community is Seeley (outside that APE) to the north. Imperial Valley is part of the Colorado Desert.

The Colorado Desert in California is a low-lying area east of the Peninsular Ranges, with its southern end extending through Mexico to the head of the Gulf of Mexico. Elevations in the Colorado Desert range between 70 meters (m) (230 ft.) below mean sea level to 670 m (2,200 ft.) above mean sea level (Miles and Goudey 1998). A hot and dry climate characterizes the Colorado Desert. Average annual temperatures range between 20º and 24º Celsius (C) (68º and 75º Farenheit (F)), with only 76 to 152 mm of mean annual precipitation. The Colorado Desert represents an arid region, with episodic freshwater lakes formed by the infilling of Lake Cahuilla throughout the Holocene. Vegetation communities in the Colorado Desert include desert scrublands, riparian woodland and scrublands, and wetlands in moist areas (Miles and Goudey 1998). Mammals that have typically resided in the Colorado Desert include desert bighorn sheep, mule deer, pronghorn antelope (now extirpated), desert kit fox, coyote, spotted skunk, spotted bat, black-tailed jackrabbit, cottontail rabbit, ground squirrels, kangaroo rats, and mice. Common birds include eagles, hawks, owls, quail, doves, warblers, blackbirds, and finches. The Salton Sea provides habitat for a wide variety of waterfowl and shorebirds. Reptiles include numerous species of lizards and snakes.

HISTORICAL CONTEXT

Reclamation and Early Settlement in the West

In the mid-1800s, available federal land lured pioneering settlers to the West. Patenting that land under the Homestead Act of 1862, Timber Culture Act 1873, and the Desert Land Act 1877, gave settlers the opportunity to secure and improve land for themselves and for their families. Combating the rough mountainous terrain, traversing canyons and valleys, and crossing arid deserts, settlers had no guarantees that they could improve or sustain themselves on the land. Although land was readily available, water was not. Early land acts attempted to give settlers incentives to create their own irrigation features, but most settlers lacked the knowledge and resources (Robinson 1948). They often pooled their individual irrigation efforts and started water users' associations and private water companies, but the vast majority of those collective efforts were not long-term solutions. Many settlers had difficulty accumulating sufficient finances, manpower, and engineering knowledge to build and sustain reliable delivery systems. Raging floods often wreaked havoc on settler-built wooden headgates and earthen ditches. Even if settlers were able to obtain water from artesian wells and to afford pumping water, the water tables often fluctuated.

While Western farmers realized the need for consistent and reliable irrigation systems in the late nineteenth century, it was water shortages and not "resource planning" or "scientific farming" that prompted the initial interest in irrigation systems (Pisani 1984:95). Sparse settlement and sporadic irrigation in the arid West (primarily in California, but also Colorado and Utah), meant Congress was not initially interested in spending the time or funds surveying the feasibility of harnessing water resources in the West. In 1873, Senator William Morris Stewart of Nevada introduced a bill for the survey of California, which Congress approved. The Alexander Commission report (1874) advocated irrigation in the Central Valley and prompted some congressmen to push for a coordinated irrigation program. The report fell short of advocating a national reclamation program, but instead supported a "mixed enterprise" of public (state) and private water works (Pisani 1984). At that time, the greater populace was reluctant to take on the financial responsibility of a federal Project and was generally unwilling to accept the federal government's authority for such a Project (Rowley 2006). However, the combined effects of droughts, a depression in the 1890s, and the U.S. Geological Survey (USGS) expedition led by John Wesley Powell (1888-1892), created the necessary backdrop for Congressional support of the National Reclamation Act in 1902 (Pisani 2002).

Early Irrigation Efforts in the Imperial Valley

In 1853, William P. Blake conducted a preliminary survey that showed that overflows of the Colorado River emptied into the low-lying Salton Trough through the New and Alamo rivers. This process had begun thousands of years earlier, on several occasions forming ancient Lake Cahuilla. Observing the rich harvests of the Colorado River Yumans, Blake (1853) remarked on the fertility of the river-deposited clay soils, for which only the application of irrigation was needed to produce abundant crop yields. His barometric readings showed that Imperial Valley lay below sea level, and his investigations paved the way for the conception of a gravity flow irrigation system. Early solicitation by Dr. O. M. Wozencraft for federal support for such a system between 1849 and 1887 did not produce results, but Wozencraft's efforts laid the groundwork for later endeavors by Charles R. Rockwood (Steere 1953).

The first irrigation system in Imperial Valley, built by the California Development Company (CDC) under the direction of Charles Rockwood and George Chaffey, first operated in August 1900 (Frisby 1992; JRP Consulting 2000; Rockwood 1930; Starr 1990; Tout 1931). The Alamo or Imperial Canal delivered Colorado River water to the Alamo River Channel just north of the Mexican Border. Available water offered settlers an opportunity to establish farms on the government-owned lands of Imperial Valley under the Homestead Act of 1862, the Desert Land Act of 1877, and the Carey Land Act of 1894. While settlers could purchase up to 320 acres at $1.25 an acre, they also had to purchase water stock from George Chaffey's Imperial Land Company. Thirteen mutual water companies were eventually formed to distribute water in the valley. Cash-short settlers financed these costs by conveying to the Imperial Land Company either the land mortgage or water company stock as security for a 6 percent note on the cost of the water stock (Starr 1990). By 1904, the early channel had silted up, and a second bypass suffered the same fate. Both the CDC's operation and the potential for its exploitation of the homesteading pioneers in the Imperial Valley alarmed the federal

government (Ní Ghabhláin and Schaefer 2005). Theodore Roosevelt's signature on the Reclamation Act of 1902 (Newlands Act) gave the federal government the authority to allocate funding to aid settlement in the West by helping establish sustainable water sources through water works Projects. This act profoundly affected the development of the Arid West and "laid the foundation for a powerful new federal presence in western water matters" (Rowley 2006:100). It also created the Reclamation Service as part of the USGS, which provided the engineering expertise and directed the Projects (Armstrong 1976).

Almost as soon as it was formed, the Reclamation Service took measures to challenge the way the CDC operated in the Imperial Valley and how it used public water from the Colorado River and public lands of Imperial Valley to make a profit. The Reclamation Service attacked the claims of the CDC concerning the fertility of the alkaline soils in Imperial Valley and the economics of developing that land. As the federal entity charged with water development, the Reclamation Service also began to explore much more ambitious and reliable approaches to controlling the Colorado River (Starr 1990). In 1903, the federal declaration of the Colorado River as a navigable waterway undermined the CDC's right to tap the water. These actions led to a period of extreme conflict between the CDC and the Reclamation Service.

The CDC, then under the control of Anthony Heber, pursued an alternate route outside the U.S., since it would be impossible to obtain a water diversion permit from the Reclamation Service. A new intake south of the U.S.-Mexico border was also expected to solve the problem of the silted Alamo Canal (Starr 1990). Efforts in 1905 to open this diversion without a permanent concrete headgate coincided with an unusually rainy year for the Southwest that caused the Colorado River to redirect itself westward, destroying the partially completed headgate and pouring 360 million ft^3 of water per hour into the Imperial Valley. The flood ironically renewed the ecological balance in the Imperial Valley by recreating Lake Cahuilla in the form of the Salton Sea. This balance, however, was at the cost of destroying the Imperial Valley's irrigation system. The series of floods in the spring of 1905 forced the CDC to try to close the Mexican cut with a series of dams, but money and limited engineering capabilities were spent. In June 1905, the Southern Pacific Railroad acquired the failed CDC and fought the disastrous floods during 1905-1907. Despite the Southern Pacific's requests for help from the federal government in 1906, President Roosevelt offered no support for the CDC, even though the Southern Pacific now controlled the company, because the CDC caused the problem. Only monumental and extremely expensive efforts by the Southern Pacific Railroad finally diverted the river back to the Gulf of California (Corey 1915; Starr 1990).

The Imperial Irrigation District

Dissatisfied Imperial Valley settlers ultimately opted for an alternative to the CDC and supported the Reclamation Service efforts for more ambitious and reliable approaches to controlling the Colorado River. In 1904, the concerned settlers first organized their own Imperial Water Users Association as a prerequisite for the federal government's assistance (Dowd 1956; Starr 1990). Efforts to convince the federal government to buy out the CDC and to strengthen local support for the Reclamation Service resulted in threats by the CDC to cut off the water supply. Some fearful farmers turned against Reclamation and literally tarred and

feathered a pro-Reclamation advocate after a public debate. Eventually, the cost of controlling the 1905-1907 floods, damage suits by the New Liverpool Salt Company resulting from the floods, and other litigation forced the CDC into bankruptcy and receivership (Starr 1990).

The Imperial Irrigation District (IID) was founded in 1911 in response to the logistical, legal, and economic problems caused by the CDC bankruptcy and the aftereffects of more flooding. Over the next 11 years, the IID acquired all 13 Imperial Valley mutual water companies and existing waterworks. In the early 1900s, Caffey had constructed the Alamo Canal as an intake canal from Hanlon or Rockwood Heading at the Colorado River that extended through Mexico before connecting with the old Alamo River Channel and then heading north to the Salton Sink at Sharp's Heading. The first canal, Central Main Canal, extended west and northwest from Sharp's Heading serving Imperial Water Company No. 4 and No. 8. The Encina Canal or Westside Main Canal headed southwesterly from the Alamo Canal in Mexico toward Signal Mountain and continued northwesterly along the westerly irrigation boundary as Westside Main Canal for Imperial Water Company No. 6 and later No. 12. The East Side Main Canal served Company No. 7 and Low Line Canal served Company No. 5. Eighty miles of main canals served the Imperial and Mexicali valleys by January 1905 (Dowd 1956). However, severe floods (1905-1907) severely impacted the waterworks and by the time the IID organized, the Mexican Revolution had already begun.

The IID joined efforts to deliver water from a politically secure location north of the Mexican border and through a system that would not be threatened by Colorado River floods. As early as 1904, the Reclamation Service proposed several routes (Dowd 1956). The original concept was to divert water at Laguna Dam (1908) to irrigate lands at the Colorado-Gila River confluence. Imperial Valley farmers formed the Imperial Laguna Water Company in 1914 as a mutual water company to develop East Mesa lands. By 1918, they had come to an agreement with the IID to build a canal to service all of Imperial Valley. In 1919, the two parties supported the construction of an All-American Canal and a Colorado River storage reservoir. This new All-American canal would solve the previous problems of dependence on a Mexican right-of-way. A large dam would eliminate issues of siltation and threats of destruction during spring floods. First, legislation was necessary for the distribution of Colorado River water among the seven states that bordered the river (Fradkin 1981). The 1922 Colorado River Compact authorized the allocation of the water supply between upper and lower basin states. Secretary of Commerce Herbert Hoover persuaded all seven states to sign, but the Arizona legislature failed to ratify because the Compact did not specify water allotments to each state. California pushed for the All-American Canal, while the possibility of its effects on Arizona's water rights prompted opposition from Arizona representatives (Reisner 1993).

Growing Congressional support for water development Projects on the Colorado River rallied around protecting the precarious position of the successful agricultural community in the Imperial Valley. The valley produced crops valued between $40 and $50 million in 1927, but had already lost millions of dollars in 1924 due to water shortage. Fluctuations in the water supply from either floods or shortages consistently threatened Imperial Valley farmers (Brown 1927; James 1928). The valley became an example of the potential for agricultural

development hindered by an inability to control the Colorado River as a consistent water source.

All-American Canal

Construction of the All-American Canal was authorized under the Boulder Canyon Project Act of 1928, one of the most monumental public reclamation Projects ever undertaken in the western United States. Along the Colorado River, the Imperial Dam (built in 1935-1938) became the diversion point for the All-American Canal, where three enormous desilting basins cleansed the muddy Colorado River waters. The All-American Canal, excavated between 1934 and 1940, carried water 82 mi. to Imperial Valley (Schaefer and O'Neill 2001).

Although portions of the canal, including the Coachella Canal and all of the Imperial Valley mains, were not complete until 1948, the All-American Canal was supplying approximately 50 percent of Imperial Valley's water by 1941. Construction required removing 57.5 million yard (yd.)^3 of soil and sand, and 1.05 million yd.^{3} of rock. Canal structures required an additional 2.7 million yd.^{3} of excavation and backfill. The 82-mi.-long canal has the capacity of 15,155 ft.^{3} per second (cfs) at the initial diversion, reducing gradually as water is drawn for irrigation. It has a maximum width of 200 ft. at water level, 134 ft. at the bottom, and a water depth of 22 ft. Beyond the Pilot Knob Wasteway, the canal dimensions diminish to 130 ft. wide, 16.6 ft. water depth, and a capacity of 10,155 cfs. The canal now delivers 3.1 million acre-ft. annually to nine cities and half a million acres of agricultural lands throughout the Imperial and Coachella valleys. In 2001, the Bureau of Reclamation (BOR) and the California State Historic Preservation Officer (SHPO) determined that the All-American Canal was eligible for the NRHP (Burkard et al. 2007).

Project Area

Irrigation and Drainage

Transforming a desert into fertile agricultural fields required water conveyed via canals and their laterals. Sustaining agricultural efforts in a desert valley with the propensity for alkali contamination and a lack of natural soil drainage necessitated construction of artificial drains. Only a few early wasteways existed such as the waste gate from the Central Main and Encina canals to the Alamo River, another waste gate on the Central Main in Mexico, and the Wormwood Drain. Despite early warnings from the Department of Agriculture to consider drainage, no major efforts were made. During the first two decades of the twentieth century, the acreage of irrigated land skyrocketed in the Imperial Valley. New settlers to the area prompted the incorporation of El Centro and Brawley and those farmers had the capacity to fund improvements to the area, including schools. Most fields were planted in alfalfa with cotton and grains following closely behind. Sheep and poultry were important livestock industries for the valley as were fruit trees, melons, and lettuce (Imperial County Board of Supervisors 1909; Dowd 1956:69; Moore 1991:49-54; Thurston 1920; United States Army Corps of Engineers 1909; United States Geological Survey 1957:44).

By the 1920s, the IID operational area had expanded after the purchase of C.D. Company properties, yet no drainage system existed. As early as 1911, high salinity was already

affecting crops yields but many thought the natural drainage of the New and Alamo rivers that flowed from Mexico and emptied into the Salton Sea was sufficient. Soil surveys of the 1918-1920 identified salt accumulation as the reason for low crop yields in certain areas and confirmed the fact that alkali and waterlogged land was a problem that would not dissipate. In response, the IID began investigations and requesting bonds to fund a grid-based drainage system of deep drain with outlets to the rivers. Construction of 234 miles of deep drains (open canals 10-12 ft. deep) began in 1922 though most of the main drains were constructed using funding from the 1929 bond. Farmers independently dug smaller laterals that connected to these large drains in an effort to rid their land of excess water and salt. While the IID's efforts were an important start, farmers needed more individualized attention. Soils varied across the valley and areas transformed by alluvial deposits from swollen rivers meant a one size approach to drainage problems was not realistic. An expanded IID program included the construction of additional drains and considered soil variations of individual farms. As part of this program, the IID worked with those land owners to survey and analyze their properties for proper, individualized drainage. Tile drainage systems became the cornerstone of that project. These individualized drainage systems included a series of concrete tiles laid underground within fields with outlets to main drains. The first tile drains were constructed in 1928 in Calipatria. By 1930, an estimated 740 miles of lateral drains had been constructed, contributing to growing agricultural industries in the valley (Dowd 1956:19, 69-71; Moore 1991:53-66; United States Army Corps of Engineers 1909).

By 1930, the impact of the All American Canal had not been realized, yet the county was ranked eleventh in the country for agricultural production and livestock. Most of the acreage was still devoted to alfalfa for feed for dairy cows, raising sheep, hogs, and cattle. Melons and lettuce were prime vegetable crops, but sugar beet, which is used for livestock feed, and flaxseed were on the rise (Los Angeles Directory Company 1939:11-12). The Depression significantly affected agricultural production causing a steep drop in land assessments and therefore funding for additional drainage work. However, improved technologies developed in the 1930s streamlined the installation of tile drainage on individual properties in the 1940s and 1950s that expanded in the 1950s and 1960s (Moore 1991:68-82). In the project area, all major drains had been constructed by March 1949 (United States Department of Agriculture).

Since the early 1900s agriculture has been an important economic market for the Imperial and Coachella valleys, yet unparalleled growth in agricultural production followed the completion of the All-American Canal in Imperial Valley with a staggering 1,122 percent increase. The value of field crops produced in Imperial County grew from just over $5 million in 1940 to $65 million in 1954. Property values more than doubled between 1940 and 1954 with reported incomes increasing from $30 million in 1940 to $136 million in 1952. In 1955, a year after the distribution system off the All American Canal's Coachella Canal was complete, irrigated lands in the Imperial and Coachella valleys contributed "almost the entire flow of vegetable and truck crop specialties into the Nation's market" during certain seasons (Bureau of Reclamation 1955:1, 8, 11). Growth in agricultural production in Imperial and Coachella valleys has continued unabated to the present day making this area one of the most productive in the United States.

General Development

The Westside Main Canal had been constructed by 1907, originally constructed to serve Imperial Water Company No. 6 (organized in 1901) and later Company No. 12 (organized in 1908). The Fig, Fern, and Forget-Me-Not canals were constructed circa 1909 and maintained a similar alignment over time. The only drain identified in the area at that time was the Wormwood, which has maintained that same alignment within the project area. As previously mentioned, the floods of 1905-1907 wreaked havoc on the valley and caused waterways such as the New River to swell. Once a river recedes from an area, it leaves behind alluvial soils that are ideal for farming. Many early settlers acquired land tracts adjacent to those newly fertile lands and by 1912, most of the farming tracts within the project area hugged the New River. At the center of activity was Storm's Crossing near Derrick Road and West Campbell Road, a tract where the Derrick family later operated a farm in the 1920s (Grumbles n.d.; Dowd 1959:67-68; Tait 1908; Thurston 1912a; United States Army Corps of Engineers 1909).

In 1911, Seeley had been established as a new town on the west side of the valley and a school, bank, and hotel were the first buildings constructed. Telephone lines, Highway 80, and the San Diego and Arizona Railroad connected the town and its growing cotton industry with San Diego and beyond. Seeley never became a bustling town (Henderson 1968:80-81). Instead, the area southwest of Seeley (Westside) developed as a rural community with family farms dispersed over large acreage. By 1914, several other waterworks had been constructed in the area, including Foxglove Canal, Fushia Canal (now Fern Side Main), Wormwood Canal, Lateral 1 off Foxglove Canal (a portion of present-day Dixie Lateral 1), and an early version of Dixie Drain 3/3-A that extended from Fushia Canal as Lateral 1 (Thurston 1914). By 1919, many of the present-day roads had developed around the waterways (Blackburn 1919). Families such as the Derricks, Diehls, Lieberts, Vaughns, and Wixoms were living in the greater Westside area. Many of the roads are named after local families, most of whom lived in the area from the 1910s and 1920s until the 1950s. The Derrick family is a family that arrived early and remained in the area until at least 1979 (Los Angeles Directory Co. 1930, 1939, 1949; Polk 1959, 1962; Thurston 1912b, 1920). A number of drains were also named after local families that no doubt pushed for their construction. By March 1949, at least the Westside Drain, Dixie Drain 3, Wixom Drain, Fig Drain, and Diehl Drain had been constructed (United States Department of Agriculture 1949). As previously mentioned, the Wormwood Drain already existed by 1909 and retained the same alignment over time within the project area.

Westside School

The first Westside School had been established in 1917 to serve agricultural families in the rural Seeley area. Although a school also existed in Seeley, families such as the Derricks attended the Westside School since it was closer to home. Helen and Laura Jean Derrick taught at the school, Helen since 1945 and Laura since at least the 1950s. By 1979, the two still taught at the school. The one-room school house constructed in 1917 was torn down in 1970 and was replaced by the present-day school (*Imperial Valley Press* 1979).

Westside Main Canal

One of the principal canals branching off the All-American Canal is the Westside Main Canal. Built circa (ca.) 1907, the Westside Main Canal was later integrated into the All-American Canal system in the mid- to late1930s (Burkard et al. 2007). This canal runs north from the All-American Canal just west of El Centro, and through the community of Dixieland. The canal remains in use today as an integral component of the Imperial Irrigation District (IID) irrigation system. As referenced in previously prepared DPR Form 523a forms, the Bureau of Reclamation (BOR) and the California State Historic Preservation Officer (SHPO) determined in 2001 that the All-American Canal was eligible for listing in the NRHP/CRHR, and by extension, the Westside Main canal was eligible for listing in the NRHP/CRHR for its significance in association with the development of the Imperial Valley (Burkard et al. 2007) (Appendix B).

3. PREVIOUS RESEARCH

PREVIOUS STUDIES

As a result of a historic resources records search conducted by KP Environmental, LLC, 40 cultural resource studies were identified that address cultural resources within one mi. of the Project. All previous studies are summarized in Table 2. The majority of these studies focused on archaeological resources. Those that evaluated the built-environment include evaluations of the Westside Main (Burkard, et al. 2007), and Dixie, Fern, Fig, Forget-Me-Not and Foxglove Canals (Tessera Solar 2010).

Table 2. Cultural Resource Investigations within a One-Mile Radius of the Project

Author	Title	Company/Agency	Year
Walker, Bull & Von Werlhof	Cultural Resource Study of a Proposed Electric Transmission Line From Jade to the Sand Hills, Imperial County, California	RECON	1979
Gallegos	Class II Cultural Resource Inventory East Mesa and West Mesa Regions Imperial Valley, California, Volume I	Westec Services, Inc.	1979
Davis	Class II Cultural Resource Inventory East Mesa and West Mesa Regions Imperial Valley, California	Westec Services, Inc.	1980
Von Werlhof & McNitt	Archaeological Examinations of the Republic Geothermal Field, East Mesa, Imperial County	Imperial Valley College Museum	1980
Bull	A Cultural Resource Survey of the Proposed Imperial Valley Substation	RECON	1980
Walker, Bull, & Von Werlhof	Cultural Resource Study of a Proposed Electric Transmission Line from Jade to the Sand Hills, Imperal County, California	RECON	1981
BLM	APS/SDG&E Interconnection Project- Supplement to the Draft Environmental Document	BLM	1981
Schaefer	Volume II Appendix; Phase II; Archaeological Survey of the La Rosita 230 KV Interconnection Project	Cultural Systems Research	1981
Cultural Systems Research Inc.	Archaeological Field Investigation of Cultural Resources Associated with the Proposed Imperial Valley Substation (7A) Access Road	Cultural Systems Research	1982
Shackley	Phase III Archaeological Survey of the Mountain Springs (Jade) to Sand Hills Portion of the APS/SDG&E Interconnection Project 500 KV Transmission Line	Cultural Systems Research	1982
Foster & Greenwood	Cultural Resource Inventory of the La Rosita to Imperial Valley Interconnection Project 230 KV Transmission Line, Imperial Valley, California	Greenwood & Associates	1983
Welch	Cultural Resource Inventory for Thirty Proposed Asset Management Parcels in Imperial County, California	BLM	1983
Graves Engineering	Environmental Impact Report, Rio Bend RV Resort Ranch, SCH #83102609, Imperial County, California	Graves Engineering	1984
Townsend	Southwest Powerlink Cultural Resources Management Plan- Volume II	Wirth Environmental Services	1984
Townsend	Southwest Powerlink Cultural Resources Management Plan- Volume I	Wirth Environmental Services	1984
Shackley	Volume II- Appendixes, Data Recovery on the Mountain Springs (Jade) to Sand Hills Segment: Southwest Powerlink Project	Wirth Environmental Services	1984
Shackley	Archaeological Investigations in the Western Colorado Desert: A Socioecological Approach- Volume I	Wirth Environmental Services	1984
REH Consultants	Rio Bend Specific Plan	REH Consultants	1992

Author	Title	Company/Agency	Year
Brian F Mooney Associates	Final Environmental Impact Report for the Rio Bend Specific Plan, Imperial County, California	Brian F. Mooney Associates	1992
Imperial Irrigation District	Draft Environmental Impact Report for East Lowline and Trifolium Interceptors, and Complete Projects	Imperial Irrigation District	1993
Burkenroad	Phase One Regional Studies APS/SDG&E Interconnection Project Transmission System Environmental Study Cultural Resources: History	David Burkenroad	1979
Wirth Associates, Inc.	Phase One Regional Studies APS/SDG&E Interconnection Project Transmission System Environmental Study Cultural Resources: Archaeology	Wirth Associates, Inc.	1979
Imperial County	Proposed Workscope Phase II Cultural Resources Studies APS/SDG&E Transmission Interconnect Project, Miguel to Sand Hills, Sand Hills to PVNGS, Imperial County	Imperial County	1979
Cultural Systems Research, Inc.	Draft Archaeological Research Design and Data Recovery Program for Cultural Resources within the Mountain Springs (Jade) to Sand Hills Portion of the APS/SDG&E Interconnection Project 500 KV Transmission Line	Cultural Systems Research, Inc.	1982
CSRI	Mountain Springs (Jade) to Sand Hills Data Recovery Preliminary Report	CSRI	1982
Wallace, Roberts & Todd	County of Imperial Bicycle Master Plan	Wallace, Roberts & Todd	1999
BLM	Environmental Assessment for Presidential Permit Application for Baja California Power, Inc. and Sempra Energy Resources	BLM	2001
BLM	Draft Environmental Impact Statement for the Imperial-Mexicali 230KV Transmission Lines	BLM	2004
Wlodarski	Nextel Wireless Telecommunications Site CA8991C (Sunbeam: Kuhn 2)	Cellular Archaeological Resource Evaluations	2006
Berryman	Cultural Resource Treatment Plan in Support of the Construction of Two 230KV Transmission Lines from the Imperial Valley Substation to the International Border with Mexico	RECON	2001
Yost, Mirro, Ing, Higgins	Final Report on Cultural Resource Monitoring Along the Level (3) Long Haul Fiber Optic Running Line, San Diego, California to Yuma, Arizona	TRC	2001
Ritter	An Analysis of Culture Resources Along the Proposed Yuha Desert ORV Courses	Ritter	1975
Wirth Associates, Inc.	APS/SDG&E Interconnection Project Environmental Study Phase II Corridor Studies- Native American Cultural Resources Appendices	Wirth Associates, Inc.	1980
Townsend	Southwest Powerlink Cultural Resources Management Plan (Draft)	Wirth Associates, Inc.	1983
Wirth Associates, Inc.	APS/SDG&E Interconnection Project (Phase II Corridor Studies)- Cultural Resources: Archaeology	Wirth Associates, Inc.	1980
Shackley	Volume II- Phase III Archaeological Survey of the Mountain Springs (Jade) to Sand Hills Portion of the APS/SDG&E Interconnection Project 500KV Transmission Line Confidential Technical Appendices.	Cultural Systems Research, Inc.	1982
SWCA	Final Cultural Resources Survey of Alternatives for the Sunrise Powerlink Project in Imperial, Orange, Riverside and San Diego Counties	SWCA	2008
Noah & Gallegos	Final Class III Archaeological Inventory for the SDG&E Sunrise Powerlink Project, San Diego and Imperial Counties, California	Gallegos & Associates	2008
Olech	Yuha Basin Area of Critical Environmental Concern (ACEC) Management Plan	BLM	1981
Zeppeda-Herman	Class III Cultural Resources Survey for the Imperial Solar Energy Center South Project	BLM	2011

Author	Title	Company/Agency	Year
Mutaw, Roberts, Tucket, Shaw, Bagwell, O'Hanlon, Nixon, Fink, Hollins, Neal	Draft Final Class III Confidential Cultural Resources Technical Report for the Imperial Valley Solar (formerly Solar 2), Imperial Valley County	Tessera Solar	2010

PREVIOUSLY DOCUMENTED RESOURCES

Previous studies have identified eight historic resources within the Project APE. These are described below and summarized in Table 3. The following resource descriptions detail the resources as documented by previous studies. Updates concerning the current condition of resources are provided in Chapter 5.

Table 3. Previously Documented Built-Environment Resources

Resource	Trinomial/Primary Number
Westside Main Canal	CA-IMP-7834 /P-13-008334
Dixie Drain 3	P-13-012688
Fern Canal and Fern Drain	P-13-012689
Fig Canal	P-13-012693
Forget-Me-Not Canal	P-13-012690
Foxglove Canal	CA-IMP-8821
Wormwood Canal	CA-IMP-8983
Leibert Road Shed	P-13-013567

Westside Main Canal (CA-IMP-7834)

In 2007, J. Burkard, H. Thompson, and J. Covert of SWCA Environmental Consultants evaluated a segment of the Westside Main Canal, built by 1907 and later integrated into the larger Imperial Valley irrigation system. Rendering a professional, independent recommendation, SWCA concurred with the previous 2001 determination by the BOR and the California SHPO that the Westside Main Canal was eligible for the NRHP and CRHR as a contributor to a larger historic district that includes the All-American Canal, which is also eligible for listing in the NRHP.

Dixie Drain 3 (P-13-012688)

URS Corporation previously evaluated the Dixie Drain 3, originally constructed ca. 1940 as part of the Dixie Canal irrigation system, part of the larger Imperial Valley irrigation system. URS recommended that the Dixie Drain 3 was not eligible for the NRHP or the CRHR due to a loss of integrity from regular dredging and widening of the canals and drains over time to alleviate problems of silt and build-up.

Fern Canal and Fern Drain (P-13-012689)

URS Corporation previously evaluated the Fern Canal, one of the earliest irrigation canals in the Imperial Valley (ca. 1909) and later integrated into the larger Imperial Valley irrigation system. URS recommended that the Fern Canal was not eligible for the NRHP or the CRHR due to a loss of integrity from regular dredging and widening of the canals and drains over time to alleviate problems of silt and build-up.

Fig Canal (P-13-012693)

URS Corporation previously evaluated the Fern Canal, constructed ca. 1909 and later integrated into the larger Imperial Valley irrigation system. URS recommended that the Fig Canal was not eligible for the NRHP or the CRHR due to a loss of integrity from regular dredging and widening of the canals and drains over time to alleviate problems of silt and build-up.

Forget-Me-Not Canal (P-13-012690)

URS Corporation previously evaluated the Forget-Me-Not Canal, originally constructed ca. 1909. URS recommended that the Forget-Me-Not Canal was not eligible for the NRHP or the CRHR due to a loss of integrity from regular altering and modernizing of the canals and drains over time.

Foxglove Canal (CA-IMP-8821)

URS Corporation previously evaluated a portion of the Foxglove Canal, originally constructed ca. 1912. URS recommended that the Foxglove Canal was not eligible for the NRHP or the CRHR due to a loss of integrity from regular altering and modernizing of the canals and drains over time.

Wormwood Canal (CA-IMP-8983)

In 1999, Jill Hupp of Caltrans evaluated a section of the Wormwood Canal, first built in 1911 and later integrated into the larger Imperial Valley irrigation system by connection to the Westside Main Canal (Hupp 1999). Hupp recommended that the canal was not eligible for listing in the NRHP because it was realigned and lined with concrete, replacing its original earthen lining, thereby affecting the resource's integrity.

Leibert Road Shed (P-13-013567)

In 2011, ASM previous evaluated the shed on the south corner of Liebert Road and Westside Main Canal constructed ca. 1940. ASM recommended that the shed did not meet the criteria for eligibility for the NRHP or CRHR (Davis et al. 2011a).

4. RESEARCH AND FIELD METHODS

INTRODUCTION

All known historic resources located within the Project Area and within 0.5 mi. of the Project Area boundaries were identified and subjected to analysis to assess which NRHP/CRHR-eligible resources would be subject to potential direct and indirect (visual, auditory, and atmospheric) impacts resulting from the Project (see Figure 3 – Confidential Appendix C). Due to inaccessibility, some areas within the western portion of the APE were not surveyed; however, a review of current aerial photographs and historic United States Geological Survey (USGS) maps indicates an absence of historic resources in that portion of the APE.

SECRETARY OF THE INTERIOR'S (SOI) GUIDELINES

The SOI has issued the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* [48 FR 44720–44726]), as guidance to ensure that the procedures for the identification and evaluation of historic resources are adequate and appropriate. The National Park Service has also produced a series of bulletins that provide guidance on historic preservation. The current study was conducted in compliance with the guidelines provided in Bulletin 24, *Guidelines for Local Surveys: A Basis for Preservation Planning* (Derry et al. 1985).

The five property types are defined as follows:

> **District**: A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.
>
> **Site**: A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historical, cultural, or archeological value regardless of the value of any existing structure.
>
> **Building**: A building, such as a house, barn, church, hotel, or similar construction, is created to shelter any form of human activity. Building may also be used to refer to an historically and functionally related unit, such as a courthouse and jail or a house and barn.
>
> **Structure:** The term structure is used to distinguish from buildings those functional constructions made usually for purposes other than creating shelter.
>
> **Object**: The term object is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is

associated with a specific setting or environment, such as statuary in a designed landscape.

The objective of this study is the assessment of direct impacts and visual, auditory, and atmospheric intrusions on historic resources resulting from the construction of the Project. The term "built-environment" is a relatively new term used in its broadest sense to designate "the part of the environment formed and shaped by humans, including buildings, structures, landscaping, roads, signs, trails, and utilities" (www.co.tompkins.ny.us/planning/vct/glossary.html). For the purposes of this study, historic resources include historic districts, buildings, structures, and objects that are listed in, or eligible for listing in, the NRHP and/or the CRHR. Ruined buildings and fragmentary structures (such as sections of stone walls) are classified as ruins and are therefore assumed to be addressed in the cultural resources report for this project. Likewise, historic trails, unimproved roads and minor historic structures and objects such as stone wells, cisterns, claim markers, stone cairns, survey makers, and isolated mining prospecting pits are also excluded from consideration in this study, because they are not considered part of the built-environment.

Several avenues of research were included in this built-environment inventory and assessment, including: an inventory of all known historic resources within the Project APE, an evaluation of identified resources' eligibility for listing in the NRHP and/or CRHR; and an analysis of direct and indirect impacts for all built-environment properties eligible for listing in the NRHP and/or CRHP. Although the area west of the Project (but within the Project APE) was inaccessible for field survey, historic maps and current aerial photographs indicate that no historic resources are located in that area. The methodology developed to identify, document, and evaluate NRHP and/or CRHR-eligible and CEQA historical resources is described below.

METHODOLOGY

Archival Research

ASM conducted archival research to develop a regional historical context and resource-specific contexts for resources within the APE (see Chapter 2). Decisions about the identification, evaluation, designation, and treatment of historic resources are most reliably made when the relationship of individual properties to other similar properties is understood. Information about historic resources representing aspects of history, architecture, archaeology, engineering and culture must be collected and organized to define these relationships. This organizational framework is called a "historic context." The historic context organizes information based on a cultural theme and its geographical and chronological limits. Contexts describe the significant broad patterns of development in an area that may be represented by historic resources. The development of historic contexts is the foundation for decisions about identification, evaluation, designation, and treatment of historic resources.

In an effort to create a historic context and identify buildings and structures of local significance, ASM consulted with various local repositories. Resources consulted at the

Imperial Valley Pioneers Museum included newspaper clippings, historic maps, histories of the area, city and county directories, and materials regarding operations of the IID. Aerials, manuscripts, senate reports, and other historical documents were collected from repositories such as the University of California, San Diego; San Diego State University; and Water Resources Collections and Archives. Present-day operational maps were gathered from the IID.

Records Search and Data Analysis

As a first step in identifying historic resources within the Project APE, ASM consulted historic maps to help identify the locations of potential historic resources. ASM consulted Imperial County Assessor Parcel data for evidence of built-environment structures; however, dates of construction were not recorded for all resources. ASM obtained the results of a cultural resources records search, conducted by KP Environmental at the South Coastal Information Center of the California Historical Resources Information System to identify all previously-recorded historic resources in the Project APE (Appendix B). Previous studies in and adjacent to the Project Area, many of which were conducted by ASM, were also consulted (Davis et al. 2011a, 2011b, and 2011c).

Field Survey

ASM conducted historic resource field surveys on November 2 and November 10, 2011, to document historic resources within the Project APE. The reconnaissance-level field surveys, historic building and structure evaluations, and assessment of visual impacts were conducted by ASM's Senior Architectural Historian Shannon Davis, Associate Architectural Historian Jennifer Krintz, and Senior Historian Sarah Stringer-Bowsher. The reconnaissance-levels, or "windshield surveys," were conducted from a vehicle, guided by the project area and historical maps, with some pedestrian survey as warranted. No permits were required for the survey. The field survey began at the southeastern section of the Project Area and continued north and west. The buildings and structures, and their viewsheds, were photographed from public roads and canal access roads. The addresses of the buildings, when available, were recorded. For those that were not available, the location was verified and noted on USGS topographic quad maps. During the surveys, descriptive information about buildings within the Project Area was noted and the buildings were analyzed through visual observation. GIS data points were taken of potential historic resources.

As a result of the field survey, 20 historic resources were identified and documented within the Project APE (Figure 4 – Confidential Appendix C).

5. REPORT OF FINDINGS

HISTORIC SITES AND STRUCTURES

Twenty historic resources were identified within the APE that are more than 45 years old: the Westside Main, Diehl, Dixie, Fern, Fig, Forget-Me-Not, Foxglove, Wixom, and Wormwood canal systems, one shed, one school, and nine residential buildings (Table 4).

Table 4. Historic Resources More Than 45 Years Old

Resource	Date Built	Resource Type
Westside Main Canal	ca. 1907	Canal system
Diehl Drain	ca. 1940	Canal system
Dixie Drains and Lateral 1	ca. 1940 and ca. 1914	Canal system
Fern Canal	ca. 1909	Canal system
Fig Canal	ca. 1909	Canal system
Forget-Me-Not Canal	ca. 1909	Canal system
Foxglove Canal	ca. 1912	Canal system
Wixom Drain	ca. 1940	Canal system
Wormwood Canal	ca. 1911	Canal system
1210 Drew Road	ca. 1955	Residence
1220 Drew Road	ca. 1940	Residence
1276 Drew Road	ca. 1940	Residence
1796 W. Graham Road	ca. 1955	Residence
2596 W. Hardy Road	ca. 1940	Residence
Leibert Road Shed	ca. 1940	Shed
W. Stevens Road	ca. 1940	Residence
2396 W. Vaughn Road	ca. 1955	Residence
2104 W. Wixom Raod	ca. 1955	Residence
1651 Westside Road	ca. 1955	Residence
Westside School	1970	School

Westside Main Canal

Westside Main Canal was constructed ca. 1907 as one of four canals constructed for the earliest irrigation system in the Imperial Valley. It was later connected to the All-American Canal which extends westward from Yuma, Arizona north of the U.S.-Mexico border and terminates at the Westside Main Canal. The segment of the Westside Main Canal within the Project APE is approximately 5.5 mi. long, beginning just north of its intersection with Interstate 8 extending southeast approximately 0.5 mi. past its intersection with Liebert Road and the Fern Canal. The canal is approximately eight ft. deep and approximately 40 ft. wide. Numerous laterals extend from the canal into the Project area. The canal system also includes drains that remove the salinity from the agricultural lands the canal and its laterals irrigate.

Diehl Drain

The Diehl Drain is an irrigation drainage ditch constructed after 1922 and before 1949, possibly ca. 1940. It is located northeast of the Westside Main Canal and flows north and south. The canal is approximately 10-20 ft. wide and about 10 ft. deep. It is an earthen dug ditch. The entire drain is approximately one mi. long and connects with the Fig Drain.

Dixie Drains and Lateral 1

The Dixie drains, which now includes Lateral 1, is part of a larger drainage system that includes Westside Drain, Forget-Me-Not Drain, and Salt Creek Drain. This drainage system empties into the New River, south of Worthington Road. Salt Creek extended through the project area in 1909. Today the creek bed is part of the present-day Dixie Drain 3. The Dixie drains were constructed after 1922 and before 1949, possibly ca. 1940. The earthen dug drainage ditches are approximately 10 ft. wide and about 6 ft. deep. The Dixie Lateral 1 had been constructed before 1914. Dixie Lateral 1 is an irrigation canal lateral that extends eastward from the Westside Main west of Hyde Road and south of West Vaughn Road. It interconnects with the Dixie Drain 3 at Diehl Road and Westside Road. The earthen dug canal is approximately 10 ft. wide and about 6 ft. deep. Lateral 1 was extended to connect with Dixie Drain 3 in later years.

Fern Canal

The Fern Canal is an irrigation canal constructed ca. 1909. In the Project Area, it is located west of Liebert Road, and flows north from the Westside Main Canal beyond Interstate 8. The canal is approximately 10 ft. wide and about 6 ft. deep. The canal is lined with concrete. Modifications were made to the canal in the 1960s. The entire canal is approximately 10 mi. long.

Fig Canal

The Fig Canal is an irrigation canal constructed ca. 1909. It is located east of the Westside Main Canal and flows north from the Fern Canal at Liebert Road and West Wixom Road to the Fig Spill around Evan Hewes Highway (Old Highway 80) near Seeley. The canal is approximately 10 ft. wide and about 6 ft. deep. The canal is lined with concrete. Modifications were made to the canal in the 1970s. The canal system also includes drains that remove the salinity from agricultural lands. The Fig Drain is an earthen dug irrigation drainage ditch located between Drew and Derrick roads that flows north to the New River. The drain is approximately 10 ft. wide and about 6 ft. deep. It was originally constructed after 1922 and before 1949, possibly ca. 1940. The entire drain is approximately 4 mi. long.

Forget-Me-Not Canal

The Forget-Me-Not Canal is an irrigation canal constructed ca. 1909. It is located east of the Westside Main Canal and extends northward along Hyde Road. The earthen dug irrigation canal is approximately 10 ft. wide and about 6 ft. deep. The Forget-Me-Not Lateral 1 is an irrigation lateral constructed ca. 1909. It is located west of the Westside Road and flows

eastward from the Forget-Me-Not canal and empties into the Westside Drain. The concrete-lined lateral is approximately 10 ft. wide and about 6 ft. deep. Modifications were made to the canal ca. 1960s/1970s.

Foxglove Canal

The Foxglove Canal is an irrigation canal constructed ca. 1912. It is located east of and directly parallel to the Westside Main Canal. The canal begins at a point just west of Hyde Road, and flows north to the canals terminus one mile north of the intersection of Westmoreland and W. Hetzel Rd. The concrete-lined irrigation canal is approximately 12 ft. wide and about 6 ft. deep. Modifications were made to the canal in the 1960s. The entire canal is approximately 9 mi. long.

Wixom Drain

The Wixom Drain is an earthen-dug irrigation drainage ditch constructed after 1922 and before 1949, possibly ca. 1940. It is located east of the Westside Main Canal and flows north to the New River from the Fig Canal at Liebert Road and West Wixcom Road. The drainage ditch is approximately two mi. long, 10-20 ft. wide and about 10-15 ft. deep.

Wormwood Canal

The Wormwood Canal is a concrete-lined irrigation canal constructed in 1911 and modified in the 1960s. It extends from the Westside Main Canal at Fisher Road and continues eastward to Wormwood Road before extending northwesterly to Drew Road. The canal is approximately 10 ft. wide and about six ft. deep and is accessible from Old Highway 80, State Route 98, and Interstate 8. The project area also includes Wormwood Lateral 7 (an extension of the canal system from 1950) as well as the earthen Wormwood Drain, one of the earliest drains in the Imperial Valley, dating to at least 1909. Wormwood Drain primarily extends along Wormwood Canal, paralleling Drew Road, northward from Graham Road to the New River.

1210 Drew Road

1210 Drew Road is a one-story vernacular building constructed as a single-family residence ca. 1955. ASM confirmed that by March 1949, a residence did not exist on the property (United States Department of Agriculture 1949). Located on the east side of Drew Road, it is a wood frame building, rectangular in plan with a concrete foundation. The exterior is clad in stucco siding. The roof is a low-pitched, side gable roof with a front gable projection with widely overhanging eaves and clad in an asphalt roll. On the west elevation, a concrete walkway leads to a recessed corner porch. The primary entrance is located in a porch and could not be seen from the street at the time of the survey. The windows consist of aluminum sliders. There is a stone chimney on the exterior of the west elevation. Modifications to the building include the replacement siding, windows and doors. Landscape features include a grass lawn and a palm tree-lined front yard with a chain-link fence.

1220 Drew Road

1220 Drew Road is a one-story vernacular building constructed as a single-family residence ca. 1940. ASM confirmed that by March 1949, a residence existed on the property (United States Department of Agriculture 1949). An addition was constructed along the eastern side of the building at a later time. Located on the east side of Drew Road, it is a wood frame building, rectangular in plan with a concrete foundation. The exterior is clad in horizontal wood board siding. The roof is a low-pitched front gable roof with overhanging eaves and exposed rafter tails. The roof is clad in asphalt sheets. On the south elevation, a concrete walkway leads to a partial-width porch with a front gable roof. Wood posts support the front gable roof. The primary entrance is located within the porch and could not be seen from the street at the time of the survey. The windows consist of double-hung wood sash windows with wood shutters.. Landscape features include a yard surrounded by a chain-link fence.

1276 Drew Road

1276 Drew Road is a one-story vernacular building constructed as a single-family residence ca. 1940. ASM confirmed that by March 1949, a residence existed on the property (United States Department of Agriculture 1949). Located on the east side of Drew Road, it is a wood frame building, rectangular in plan with a concrete foundation. The exterior is clad in horizontal wood board siding. The roof is a low-pitched front gable roof with a shed roof extension surrounding the north, west and south facades. The roof also has overhanging eaves and is clad in asphalt sheets. On the north elevation, a gravel drive leads to an entrance that could not be seen from the street at the time of the survey. The windows could not be seen from the street at the time of the survey and have security bars over the windows. Additions include a rear one-story front gable addition on the east elevation. Modifications to the building include the enclosed shed roof porch enclosure. Landscape features include a gravel and dirt yard with a chain-link fence.

1796 W. Graham Road

1796 W. Graham Road is a one-story vernacular building constructed as a single-family residence ca. 1955. ASM confirmed that by March 1949, a residence existed on the property but was not the present-day building (United States Department of Agriculture 1949). Located on the northeast corner of W. Graham Road and Drew Road, it is a wood frame building, rectangular in plan with a concrete foundation. The exterior is clad in stucco siding. The roof is a low-pitched side gable roof with a front gable dormer. The roof has widely overhanging eaves and clad in asphalt and gravel. On the south elevation, a grass lawn leads to the primary entrance which consists of one wood paneled door with a semi-circle glaze. There is a secondary entrance located on the south elevation which consists of a sliding glass door. The windows consist of aluminum sliders. Modifications to the building include the non-original windows, doors and siding. Landscape features include a grass lawn and some trees.

2596 W. Hardy Road

2596 W. Hardy Road is a one-story vernacular building constructed as a single-family residence ca. 1955. ASM confirmed that by March 1949, a residence did not exist on the property (United States Department of Agriculture 1949). Located on the south side of Hardy Road, it is a wood frame building, rectangular in plan with a concrete foundation. The exterior is partially clad in horizontal siding. The roof is nearly flat with widely overhanging eaves. The property contains heavy landscaping which obscures the view of the property to a great degree from the public right of way.

Leibert Road Shed

The building on the south corner of Liebert Road and Westside Main Canal (P-13-013567) was constructed as a shed ca. 1940. The vernacular building is one-and-one-half stories located on the south side of Liebert Road. The shed is wood framed and rectangular in plan with a concrete foundation. The exterior is clad in vertical wood board siding. The roof is a frontgable low-pitched roof with wide eaves. There is one entryway on the north elevation. A chain link fence surrounds the building. No other features could be seen from the road at the time of the survey.

W. Stevens Road

The W. Stevens Road property Road is a one-story vernacular building constructed as a single-family residence ca. 1940. ASM confirmed that by March 1949, a residence existed on the property (United States Department of Agriculture 1949). Located on the north side of W. Stevens Road, it is a wood frame building, near rectangular in plan with a wood post and beam foundation. The exterior is clad in horizontal and vertical wood board siding. The roof is a low-pitched side gable roof with moderate eaves and clad in asphalt sheets. The primary entrance is located on the east façade. Additions include a shed roof addition on the north façade, and two other one-story additions on the south elevation. The windows and doors are missing. Landscape features include a group of trees and a gravel and dirt driveway. There is also a large mechanical equipment garage located to the north of the main dwelling as well as a shed roof shop building associated with the property. The building is currently vacant.

2396 W. Vaughn Road

2396 W. Vaughn Road is a one-story vernacular building constructed as a single-family residence ca. 1955. ASM confirmed that by March 1949, a residence did not exist on the property (United States Department of Agriculture 1949). Located on the north side of W. Vaughn Road, it is a wood frame building, T-shaped in plan with a concrete foundation. The exterior is clad in stucco siding. The roof is a low-pitched cross-gable roof with widely overhanging eaves and clad in asphalt siding. On the south elevation, a concrete walkway leads to a partial-width recessed porch with a front gable roof. Wood posts support the porch roof. The primary entrance is located within the porch and consists of paneled wood door with glazing. The windows consist of vinyl sliders and sashes. Modifications to the building include

the replacement doors and windows. Landscape features include a grass lawn with trees and a wood fence surrounding the property.

2104 W. Wixom Road

2104 W. Wixom Road is a one-story vernacular building constructed as a single-family residence ca. 1955. ASM confirmed that by March 1949, a residence did not exist on the property (United States Department of Agriculture 1949). Located on the north side of W. Wixom Road, it is a wood frame building, near rectangular in plan with a concrete foundation. The exterior is clad in a stone veneer siding. The roof is a cross-gable roof with shallow eaves and clad in an asphalt roll. The residence is oriented south and was located behind vegetation and a wood fence. The primary entrance could not be seen from the road at the time of the survey. The windows consist of vinyl sliders. One window on the east elevation has been boarded over with plywood boards. Modifications to the building include the replacement windows. Landscape features include a dirt road and trees. There are also approximately 3 ancillary buildings associated with the property.

1651 Westside Road

1651 Westside Road is a one-story Ranch house constructed as a single-family residence ca. 1955. A structure may have existed on property by March 1949, but it is not the present-day building (United States Department of Agriculture 1949). Located on the west side of Westside Road, it is a wood frame building, rectangular in plan with a concrete foundation. The exterior is clad in stucco siding. The roof is a low-pitched side gable roof with a front gable projection on the south section of the building and clad in an asphalt roll. On the east elevation, a concrete walkway leads to a primary entrance located on the north or east elevation. The primary entrance could not be seen from the street at the time of the survey. The windows consist of vinyl sliders with sandwich muntins. There is one chimney located within the roof surface. Modifications to the building include the replacement windows. Landscape features include tall palm trees. Other buildings include a front gable carport and garage as well as a shed roof storage shed.

Westside School

Westside School was constructed in 1970, void of most stylistic references, although exhibiting some characteristics of Modern architecture. It replaced a previous one-room school house at the site built in 1917. It is a complex of five buildings; all one-story educational buildings located on the north side of W. Vaughn Road. The main educational building has a wood frame, near rectangular plan with a concrete foundation. The exterior is clad in stucco siding. The roof is a low-pitched side gable roof with shallow eaves and clad in asphalt sheets. The building was constructed in two parts; the easternmost section has windows on the south façade and a flush wood door entrance. The north façade of the easternmost section of the main building has large sash multi-light windows and entrances that lead to the rear exterior playground area. The westernmost section has no windows or entrances on the south façade and has aluminum sash windows in between a series of mechanical or HVAC units which protrude from the wall surface on the north facade.

There are three buildings located to the west of the main building. These buildings consist of a one-story classroom building with an overhanging eave on the north façade; a one-story stucco building with a front gable roof and a concrete block fence on the north façade; and a one-story building with a side gable roof and vertical siding with an access ramp located on the east façade. There is also a one-story building located north of the main educational building with a front gable roof. Landscape features include trees along the south section of the property as well as trees and a lawn with playground equipment on the north side of the property.

6. EVALUATION OF BUILT-ENVIRONMENT RESOURCES

This historic built-environment evaluation and assessment of direct and indirect impacts was carried out in compliance with CEQA and other applicable federal, state, or local laws, ordinances, rules, regulations, and policies as discussed under the Regulatory Framework in Chapter 1. Compliance with CEQA requires consideration of impacts to cultural resources that are either historical resources (determined eligible for NRHR and/or CRHR) or resources potentially eligible for listing on the CRHR. The procedures for assessing archaeological and historical resources are addressed in CEQA Guidelines Section 15064.5(a) and 15064.5(c).

All known historic resources located within 0.5 mi. of the Project Area (the Project APE) were inventoried and analyzed to assess which eligible resources would be subject to potential direct and indirect impacts or intrusions resulting from the Project.

NATIONAL REGISTER CRITERIA FOR EVALUATION

The NRHP criteria for evaluation are designed to guide federal agencies and others in evaluating whether a property is eligible for inclusion in the NRHP. The criteria for evaluation are as follows:

The quality of significance in American history, architecture, archaeology, 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 that:

A. are associated with events that have made a significant contribution to the broad patterns of our history; or
B. are associated with the lives of persons significant in our past; or
C. 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. have yielded or may be likely to yield, information important in prehistory or history [36 CFR 60.4].

Generally, properties eligible for NRHP listing are at least 50 years old. Properties less than 50 years of age must be exceptionally important to be considered eligible for listing.

CEQA AND THE CALIFORNIA REGISTER CRITERIA FOR EVALUATION

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including impacts to historical resources. Historical resources are recognized as part of the environment under CEQA. 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. Mitigation of adverse impacts is required if the proposed Project will cause substantial adverse change to a historic resource. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a Project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance. 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.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR, cited as PRC Section 5024.1, Title 14 CCR, Section 4852, consisting of the following:

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

INTEGRITY

In order to be eligible for listing in the NRHP or the CRHR, a property must also retain sufficient integrity to convey its significance. The seven elements of integrity defined by the NRHP are: location, design, setting, materials, workmanship, feeling and association (National Park Service 1991). To retain historic integrity, a property must possess several, and usually most, aspects of integrity.

Location: "the place where the historic resource was constructed or the place where the historic event occurred" (National Park Service 1991:44)

Design: "the combination of elements that create the form, plan, space, structure, and style of a property" (National Park Service 1991:44)

Setting: the "physical environment of a historic resource" (National Park Service 1991:45)

Materials: the "physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic resource" (National Park Service 1991:45)

Workmanship: the "physical evidence of the crafts of a particular culture or people during any given period in history or prehistory" (National Park Service 1991:45)

Feeling: "a property's expression of the aesthetic or historic sense of a particular time" (National Park Service 1991:45)

Association: "the direct link between an important event or person and a historic resource" (National Park Service 1991:45)

HISTORIC BUILT-ENVIRONMENT EVALUATION

Recommended Eligible

Of the 20 historic resources within the APE that are more than 45 years old, one resource, the Westside Main Canal, has been determined eligible for listing in the NRHP. No other historic resources within the APE are recommended as eligible for listing in the NRHP or CRHR.

Westside Main Canal

The canal system, including the canal, lateral, and drain segments in the Project APE, is eligible for listing in the NRHP and CRHR under Criterion A/1 for its significance in the development of the Imperial Valley. The earthen canal was integral to the development of irrigated commercial agriculture since its construction in the early 1900s. Under the themes of agriculture and economic development, ASM's professional, independent recommendation is that this section of the Westside Main Canal is eligible for the NRHP and CRHR on the local and state levels.

Character-defining features of the canal include:

- original canal alignment
- earthen walls
- earthen levees
- agricultural setting
- structures such as bridges, siphons, drops, and gates

As an irrigation system, the viewshed, or historic setting, is not a character-defining feature of this type of historic resource.

Recommended Ineligible

Of the 20 historic resources within the APE that are more than 45 years old, 19 are recommended as ineligible for listing in the NRHP and the CRHR (Table 5).

Table 5. Ineligible Resources More Than 45 Years Old

Resource	Date Built	Resource Type
Diehl Drain	ca. 1940	Canal system
Dixie Drains and Lateral 1	ca. 1940 and ca. 1914	Canal system
Fern Canal	ca. 1909	Canal system
Fig Canal	ca. 1909	Canal system
Forget-Me-Not Canal	ca. 1909	Canal system
Foxglove Canal	ca. 1912	Canal system
Wixom Drain	ca. 1940	Canal system
Wormwood Canal	ca. 1911	Canal system
1210 Drew Road	ca. 1955	Residence
1220 Drew Road	ca. 1940	Residence
1276 Drew Road	ca. 1940	Residence
1796 W. Graham Road	ca. 1955	Residence
2596 W. Hardy Road	ca. 1940	Residence
Leibert Road Shed	ca. 1940	Shed
W. Stevens Road	ca. 1940	Residence
2396 W. Vaughn Road	ca. 1955	Residence
2104 W. Wixom Raod	ca. 1955	Residence
1651 Westside Road	ca. 1955	Residence
Westside School	1970	School

Diehl Drain

The Diehl Drain was an early irrigation drain for the agricultural fields of the Imperial Valley. The Diehl Drain was shown on 1949 aerial photos of the region, but was not present among the earliest irrigation systems known to exist by 1909. Drainage ditches were added to the

Imperial Valley irrigation systems beginning in the 1920s to alleviate silt and build-up within the agricultural fields. Although the drainage ditch is associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, this particular drain does not convey that theme as well as other similar resources such as the Westside Main and the All-American canals. Therefore, the Diehl Drain is recommended not eligible for the NRHP and the CRHR.

Dixie Drains and Lateral 1

Dixie drains and Dixie Lateral 1 are part of the Dixie Canal irrigation system. Dixie Lateral 1 had been constructed before 1914 and the Dixie drains were constructed after 1922 and before 1949, possibly ca. 1940. According to a previous evaluation by URS Corporation, the Dixie Drain 3 was recommended not eligible for the NRHP or the CRHR for the loss of integrity from regular dredging and widening of the canals and drains over time to alleviate problems of silt and build-up. Although the drainage ditch and lateral 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. Therefore the Dixie Drain 3 and the Dixie Lateral 1 are recommended not eligible for the NRHP and the CRHR.

Fern Canal

The Fern Canal was one of the earliest irrigation canals in the Imperial Valley, constructed in 1909. According to a previous evaluation by URS Corporation, the Fern Canal was recommended not eligible for the NRHP or the CRHR for the loss of integrity from regular dredging and widening of the canals and drains over time to alleviate problems of silt and build-up. Although the canal is associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, this particular canal does not convey that theme as well as other similar resources such as the Westside Main Canal and the All-American canals—in part due to their loss of integrity. Therefore the Fern Canal is recommended not eligible for the NRHP and the CRHR.

Fig Canal

Fig Canal was one of the earliest irrigation canals in the Imperial Valley, constructed in 1909 and the associated Fig Drain was constructed ca. 1940. According to a previous evaluation by URS Corporation, the Fig Canal was recommended not eligible for the NRHP or the CRHR for the loss of integrity from regular dredging and widening of the canals and drains over time to alleviate problems of silt and build-up. Although the canal is associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, neither the Fig Canal nor the Fig Drain convey that theme as well as other similar resources such as the Westside Main Canal and the All-American canals—in part due to their loss of integrity. Therefore the Fig Canal is recommended not eligible for the NRHP and the CRHR.

Forget-Me-Not Canal

Forget-Me-Not Canal and Forget-Me-Not Lateral 1 was part of one of the earliest irrigation systems in the Imperial Valley, constructed in 1909. According to a previous evaluation by URS Corporation, the Forget-Me-Not Canal was recommended not eligible for the NRHP or the CRHR for the loss of integrity from regular altering and modernizing of the canals and drains over time. Although the canal is associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, neither the Forget-Me-Not Canal nor Forget-Me-Not Lateral 1 convey that theme as well as other similar resources such as the Westside Main Canal and the All-American canals—in part due to their loss of integrity. Therefore the Forget-Me-Not Canal is recommended not eligible for the NRHP and the CRHR.

Foxglove Canal

The Foxglove Canal was an early irrigation canal in the Imperial Valley, constructed ca. 1912. According to a previous evaluation by URS Corporation, the Foxglove Canal was recommended not eligible for the NRHP or the CRHR for the loss of integrity from regular dredging and widening of the canals and drains over time to alleviate problems of silt and build-up. Although the canal is associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, this particular canal does not convey that theme as well as other similar resources such as the Westside Main Canal and the All-American canals—in part due to its loss of integrity. Therefore the Foxglove Canal is recommended not eligible for the NRHP and the CRHR.

Wixom Drain

The Wixom Drain was an early irrigation drain for the agricultural fields of the Imperial Valley. The Wixom Drain was shown on 1949 aerial photos of the region, but was not present among the earliest irrigation systems known to exist by 1909. Drainage ditches were added to the Imperial Valley irrigation systems beginning in the 1920s to alleviate silt and build-up within the agricultural fields. Although the drainage ditch is associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, this particular drain does not convey that theme as well as other similar resources such as the Westside Main and the All-American canals. Therefore, the Diehl Drain is recommended not eligible for the NRHP and the CRHR.

Wormwood Canal

The Wormwood Canal was one of the earliest irrigation canals in the Imperial Valley, constructed in 1911, with the Wormwood Drain constructed earlier by at least 1909, while Lateral 7 was constructed much later in 1950. According to a previous evaluation by Caltrans, the Wormwood Canal was recommended not eligible for listing in the NRHP because the canal was realigned and lined with concrete. Therefore the canal does not retain enough integrity to convey its significance as one of the original irrigation canals for the Imperial Valley. ASM concurs with this finding and recommends the Wormwood Canal as not eligible for listing in

the NRHP and the CRHR. Although the canal is associated with the early irrigation system of the Imperial Valley, and the important local theme of agricultural development, this particular canal, nor the early Wormwood Drain on its own, convey that theme as well as other similar resources such as the Westside Main and the All-American canals. Therefore, the Wormwood Canal is recommended not eligible for the NRHP and the CRHR.

Leibert Road Shed

ASM previously recommended that the Leibert Road Shed was not eligible for listing in the NRHP and the CRHR. We concur with our previous recommendation, and the shed is recommended not eligible for listing in the NRHP or CRHR. Specifically, under Criterion A/1, research failed to tie the shed to events that have made a significant contribution to the broad patterns of local or regional history, or to the cultural heritage of California or the U.S., including agricultural complexes in Imperial Valley. Under Criterion B/2, research failed to link the building with the lives of persons important to local, California, or national history. Under Criterion C/3, the building does not embody significant characteristics of a type, period, region, or method of construction; nor does it represent the work of a master, or possess high artistic values that would qualify it for listing. Finally, because this resource is a common property type it does not have the potential to provide information that is not available through historic research. Therefore, the Leibert Road Shed is not eligible for listing in the NRHP or the CRHR under Criterion D/4.

Westside School

Westside School was constructed as a rural school in 1970. The Westside School is recommended not eligible for listing in the NRHP or CRHR. Specifically, under Criterion A/1, research failed to tie the school to events that have made a significant contribution to the broad patterns of local or regional history, or to the cultural heritage of California or the U.S., including agricultural complexes in Imperial Valley. Under Criterion B/2, research failed to link the building with the lives of persons important to local, California, or national history. Under Criterion C/3, the building does not embody significant characteristics of a type, period, region, or method of construction; nor does it represent the work of a master, or possess high artistic values that would qualify it for listing. Finally, because this resource is a common property type it does not have the potential to provide information that is not available through historic research. Therefore, the Westside School is not eligible for listing in the NRHP or the CRHR under Criterion D/4.

Residential Buildings within the APE

The remaining nine historic resources within the APE that are recommended ineligible for listing in the NRHP and CRHR are all single-family residential buildings:

- 1210 Drew Road
- 1220 Drew Road
- 1276 Drew Road
- 1796 W. Graham Road

- 2596 W. Hardy Road
- W. Stevens Road
- 2396 W. Vaughn Road
- 2104 W. Wixom Road
- 1651 Westside Road

None of these buildings are recommended as eligible for listing in the NRHP and CRHR. Specifically, under Criterion A/1, research failed to tie these buildings to events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the U.S. Under Criterion B/2, research failed to link the buildings with the lives of persons important to local, California, or national history. Under Criterion C/3, none of these buildings embody significant characteristics of a type, period, region, or method of construction; nor do they represent the work of a master, or possess high artistic values that would qualify them for listing. Finally, because these resources are a common property type, they do not have the potential to provide information that is not available through historic research. Therefore, none of these buildings are eligible for listing in the NRHP or the CRHR under Criterion D/4.

7. ASSESSMENT OF IMPACTS ON THE HISTORIC BUILT-ENVIRONMENT

DIRECT IMPACTS

CEQA Guidelines Section 15064.5(b)(1) define a significant effect as one that would materially impair the significance of an historical resource. The Project will not result in the any direct impacts to the historic resources. Portions of the Westside Main Canal system (including its laterals and drains) are located within the Project area, however they will not be altered or impacted directly from the construction or installation of the solar field or Gen-Tie line.

INDIRECT IMPACTS

An adverse indirect impact—visual, auditory, or atmospheric—to a historic resource is one that negatively affects the integrity of setting or feeling of the resource to the extent that the characteristics that would qualify the resource for listing in the NRHP or the CRHR are compromised. An undertaking can therefore only have an adverse effect if it impacts an historic built-environment resource that is eligible for listing in the NRHP or the CRHR. This section provides an assessment of indirect impacts that may affect the Westside Main Canal, which has been determined eligible for listing in the NRHP/CRHR. This property will not be subject to any indirect impacts by the Project.

Visual Impacts

In evaluating visual impacts on historic resources, and for purposes of this report, the following definitions have been employed (Delaware SHPO 2003):

Adverse Visual Effect: National Historic Preservation Act Section 106 regulations in 36 CFR 800 define an adverse effect as one that occurs when an undertaking carries the potential to directly or indirectly alter the characteristics of an historic resource that make it eligible for listing in the NRHP. Accordingly, an adverse visual effect is one that negatively affects the integrity of the setting or feeling of an historic built-environment resource, to the extent that significance and eligibility for listing in the NRHP are compromised. In particular, adverse visual impacts can be seen as negatively affecting the following characteristics of integrity: setting, feeling, or association.

Historic Built-Environment Resource: a historic site, district, building, structure, or object that is either eligible for inclusion in the NRHP, or listed therein.

Obstructive Visual Impacts: any visual effect that carries the potential to obstruct any part of the view of an historic built-environment resource, or the scenic view from such a resource.

Adverse obstructive impacts can obstruct all or a portion of an historic built-environment resource and/or its viewshed, in turn negatively affecting the property's historic character.

Scenic Views: any scenic resources or resources that are visually and aesthetically important and that contribute to an historic built-environment resource's significance.

Viewsheds: those areas visible from a specified location or locations.

Visual Impacts: any aspect of a proposed undertaking that will be seen from or will be in the view of an historic built-environment resource. A visual effect may be beneficial or adverse and may affect the historic resource in an aesthetic or obstructive manner. The determination that a visual effect exists does not automatically imply that the effect is adverse.

Issues of Visual Impacts and Historic Built-Environment Resources

Because there is no universally accepted yardstick for measuring visual impacts, and because those impacts do not always damage the defining characteristics of an historic built-environment resource in any physical manner, assessing them can be difficult and complicated, and is almost always subjective. If we are to consider that an historic built-environment resource is affected when its historic significance and integrity have been diminished, determining how a Project harms a resource's historical significance and integrity is essential to any assessment. In assessing the visual impacts for historic resources, the criteria for significance and the aspects of integrity are factors that require careful evaluation and can provide a defensible qualitative method for determining visual impacts on historic resources.

Adverse Visual Impacts

Adverse visual impacts may be created when an undertaking is visible within the viewshed of the historic resource, when it blocks a view toward the historic resource, or when it introduces an element that is incompatible with the criteria under which the property is eligible.

Simply because an undertaking will be visible from an historic built-environment resource does not mean it automatically will create an adverse visual effect. Therefore, notwithstanding whether the undertaking is or is not an historic built-environment resource, it is necessary to evaluate the visual changes and alterations the undertaking will introduce to the resource. In assessing adverse visual impacts on a built-environment resource it is necessary to identify the criterion or criteria under which the resource is eligible and what qualities or characteristics of the resource contribute to its significance or eligibility. For example, if a resource is eligible for its innovative engineering qualities, visual impacts on the property may not be adverse, whereas if the property is eligible on the basis of its architectural significance, an adverse effect very well may be created.

An adverse effect may be obstructive, which is to say it may block the view to or from an historic resource; it may also not be obstructive and still create an adverse effect in that it introduces elements so incompatible with the criterion or criteria under which the property is eligible for listing that it diminishes the property's significance to a substantial degree. A

highway proposed to run alongside an historic rural church, while it would not directly obstruct the view to or from the building, might still introduce an element so incompatible with the rural setting of the property that it would have a diminishing effect upon the integrity of the property's setting.

Adverse aesthetic impacts should be determined on a case-by-case basis, weighing the following factors:

- Significance. An historic built-environment resource's historical significance and its key aspects of integrity must be taken into account in order to evaluate the Project's impacts on the property's eligibility for listing in the NRHP/CRHR.
- Character-Defining Features. The alteration of character-defining features at the Project location (including open space) can affect the view from the historic built-environment resource and possibly the location, feeling, setting, and association of that resource.
- Compatibility. Whether in an open space or a developed area, the compatibility of the Project with the character of the Project's location and surrounding area, including historic resources, is important. The character of the historic built-environment resource's site and architectural features should be the basis for determining the appropriate characteristics of the proposed Project. The compatibility of the Project is determined by:

    - mass – the arrangement of the Project's spaces;
    - scale and proportion – the size and the proportion of the Project to the surrounding structures and features;
    - height – sometimes it may be necessary that a Project height extend beyond that of the surrounding buildings and other features within view of the Project; it is important that the height of the Project not cause the line of sight to move so far up that the surrounding features are out of view, thereby detracting from the original view;
    - shadows;
    - color;
    - the degree to which the Project would contribute to the area's aesthetic value;
    - the degree of contrast, or lack thereof, between the Project and the background, surrounding scenery, or neighborhood; and,
    - the amount of open space.

- Obstructive Impacts. Whether a Project is on or near an historic built-environment resource, it can block the resource from being viewed, or block a view seen from that resource, thereby possibly diminishing its integrity. Determination of adverse obstructive impacts should be made on a case-by-case basis, considering the following factors:

- The historic built-environment resource's significance. It is necessary to understand the resource's historic significance and its key aspects of integrity in order to evaluate the Project's impacts on the resource's eligibility for listing in the NRHP/CRHR.
- Nature and quality of the view from the historic built-environment resource. This includes such features as natural topography, settings, man-made or natural features of visual interest, and other historic resources seen from the historic built-environment resource, any of which would contribute to its significance and integrity.
- Extent of obstruction. This includes total blockage, partial interruption, or interference with a person's enjoyment and appreciation of a scenic view or historic resource viewed from the historic built-environment resource, to the extent it affects the integrity of the historic built-environment resource.
- Obstruction of an historic built-environment Resource. The Project might obstruct the historic built-environment resource from being viewed from the Project site or other area. If the historic built-environment resource is visually appreciated from surrounding viewpoints, obstructing its view may affect its feeling, setting, location, or association.

Assessment of Visual Impacts

Westside Main Canal

Both the solar field and electric line of the Project will be visible from the segments of the Westside Main Canal located within the Project APE (Figures 5, 6, and 7). Those segments of the canal are recommended as eligible for listing in the NRHP and CRHR under Criterion A/1 for their significance in the development of the Imperial Valley. Character-defining features of the canal include original canal alignment, earthen walls, earthen levees, agricultural setting, and structures such as bridges, siphons, drops, and gates. Viewshed from the canal is not a character-defining feature of this historic resource, nor a quality that contributes to its NRHP eligibility. A small portion of the overall setting will be altered by the solar field, but not to a level that would significantly compromise the integrity of its setting. Neither the solar field nor the electric lines significantly diminish the integrity of the setting and feeling of this historic built-environment resource and therefore do not constitute a significant visual impact under CEQA.

Auditory Impacts

In consideration of auditory impacts from the Project, the effect of the noise generated by the solar field and electric line must be considered in relationship to the current ambient noise levels in the vicinity of the historic built-environment resource within the Project APE. The findings of the Noise Report being prepared concurrently with this report were not available to determine the noise level that will be generated by the Project. However, ASM does not anticipate that those levels will exceed the current noise levels allowed for the setting of the Westside Main Canal. This opinion is based on recent experience

Figure 5. Viewshed from the Westside Main Canal at Leibert Road., looking south towards Imperial Valley Substation.

Figure 6. Viewshed from the intersection of the Westside Main Canal and Fern Canal, looking northeast into solar field area in the distance.

in evaluating the effects of similar solar projects in the same area as the Camp Verde Solar Project, in which the Westside Main Canal was also within the Project APE (Davis 2011a, 2011b and 2011c). Therefore, the operation of the Project is not likely to constitute a significant auditory impact under CEQA.

Auditory impacts during construction of the solar field and electric line may constitute a temporary auditory intrusion to the Westside Main Canal due to the proximity of the Project to this historic resource. Although specific information on the type of construction equipment to be used was not yet available at the time of the preparation of this report, typical construction equipment for this type of solar project could include off-highway trucks, graders, rollers, tractors/loaders/backhoes, water trucks, rubber-tired bulldozers, and rough terrain forklifts (LS Power Development, LLC 2011). The cumulative noise level of the combined operation of such equipment could result in noise levels that are at the acceptable threshold established by Imperial County for allowable noise level for construction noise, but will exceed the ambient sound levels typical for the setting of the Westside Main Canal (LS Power Development, LLC 2011). However, because the impact of these auditory impacts would be temporary, the impact will likely not rise to the level of a significant auditory impact under CEQA.

Figure 7. Viewshed from the Westside Main Canal near Diehl Road, looking east toward solar field area.

Atmospheric Impacts

In consideration of atmospheric impacts from the Project, the effect of atmospheric intrusions generated by the solar field and electric line must be considered in relationship to the current

levels at the location of the historic built-environment resource within the Project APE. Potential atmospheric intrusions can include elements such as dust, emissions, and chemical residue from dust abatement. Air emissions are generated during construction activities associated with the development of a Project, including grading, clearing, hauling, underground utility construction, and paving activities. During site clearing and remedial grading, diesel exhaust emissions are generated by construction-related vehicles such as bulldozers, loaders, dump/haul trucks, and scrapers. Emissions are also generated in the form of dust and PM10 as a result of soil disturbance (Davis 2011a and 2011c).

The findings of the Air Quality Report being prepared concurrently with this report were not available to determine the emissions that will be generated by the Project. However, ASM does not anticipate that those levels will exceed the current ambient air quality thresholds allowed for the setting of the Westside Main Canal. This opinion is based on recent experience in evaluating the effects of similar solar projects in the same area as the Camp Verde Solar Project, in which the Westside Main Canal was also within the Project APE. It is anticipated that if any of the air quality threshold are exceeded, that will likely only be during the construction of the Project, and will only constitute a temporary atmospheric intrusion. Therefore, because the impact of these atmospheric intrusion would be temporary, the impact will likely not rise to the level of a significant atmospheric impact under CEQA.

Based on our understanding of the project, emissions during operation would likely be less than those during construction, and the Project will be required to comply with all applicable air quality regulations for operating facilities. Operation of the Project will therefore likely not be a significant impact under CEQA.

SUMMARY

No significant impacts to historic resources were identified as a result of this evaluation. Portions of the Westside Main Canal system (including its laterals and drains) are located within the Project area, however they will not be altered or impacted directly from the construction or installation of the solar field or Gen-Tie line. No significant indirect impacts (visual, auditory, or atmospheric) were identified as a result of the evaluation of indirect impacts on the Westside Main Canal, the only built-environment resource within the Project APE determined eligible for listing in the NRHP/CRHR or as a CEQA historical resource. The canal will not be subject to a visual intrusion by the Project. The canal may be subject to temporary auditory and atmospheric intrusions during the construction of the Project. However, neither intrusion is likely to rise to the level of a significant impact under CEQA.

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NAHC LETTER

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July 7, 2011

Ms. Patricia T. Mitchell, M.A., RPA, Senior Project Archaeologist

KP ENVIRONMENTAL, LLC

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Sent by U.S. Mail
No. of Pages: 4

Re: Sacred Lands File Search and Native American Contacts list for the **"Proposed Mount Signal Solar Project;"** located approximately eight miles southwest of the City of El Centro, in the Mount signal area; Imperial County, California

Dear Ms. Mitchell:

The Native American Heritage Commission (NAHC) conducted a Sacred Lands File search of the 'area of potential effect,' (APE) based on the USGS coordinates provided and found **Native American cultural resources were not identified** in the USGS coordinates you specified. Also, please note; the NAHC Sacred Lands Inventory is not exhaustive. Native American cultural resources may be inadvertently discovered during ground breaking activity. The NAHC is aware of recorded archaeological sites near the APE and there are Native American cultural resources in close proximity to the APE but not with one-half mile of the USGS coordinates provided.

The California Environmental Quality Act (CEQA – CA Public Resources Code §§ 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. CA Government Code §65040.12(e) defines "environmental justice" provisions and is applicable to the environmental review processes.

Early consultation, even during Initial Study or First Phase surveys with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Local Native Americans may have knowledge of the religious and cultural significance of the historic properties of the proposed project for the area (e.g. APE). Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). We urge consultation with those tribes and interested Native Americans on the list of Native American Contacts we attach to this letter in order to see if your proposed project might impact Native American cultural resources. Lead agencies should consider avoidance as defined in §15370 of the CEQA Guidelines when

significant cultural resources as defined by the CEQA Guidelines §15064.5 (b)(c)(f) may be affected by a proposed project. If so, Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "substantial," and Section 2183.2 which requires documentation, data recovery of cultural resources.

Partnering with local tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 4(f), Section 110 (f)(k) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation.

Also, California Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery', another important reason to have Native American Monitors on board with the project.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. An excellent way to reinforce the relationship between a project and local tribes is to employ Native American Monitors in all phases of proposed projects including the planning phases.

Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibility threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Attachment: Native American Contact List

California Native American Contact List
Imperial County
July 7, 2011

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Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Mount Signal Solar Project; located eight miles southwest of the City of El Centro and just north of the U.S. - Mexico International Boundary; Imperial County, California.

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July 7, 2011

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